

## How are Doing Social Enterprises in the Czech Republic?

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### Abstract

The essay outlines today situation in social entrepreneurship in the Czech Republic. The aim of the paper is to analyse the incidence of social enterprises in the Czech Republic and analyse them based on chosen variables. We used quantitative approach with descriptive statistics, which describes social enterprises according to their distribution in Czech regions, date of establishment, legal form, activity of social enterprise, and frequency of offering indemnification. Main findings are that perception of social entrepreneurship in the Czech Republic is often narrowed down to issues of employment of handicapped or otherwise disadvantaged people. Most of social enterprises are registered in the capital city of Prague, South Moravia, Olomouc, and Moravia-Silesian region. Distribution of social enterprises in the Czech Republic is uneven and for instance in the Karlovy Vary region, social enterprises represented very poorly. Most social enterprises were founded between the years 2007 and 2013, focusing on business areas like gardening and cleaning services, food production, sales, and provision of accommodation and food services. The main contribution of the article is description of today situation of social entrepreneurs in the Czech Republic and its structure. The originality of the paper based on uniqueness of gaining and analysing data about social entrepreneurship in the Czech Republic.

**Keywords:** Social Entrepreneurship, Czech Republic.

### Introduction

The term “social economy” was first used in France in 1830 by Charles Dunoyer (Dohnalová, 2011). There is a space between the state and its establishments and the market and its institutions, this gap is called the third sector or social economy. Social economy is on the border between the state or public sector and the private sector, i.e. for-profit market. It is a range of public goods which the market is not capable of distributing or is not willing to do so, and in the meantime the state waives their distribution (Hunčová, 2007). Social economy produces goods of general interest (common goods) with positive social externalities (effects) with impact on social capital (in Hunčová, 2009). In literature, the third sector is also called social economy, the social sector, non-profit sector, voluntary sector, community sector, or civic sector (Dohnalová, 2006).

In almost all industrialised countries, we are witnessing today a remarkable growth in the ‘third sector’, i.e. in socio-economic initiatives which belong neither to the traditional private for-profit sector nor to the public sector. These initiatives generally derive their impetus from voluntary organisations and operate under a wide variety of legal structures. In many ways they represent the new or renewed expression of civil society against a background of economic crisis, the weakening of social bonds and difficulties of the welfare state (Borzaga, Defourny, 2003).

The aim of this paper is to describe the current situation of social entrepreneurship in the Czech Republic. For this purpose, the legislation concerning companies engaged in social entrepreneurship was presented

first. The practical part presents the division of social enterprises by legal form of business, by foundation, by distribution in the regions of the Czech Republic, by activity of social enterprise, and by providing the so-called facultative compensation.

## **Situation in the Czech Republic**

In the Czech Republic the awareness about the content of social economy is generally low. One of the reasons may be lack of legislative framework and absence of authority the agenda of which would be social economy. Nevertheless, studies show that social economy and social enterprise exist in the Czech Republic (Dohnalová, 2011). It is interesting that most Czech social entrepreneurs independently agree that in the Czech business environment the term "social" arouses rather negative connotation, and that the expression "social innovation" may appear misleading and incomprehensible. In contrast, in Western Europe and the USA the adjective "social" rather evokes positive connotation. It occurs frequently in relation with expansion of the concept of corporate social responsibility which acquires, to some extent, even strategic character. This assumption is confirmed by the expansion of new hybrid cooperatives in the UK, the reviving debate about the role of cooperatives and social economy in spreading social entrepreneurial movement in France, and the growing popularity of master degree majors focusing on social entrepreneurship in the American approach of contemporary management education. Such linguistic oddity largely prevents not only the development of cooperative business in the Czech Republic, but it also represents a barrier for social entrepreneurs and social sector of the economy as a whole (Polícar, 2010).

Due to different ways of defining social economy, there is no accurate way of measuring its economic contribution (Dohnalová, 2011). However, some governmental and international institutions are showing an effort to create a certain procedure or standard of impact measurement of the social economy. For instance, the European Commission has developed such an initiative based on the following assumption. Where public funding is used efficient delivery of outcomes, or savings in public spending must be demonstrated. A consistent way of measuring social impact is therefore needed. In October 2012 a Social Impact Measurement expert sub-group was set up by the GECES ("Groupe d'Experts de la Commission sur l'Entrepreneuriat Social") to advise on a methodology which could be applied across the European social entrepreneurship sector (European Commission, 2014).

Social economy is a broad and multidimensional topic. The actors of social economy may or may not participate in the market and achieve profit or even loss, they also may or may not benefit from philanthropy or public sources; but always through redistribution of profit they achieve not only individual, but collective benefits within their own apolitical civic consensus of objectives and means (Dohnalová, 2011).

The objectives of social economy put focus on people. We may imagine social or ethical economy as the economy of "people for people" unlike the economy "for the market". The economy and the people participate in the market not only for profit but also other values (livelihood, stability of the economy, social stability). Market economy can also be regarded as social in case it produces positive social externalities, as well as the public sector, especially if it supports the development of social economy indirectly. The inclusion underlines the potential ethical values hidden in every economy and even possible reciprocity of the private and public sectors in terms of achievement of (social) benefits (Hunčová, 2007).

Social economy is the way how citizens economically develop their own solidarity through collective initiatives and their willingness and modernize the current welfare state while maintaining coverage of social risk at an acceptable level, as well as providing social services which are currently not covered by the state, market, or communities (in Hunčová, 2009).

Social economy can also be regarded as means by which the state returns the responsibility for social risks back to the citizens and creates certain supportive conditions like law and partnership in decision making. If an individual becomes involved in a difficult life situation (threatening his social status, exclusion from the labor market), it is possible to rely on the assistance of the state or charity. Whereas the concept of social economy assumes that such individuals are given a helping hand so that in the context of the civic sector and mutual self-help they can actively resolve their situation by themselves (Hunčová, 2007). The persistence of structural unemployment in many countries, the need to reduce state budget deficits and to keep them at a low level, the difficulties of traditional social policies and the need for more active integration policies have naturally raised the question of how far the third sector can help to meet these challenges and perhaps take over from public authorities in some areas. Of course, there is no simple answer to this question, and the debate is still wide open (Borzaga, Defourny, 2003).

**Table 1: Different attributes of public sector organizations and entities of social economy according to criteria**

Public sector organization	Criteria	Entity of social economy
No explicit aim.	Aim	The main aim of a social enterprise is to serve its members, community or society.
Democratic control over the organization is not required.	Control over organization	Excludes entities that do not operate on democratic principles.
Any profit distribution is unacceptable.	Use of profit	Limited income redistribution is permitted.

Source: Dohnalová (2011)

According to Schumpeter, a social enterprise is a socially oriented, implemented, innovative intent achieved through economic activity in the presence of real economic risks (Schumpeter, 1934). Organisation for Economic Cooperation and Development (OECD) defines social enterprises as any private activity conducted in the public interest, organized with a business strategy the main objective of which is not to maximize profit, but to achieve certain economic and social objectives, and which have the capacity to bring innovative solutions to problems of social exclusion and unemployment (OECD, 1999).

The concept of social enterprise is built on a self-governing partnership of the public and the private social sector while implementing policies mentioned below (Hunčová, 2007). Social enterprises meet the employment policy, social cohesion policy, regional development policy, and sustainability policy. Employment policy means providing equal opportunities for disadvantaged individuals in the labour market. Supporting the growth of social capital and social inclusion, as well as provision of social services are included in the social cohesion policy. Regional development policy should be understood as local economic capital growth through support of employment, entrepreneurship, and involvement of local resources. Support in care for the environment, cultural heritage, landscape, and inter-generational solidarity is the subject of sustainability policy (in Hunčová, 2009).

A social enterprise is a business entity that operates in the market while offering employment of disadvantaged individuals. Social enterprise primarily caters local needs and uses primarily local resources (in Hunčová, 2009). Social enterprises are majorly small and medium businesses. At least a minimum amount of unpaid labour is often present in their activity as for instance volunteering or self-help. Voluntary membership and openness are the core qualities of a social enterprise, and on the contrary, its main goal is of a non-profit character and not primarily return on capital. The enterprise is responsible to those who it serves (Hunčová, 2007).

Social enterprises, regardless of their legal form, can generally be identified and distinguished from voluntary organisations through a set of criteria or features, such as those identified by the EMES network ([www.emes.net](http://www.emes.net)). These criteria are: a continuous activity producing goods and/or selling services; a high degree of autonomy; a significant level of economic risk; a minimum amount of paid work; an initiative launched by a group of stakeholders; a decision making process not based on capital ownership; a participatory nature, which involves the persons affected by the activity; limited profit distribution; and, an explicit aim to benefit the community ([www.emes.net](http://www.emes.net)). These criteria must be seen and applied in an open and flexible way (OECD, 1999; Mouves, 2012).

Social enterprises are autonomous (self-governing communal citizen initiative), voluntary, and undergo significant economic risks while meeting economic and social objectives (Dohnalová, 2011). Innovations in the means of providing services to citizens, especially socially excluded citizens, who are more difficult to integrate into society are typical for such enterprises. They contribute to local and regional development. Such enterprises respond to the new emerging needs of society by creating and providing the necessary types of products, and public and social services (Dohnalová, 2011).

## **Methods Used**

In the Czech Republic, there is neither an official database of social enterprises, nor the exact number of social enterprises is known. Due to lack of legislation defining and determining the criteria for social entrepreneurship, we can only speculate what can be derived from the recommended standards.

One of the most comprehensive resources in the Czech Republic is the Czech Social Entrepreneurship website, which contains 219 registered social enterprises in its database by 16th March 2016. The directory includes organizations that are committed to the idea of social entrepreneurship. The register was created based on telephone surveys in autumn of 2012. The source of contacts used for surveying the businesses was a list of social enterprises created by the organization TESSEA. Businesses may also add their own data into the database. They shall simply fill in a questionnaire on the website of the Czech Social Entrepreneurship which is then assessed so the given company is either added to the register of social enterprises, or the request is refused.

The following information on social enterprises was analysed: year of establishment, legal form, area of business, city, county, social entrepreneurship, website of the social enterprise. The "social enterprise" section provides information on why the business is considered social in its sole discretion. Detailed examination of this data also provides other features of Czech social enterprises.

It should be noted that although such register of social enterprises is a unique source of information about social entrepreneurship in the Czech Republic, some social enterprises are not included in the list even though companies are regarded as social. It is speculative whether it is because the company has not been approved, or that the list is incomplete. For instance, a voluntary association 'Nový prostor' which provides employment for homeless individuals by selling the magazine called 'Nový Prostor' is not included in the register. Nevertheless, the company was included in the book "Social Business 10 successful examples in Europe." (Meszáros, 2008).

## **Distribution of social enterprises (SE) by legal form of business**

In the Czech Republic, the most common forms of social enterprise are a limited liability company (s.r.o.) represented by 44.7% of cases, a charitable organization (o.p.s.) by 25.6% of the business units, followed by voluntary associations (o.s.), and entrepreneurs doing business under the Trade Licensing Act. Cooperatives, which are a typical legal form of social entrepreneurship, occurred only in 7.3% of cases. The reasons why the most preferred form of social enterprise a limited liability company are facile founding, where only a single executive director is needed, and low requirement for capital. In contrast,



cooperatives, according to the law no. 90/2012 of the Legal Code, must be founded by at least three members, also legal regulation of their activity is different (e.g. arrangements for decision making or rights and obligations of members).

### **Year of Establishment of Social Entrepreneurs**

Social enterprises began their establishment in the 90s of the last century in the Czech Republic. The largest increase in the number of social enterprises was between the years 2009-2014 when every year at least 10 such companies were founded. The record number of 47 new social enterprises was achieved in 2012, also years 2011 and 2013 were considerably strong when 38 and 32 new social enterprises were established respectively.

Programs for social entrepreneurship support played a major role in this process. The concept of social economy and social enterprise became popular in the Czech Republic in connection with the possibility to draw resources from the European Structural Funds to support development (Hunčová, 2009). In 2007-2013, it concerned the operational funding program Human Resources and Employment. In the previous period, support of the development of social economy was hidden under the concept of local development, partnership between the public and private sectors under EQUER and LEADER+ programs (Hunčová, 2007). Today, operational programme 2014-2020 is being prepared, therefore stagnation or growth of emergence of social enterprises may be expected

### **Social Entrepreneurs Distribution among Regions in the Czech Republic**

While analysing the distribution of social enterprises among regions in the Czech Republic it is possible to identify three largest clusters in which the concentration of social enterprises is by far the highest. The first cluster comprises 66 enterprises in the city of Prague and Central Bohemia, which represents 30% of the total number of SEs in the Czech Republic. The reason is that in this region, concentration of economic activities in the Czech Republic the most significant in general, and most companies are registered in this area. The second most numerous cluster of social enterprises in the South Moravian region which houses 25 social enterprises (11.4% of the total number). The third and fourth most numerous clusters of social enterprises are in the Olomouc and Moravian-Silesian regions where each count over 20 social enterprises (9.1%). In contrast, the least social enterprises are in the region of Karlovy Vary (3 companies) and Liberec (4 companies), then in the Pardubice region (7 companies), in the Vysočina region (8 companies), and the Pilsen region (9 social enterprises). The fact that Karlovy Vary region is the least active in social entrepreneurship is not very surprising since it is a region with generally the lowest economic performance in the Czech Republic, on the other hand, the development of social entrepreneurship would certainly benefit this region considering its structural unemployment rate as well as the highest number workers with just primary education who would be able to find adequate employment in social enterprises.

### **Area of Business of Social Entrepreneurs**

Business areas of social firms are divided according to NACE classification into 15 groups. Areas that often-occurred form their own group (i.e. gardening, cleaning). Those that did not occur often are categorized as others. Forestry, cardboard manufacturing and glass manufacturing may be found among others. Some social enterprises operate in multiple areas of business; those were classified according to the activity which was prevalent.

Most enterprises are engaged in gardening services, landscaping, property maintenance, and cleaning work (26% of companies), followed by food production and sales (18.7%), sales in general (18.2%), accommodation and food service activities (17.8%), training and requalification (16.9%), decorative manufacture, production of glass and ceramics (9.1%). It is obvious that social enterprises operate in various sectors mostly providing services and involving in small-scale manufacture. Conversely,

industrial production does not belong among the main fields of business in social enterprises. Dividing area of activity by sector (primary, secondary, and tertiary), 20.2% of social enterprises are involved in activities which fall within the secondary sector, and 79.8% of enterprises are engaged in activities falling within the tertiary sector.

### **Providing Facultative Compensation**

In the sense of regulation §81 and following Act No. 435/2004 of the Legal Code on employment, the term „facultative compensation means that an employer with more than 25 employees in permanent employment must employ 4% of persons with disabilities. For failing to fulfil this obligation, a contribution to the state budget must be paid (in 2014 the amount of 62,090 CZK, in 2015 the amount grew to 62,946 CZK per employee with disabilities). An alternative solution to deal effectively with this issue is purchasing products or services from a company that employs more than 50% of employees with disabilities (value corresponding the amount of 176,253 CZK in 2015 per a disabled employee).

The current analysis shows that only 19.6% of the monitored 219 social enterprises provide facultative compensation while the remaining more than 80% do not.

### **Conclusion**

Social entrepreneurship appropriately combines economic and social objectives of society. Legal environment that poorly supports social entrepreneurs in general prevents greater development of social entrepreneurship in the Czech Republic. In the Czech practice, an enterprise itself decides on whether to define itself as social or not, or it does not consider such view at all. Perception of social entrepreneurship in the Czech Republic is often narrowed down to issues of employment of handicapped or otherwise disadvantaged people. Social entrepreneurship put focus on community and local development, it contributes to solving collective or social issues, not only issues of individual subjects.

The main contribution of the article is description of today situation of social entrepreneurs in the Czech Republic and its structure. The originality of the paper based on uniqueness of gaining and analysing data about social entrepreneurship in the Czech Republic. Based on the analysis conducted, it is possible to say that most of the 219 observed social enterprises that operate in the Czech Republic, most is registered in the capital city of Prague, South Moravia, Olomouc, and Moravia-Silesian region. Distribution of social enterprises in the Czech Republic is uneven and for instance in the Karlovy Vary region, social enterprises represented very poorly. Legal form of most of social enterprises is either a limited liability company, a charitable organization, or a voluntary association. Most social enterprises were founded between the years 2007 and 2013, focusing on business areas like gardening and cleaning services, food production, sales, and provision of accommodation and food services. Four-fifths of social enterprises included in the accessed database do not provide facultative compensation.

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### **References**

Borzaga, C., Defourny, J. 2003. The Emergence of Social Enterprise. London: Routledge.

Dohnalová, M. 2006. Sociální ekonomika v evropeizaci českého hospodářství. Praha: Národohospodářský ústav Josefa Hlávky.

Dohnalová, M., Průša, L. 2011. Sociální ekonomika. Praha: Wolters Kluwer Česká republika.

European Commission, 2014. 'Proposed Approaches to Social Impact Measurement in European Commission legislation and in practice relating to EuSEFs and the EaSI, Publications Office of the European'. Luxembourg: European Union.

Hunčová, M. 2007. Sociální ekonomika, sociální podnik a sociální kapitál: soupis anotací z mezinárodní konference uspořádané KFÚ FSE UJEP ve spolupráci s CPA Praha a ČSE Praha, pobočka Ústí nad Labem ve dnech 1.-2.11.2007 v Ústí nad Labem. Ústí nad Labem: Fakulta sociálně ekonomická Univerzity Jana Evangelisty Purkyně.

Hunčová, M. 2007. Sociální ekonomika a sociální podnik. Ústí nad Labem: Univerzita J.E. Purkyně v Ústí nad Labem.

Hunčová, M. 2009. Sociální ekonomika jako producent sociální a veřejné přidané hodnoty: sborník příspěvků z odborného semináře - kulatého stolu. Ústí nad Labem: Fakulta sociálně ekonomická Univerzity Jana Evangelisty Purkyně.

Meszáros, P. 2008., Sociální podnikání: 10 úspěšných příkladů z Evropy. Praha: Nový proctor.

Mouves, (2012) Le livre blanc des entrepreneurs sociaux. L'efficacité économique au service de l'intérêt général, Editions Rue de l'échiquier.

OECD, (1999), Social Enterprises. Paris: OECD.

Policar, L. (2010) Role, identita a inovace sociálního podnikání v České republice v transnacionální perspective. Brno: Masarykova univerzita.

Schumpeter, J. A. (1934) The Theory of Economic Development: an inquiry into profits, capital, credit, interest, and the business cycle.

Act on Trade Licencing: Zákon č. 455/1991 Sb., o živnostenském podnikání, (1998) available at: <http://business.center.cz/business/pravo/zakony/zivnost/>, (accesed 1 October 2018).

Business Corporations Act: Zákon č. 90/2012 Sb., o obchodních korporacích, (2012) available at: <http://business.center.cz/business/pravo/zakony/obchodni-korporace/>, (accesed 1 October 2018).

## **Ensuring an Economic Safety of Consumers in Motor Transportation System (On the Example of Subordinated to Rosavtodor of FKU Uprdor Moscow-Volgograd)**

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### **Abstract**

Article is devoted to questions of enhancement of motor transportation infrastructure of regions of Russia from line items of ensuring an economic safety of her consumers. The organizational and economic relations ensuring an economic safety of the consumer in functioning of motor transportation infrastructure of regions act as an object of research. The purpose of work is the analysis of specifics of organizational tools, methodology of ensuring an economic safety of consumers (physical persons and legal entity) in use of infrastructure of motor transportation system, and also implementation of technical and technological innovations in functioning of road services. For implementation of this purpose an integrated approach to development of theoretical recommendations and practical actions for enhancement of organizational and economic tools of the organizations of motor transportation infrastructure was used. The technique of carrying out a research in work provided: author's monitoring of activities of the motor transportation entities of regions, research of functioning of objects of transport infrastructure; the analysis of the information materials provided to FKU Uprdor Moscow-Volgograd; the analysis of statistical information, including Rosstat, Tambovstat. Methods of descriptive statistics allowed to create quantitative data on the declared problems and to provide them in tables and charts. The most important result of a research is the complex of statistical data on various quantitative and high-quality parameters of an economic safety of the consumer in the motor transportation sphere provided in tables, charts and descriptive characteristics and also tasks, actions, which in is the dominating characteristic approved during 2014-2016, for enhancement of functioning of the motor transportation entities operating and serving motor transportation infrastructure. The carried-out monitoring, the analysis and conclusions can be used in the consolidated regional Programs of social and economic development of motor transportation infrastructure, budgets of regions for a long-term and short-term outlook. In enhancement of organizational and economic tools of activities of the motor transportation entities operating and serving motor transportation infrastructure in regions. The empirical material given in article, and also the offered conclusions and actions will form base for further theoretical researches of processes of ensuring an economic safety in motor transportation infrastructure of regions.

**Keywords:** The transport Russian Federation system, regional infrastructure of transport system, an economic safety of consumers on motor transportation system, an economic safety of motor transportation infrastructure, transport system and traffic safety.

### **Introduction**

The current state and development of transport system of Russia is one of the main organizational and economic aspects in infrastructure development, both regional economy, and all economic system of national economy. Along with this and urgent the question of ensuring an economic safety

of consumers (the country population) in use motor transportation infrastructure is predominating.

Kuznetsov I. A. (2015) in the works noted that: "... from all problems of an economic safety of the person of the most important economic safety of the consumer, increase in its economic activity, prevention of the threats arising in the course of technical enhancement and a virtualizatsionny condition of the economic relations of deviant behavior of society of this or that region, the state is represented".

The matter Mnogoaspektnost in many respects depends on competent and effective creation of organizational, technical and technological and material infrastructure of the motor transportation system providing economically safe passenger traffic and a cargo flow. For example, in 12 months 2016 on the federal highways which are in operational management of FKU Updor Moscow-Volgograd the 550th road accident in which 174 people died is registered, and 790 people got wounds of various degrees of severity:

- the number of the road accidents decreased by 106 cases (-16%), (2015 of 12 m – 656 road accidents, 2016 of 12 m – 550 road accidents);
- the number of the dead decreased by 20 people (-10%), (2015 of 12 m – 194 people died, 2016 of 12 m – 174 people died);
- the number of wounded decreased by 156 people (-16%), (2015 of 12 m – 946 people are wounded, 2016 of 12 m – 790 people are wounded);
- including on the accompanying road conditions there were 30 road accidents (drop with the same period of 2015 makes 19%),  
in which:
  - 14 people died (growth with the same period of 2015 makes 40%);
  - it is wounded the 37th person (drop with the same period of 2015 makes 46%).

Relevance of a problem is as well that effective and safe functioning of motor transportation infrastructure levels impact of threats on an economic safety of the consumer (physical persons and legal entity). Within safety of life and health of the person, safety of movable and immovable transport objects, freights, cost reduction of insurance companies (payment for the CMTPL, the comprehensive insurance, damage of other property).

Degree of a readiness of problems of management and economic safety of development of transport infrastructure of regions is rather high. Were engaged in these researches: B. A. Anikin, I. V. Belov, M. A. Gasanov, N. of N of Thunders, E. N. Evdokimova, E. A. Zhukov, Yu. V. Zadvorny, E. V. Zenkina, A. A. Kapyrin, V. P. Kozlova, T. V. Konovalova, R. A. Kozhevnikov, A. B. Maximov, L. P. Malofeyeva, L. B. Mirotin, A. M. Mikhalkov, S. L. Nadiryan, V. M. Ponomaryov, T. A. Prokofieva, V. I. Sergeyev, E. F. Tikhomirov, M. P. Ulitsky, A. V. Fedyushin, V. A. Tsvetkov, L. V. Shkurina, R. M. Yazidzhyan, V. I. Yakunin, etc. However not so many works and this aspect of a research are devoted to questions of ensuring an economic safety of the consumer in motor transportation infrastructure today, in our opinion, are urgent.

Object of our research is motor transportation infrastructure of regions of Russia. The organizational and economic relations ensuring an economic safety of the consumer in functioning of motor transportation infrastructure of regions act as an object of research.

## Methods

The logic of a research of problems of an economic safety of the consumer in motor transportation infrastructure is determined by a general characteristic of an object, its "anti-corruption" financial provision of functioning, organizational and economic ensuring operation of transport infrastructure during the winter period, innovative components of ensuring an economic safety of the consumer, traffic safety, and also maintenance of professional qualification of the specialists providing daily functioning of transport infrastructure. In the figure 1, the scheme of the factors influencing organizational and economic enhancement of motor transportation infrastructure as an object of the consumer influencing leveling of threats of an economic safety is provided.

This relevance of a subject of a research will be approved with Yakovleva S.I. (2004) opinion., who

considers that "... social and economic and spatial functions of infrastructure are interconnected and form the complete system including "razmeshchenchesky", the differentiating, communication, integrating, procedural, morphological and managerial functions".

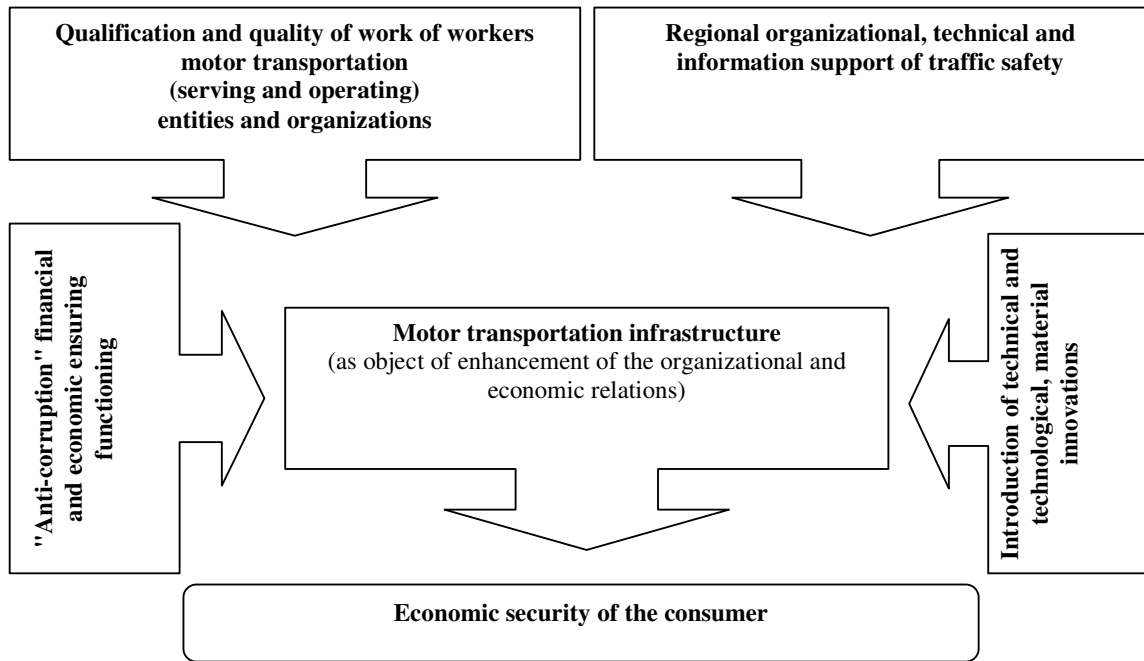
For the analysis and development of organizational and economic theoretical and practical actions served as theoretical base:

1. The decision of the Commission of the Customs union of 18.10.2011 No. 827 "About adoption of the technical regulation of the Customs union "Safety of highways" (came into force since February 15, 2015).
2. The federal law of 08.11.2007 No. 257-FZ "About highways and about road activities in the Russian Federation and about modification of separate legal acts of the Russian Federation".
3. The presidential decree of the Russian Federation of 27.06.1998 No. 727 (an edition of 29.06.2013) "About roadside strips of federal highways public".
4. The order of the Government of the Russian Federation of 29.10.2009 No. 860 "About requirements to security of highways public with the objects of road service placed in borders of strips of branch".
5. The order of the Ministry of Transport of the Russian Federation of 16.07.14 No. 88-OB - r "About approval of the Actions plan on implementation of the Concept of development of objects of road service along highways public of federal importance".
6. GOST P 52765-2007 "National standard of the Russian Federation. Highways public. Arrangement elements. Classification" (No. 269 of St is put into operation by Rostekhregulirovaniya's Order of 23.10.2007).
7. ODM 218.6.019-2016 Industry road methodical document. "Recommendations about the organization of movement and to a barrier of production sites of a roadwork". ODM 218.8.002-2010 Industry road methodical document. "Methodical recommendations about winter content of highways with use of specialized hydrometeorological information".

The technique of carrying out a research in work provided:

- author's monitoring of organizational economic activity of the motor transportation entities of regions of the CFD of Russia;
- research of technical and economic functioning of objects, structures, constructions of transport infrastructure of FKU Uprdor Moscow-Volgograd;
- the analysis of various information materials provided to FKU Uprdor Moscow-Volgograd;
- the analysis of statistical information on traffic safety according to Rosstat, Tambovstat.

Methods of descriptive statistics allowed to create quantitative data on the declared problems and to provide them in tables and charts.



**Figure 1: The scheme of the factorial analysis on ensuring an economic safety of the consumer of motor transportation infrastructure.**

## Results and Discussions

As one of signs of complexity of an object of management the total length of a transportation network and its differentiation depending on a territorial and administrative arrangement acts. And also how various factors are imposed, both geographical, and organizational and economic, on the developed specifics of this or that regional government.

Highway network as object of a specific research, FKU which are on year-round content Updror Moscow-Volgograd, passes on the territories of the Ryazan, Tambov, Voronezh and Volgograd regions and constitutes 1467 kilometers, from them:

- the network of highways passing across the territory of the Ryazan region makes 246,16 km, including:
  - the highway M-6 "Caspian Sea" on the site of km. 184+745 – km. 342+167 (total length is 164,82 km.);
  - Kaluga-Tula-Mikhaylov-Ryazan Highway 1R-132 on sites of km. 209+424 – km. 228+424; km. 232+475 km. 294+816 (total length is 81,34 km.);
- the network of highways passing across the territory of the Tambov region makes 612 km, including:
  - the highway M-6 "Caspian Sea" on the site of km. 342+167 – km. 574+410 (total length is 232,24 km.); on the site an entrance to Tambov km 0+000 – km. 7+400 (total length is 7,4 km.);
  - Oryol-Livny-Yelets-Lipets-Tambov Highway 1R-119 on the site of km. 326+600 – km. 414+160 (total length is 87,34 km.);
  - the highway 1R-193 Voronezh-Tambov on the site of km. 110+898 – km. 217+298 (total length is 106,4 km.);
  - the highway 1R-208, 209 Tambov-Penza on sites of km. 4+450 – km. 125+750; on the site of km. 0+000 – km. 15+500 Southern round; on the site of km. 0+000 – km. 41+800 Northern round (total length is 178,6 km.);
- the network of highways passing across the territory of the Voronezh region makes 66,79 km, including:

- the highway M-6 "Caspian Sea" on the site of km. 574+410 – km. 641+205 (with a general extent of 66,79 km.);
- the network of highways passing across the territory of the Volgograd region makes 549 km, including:
- the highway M-6 "Caspian Sea" on the site of km. 641+205 – km. 961+000, on the site (total length is 320 km.);
- Syzran-Saratov-Volgograd Highway 1R-228 on site 446+693 – km. 675+847 (total length is 229,365 km.).

On technical categories of the road are subdivided: I - categories - 92,078 km.; II-of category - 873,909 km.; III-of category - 495,178 km.; IV-of category - 8,0 km.

One of the main problem aspects of ensuring an economic safety of the consumer in organizational and economic functioning of this motor transportation system is "anti-corruption" financial provision" performance of works and rendering services.

For accomplishment of the work program in 2016 financing of 9 892 244,3 thousand rubles was finished by the state. For performance of works on reconstruction, actions for increase in level of arrangement, capital repairs and repair of highways and road constructions, and also works on content of highways public of federal importance and artificial constructions on them.

For accomplishment of the work program in FKU Uprdor Moscow-Volgograd for the purpose of implementation of purchases in strict accordance with the current legislation the following events were held:

- the contractual service and unified commission of the customer were created;
- all persons entering them, are without fail informed of requirements of article 31 of the Federal law of 05.04.2014 No. 44-FZ "About contractual system in the sphere of purchases of goods, works, services for ensuring the state and municipal needs";
- No. 273-FZ "About anti-corruption", regulating questions of a conflict of interest in the course of implementation of government procurement is acquainted with provisions of the Federal law of 25.12.2008;
- the biddings and different ways of purchases were performed according to the approved schedule of order placement for 2016 (taking into account the changes made to it);
- purchases were carried out on MICEX ETP electronic trading platform;
- claims activities were conducted;
- monitoring and analytical work on increase in financial performance of purchases was conducted;
- results of monitoring and the analysis were discussed at a meeting of "Working group" (the invited scientific specialists and higher education institutions were a part).

The program of works provided and entered at the scheduled time 314,49 km. it is expensive. Reconstruction of roads - 10,08 km. Actions for increase in level of arrangement of roads of-149,074 rm. (2 elevated crosswalks). A major repair of automobile - 67,065 km. Repair of highways of-116,55 km. The maintenance of network (ShPO, UZS) - 120,8 km. A major repair of artificial constructions (2 bridges) - 72,94 rm. Repair of artificial constructions - 1073,55 rm from them:

- 5 bridges (1 passing since 2016 for 2017) - 736,49 rm.,
- 2 overpasses (1 passing since 2016 for 2017) - 59,4 rm.,
- 10 objects of water throughput tubes - 277,66 rm.

Early commissioning of 9,8 km of again constructed roads is provided:

- highway R-22 "Caspian Sea" of 423 - 431 km. - 4,0 km.; additional resources of 389 684,1 thousand rubles (all for a year of 889 684,1 thousand rubles)
- highway P 228 C-C-B of 456 - 465 km. - 5,8 km. additional resources of 135 325,3 thousand rubles (all for a year of 360 325,3 thousand rubles).

The second important aspect from the point of view of problems of ensuring economic security of the consumer, in organizational and economic functioning of this motor transportation system is ensuring operation during the winter period.



According to the Public contracts signed between FKU Uprdor Moscow-Volgograd and contract organizations and also for the purpose of timely and high-quality preparation of highways of federal importance for work during the winter period of 2016-2017 and ensuring uninterrupted and safe traffic, the following events were held:

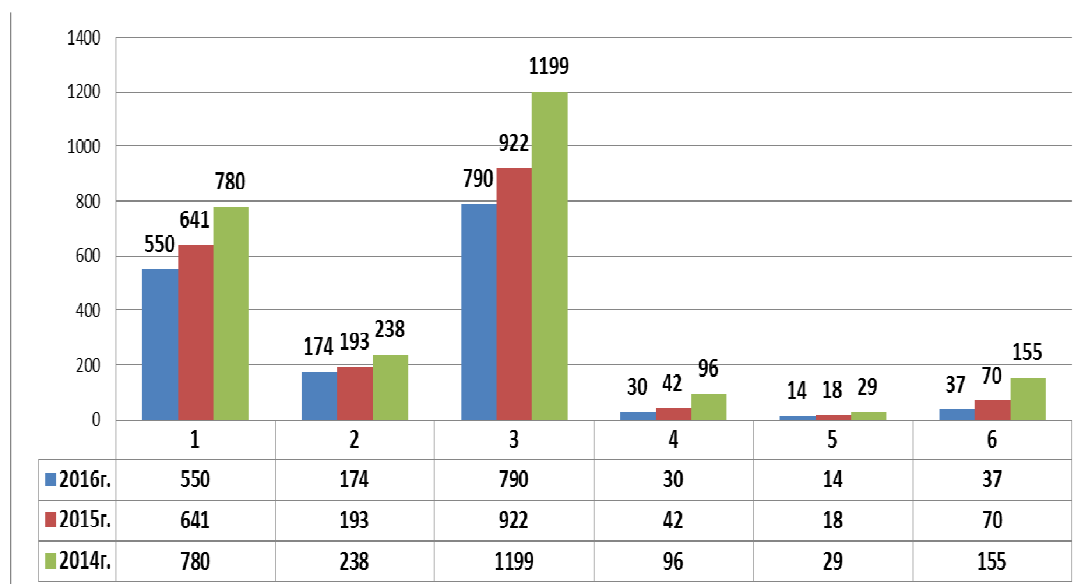
1. "The working commission" on check of readiness of contract organizations by the winter period of content of highways is created.
2. Plans and schedules of actions for preparation of roads and road constructions to operation during the winter period of 2016-2017, a graphics of checks of readiness of contract organizations by the winter period of content of highways are developed and approved.
3. Systematic incoming inspection of quality of the materials made by contract organizations, technical salt, sand and deicing materials is organized. On only 36 storage bases 172,5 thousand т were prepared. peskosolyany mix (PSS).
4. Data transmission in Federal Highway Agency (Rosavtodor) about the course of preparation of contract organizations by the winter period, according to the approved form is organized.
5. Timely preparation of the road and operational equipment occupied on winter content was provided. Total quantity of the equipment of 347 units (KDM-of 144 units; The Autograder – 43 units; Shnekorotorny snowplows – 19 units; Rotor hinge plates – 4 units; Lift trucks – 61 units; The Bulldozer – 16 units; The Tractor – 64 units)
6. Warm stoyanok for the road equipment of-35 pieces and the room for rest and heating working 33 objects were prepared.
7. Work of the center of operational production management of FKU Uprdor Moscow-Volgograd (TsOUP) and control centers of production of contract organizations (TsUP), for the purpose of implementation of monitoring of a transport and operational condition of subordinated network of highways and interaction with services of Rosavtodor on duty, Regional Department of the Ministry of Internal Affairs, GU traffic police, Ministry of Emergency Situations, EDDS is organized. Monitoring of a meteosituation on sections of highways is performed by means of video posts – meteo control, the federal roads established along network with an interval of 40-50 km. In total 58 video posts and 43 posts of meteocontrol. R-22 Caspian Sea - 51 pieces (30 pieces of video and 21 pieces of meteocontrol). R-132 of Kaluga-Tula-Mikhaylov-Ryazan – 6 pieces (3 pieces of video and 3 pieces of meteocontrol). P - 193 Voronezh-Tambov – 6 pieces (3 pieces of video and 3 pieces of meteocontrol). R-119 Oryol-Livny-Yelets-Lipetsk-Tambov-6sht. (3 pieces of video and 3 pieces of meteocontrol). R-208 Tambov-Penza with a bypass of Tambov –1 5 pieces (9 pieces of video and 6 pieces of meteocontrol). R-228 of "Syzran-Saratov-Volgograd" - 17 pieces (10 pieces of video and 7 pieces of meteocontrol). On dangerous sections of the road where there is no possibility of connection to the fixed network of electricity transmissions, the video meteocontrol posts working from solar wind energy are established: R-228 of "Syzran-Saratov-Volgograd" of km 533 (around the item of Belogorki), R-22 Caspian Sea of km 646.
8. Public contracts on services in submission of hydrometeorological information were signed with the Ryazan, Tambov, Voronezh, Volgograd TsGMS.
9. In September-November, 2016 joint meetings on winter content, and also reviews of the road equipment with representatives of traffic police, the Ministry of Emergency Situations, administrations, contract organizations are held. Such actions became traditional for Management, they allow to support fixed personal contact, both at the level of a management, and at the level of contractors that gives the chance to work for result.
10. For the purpose of strengthening of control of observance of requirements of Management and regulating documents regarding safety of traffic in production sites of a roadwork, a number of meetings with representatives of the contract organizations which are carrying out works on a construction, reconstruction, capital repairs, repair and content of highways and road constructions, representatives was held regional UGIBDD of Regional Department of the Ministry of Internal Affairs of Russia. At these meetings the following questions were considered:
  - the list of the main actions necessary for safety of traffic in production sites of a roadwork;
  - fixing of responsible persons in the contract organizations which are responsible for traffic safety on objects;
  - the list of innovative means of the organization of traffic for use in production sites of works is recommended.

All above-mentioned organizational and economic actions are very important for providing one of types of an economic safety – traffic safety. As Uprдор Moscow-Volgograd is one of the main objectives of FKU the organization of works on content and safety of highways and safety of traffic on subordinated network, and the main performance indicator of the solution of these tasks - decrease in quantity dorozhno – transport incidents.

In the matter for 2014-2016 together with regional GU traffic police, the positive result was achieved. Tells lack of the facts of a stop and difficulty of the movement during the winter period, and drop of number of road accident on all indicators about it.

In table 1. data on a condition of accident rate on federal highways FKU Uprдор Moscow-Volgograd in 2014,2015,2016 years are submitted.

**Table 1: Condition of accident rate on federal highways FKU Uprдор Moscow-Volgograd in 12 months 2016 – 2014.**



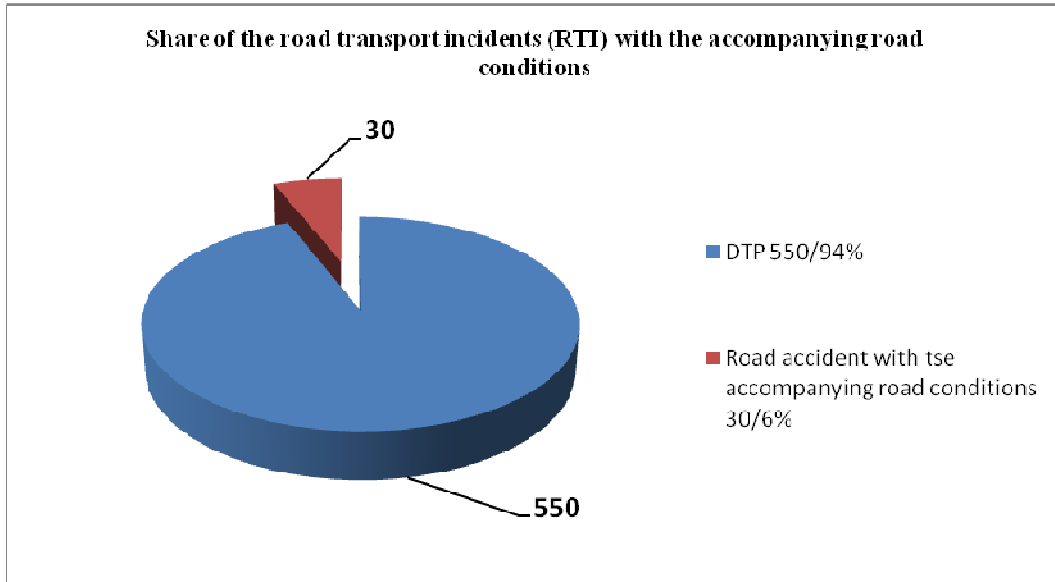
The analysis of monitoring of level of traffic safety showed that traffic safety depends on many factors, in our opinion, are basic of which:

- quality of a paving;
- the held events for arrangement of the road technical means of the organization of traffic, including innovative;
- innovative process of development of the new equipment, progressive technologies and new materials;
- the efficiency and quality of work characterizing professional qualification of specialists of FKU Uprдор Moscow-Volgograd;
- level of culture of participants of traffic.

However still many questions remain not solved. In particular the analysis of road accident in 12 months 2016 showed that on federal highways FKU Uprдор Moskva – Volgograd 30 road accidents with shortcomings of a transport-operational condition of a street road net are registered:

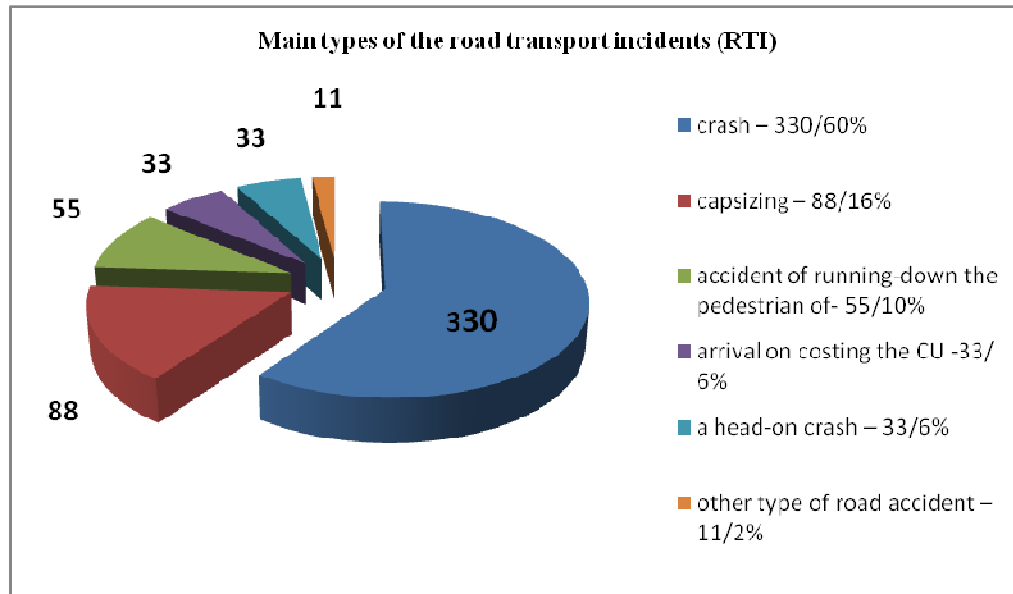
- 14 DTP-DU shortcomings of winter content;
- 8 DTP-DU absence, bad discernability of a horizontal marking of the carriageway, 7 road accidents are registered in production sites of a roadwork;
- 5 DTP-DU unsatisfactory condition of roadsides, 4 road accidents are registered in production sites of a roadwork;

- 1 DTP-DU defect of a covering;
- 1 DTP-DU lack of sidewalks (walking paths);
- 1 DTP-DU lighting is defective, it is provided in the fig 1.



**Figure 1 : Share of the road transport incidents (RTI) with the accompanying road conditions**

On federal highways treat the prevailing types of road accident: crash - 60%; capsizing - 16%; accident of running-down the pedestrian of-10%; arrival on costing the CU - 6%; a head-on crash - 6%; other type of road accident - 2%, are presented in the fig 2.



**Figure 2 : Main types of the road transport incidents (RTI)**

Main reasons for violation of traffic regulations by drivers: driving into the oncoming lane of the movement - 38%; non-compliance with the high-speed mode - 20%; the wrong choice of a distance - 15%; non-compliance with sequence of journey - 10%; overtaking violation of the rules - 7%, is presented in the fig 3.

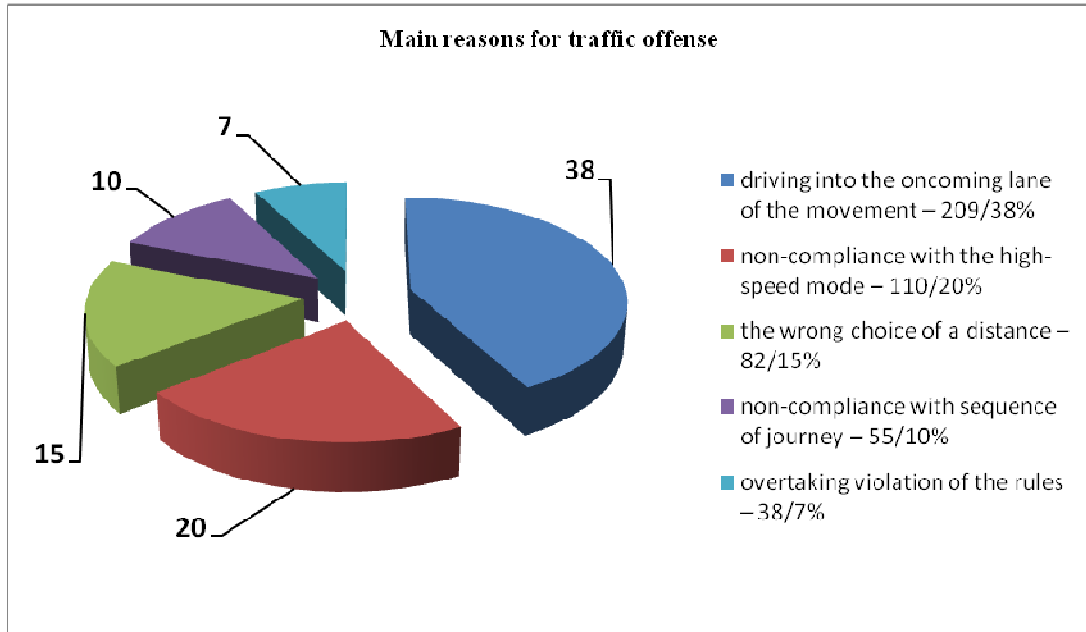


Figure 3 : Main reasons for traffic offense

Distribution of number of road accident on time of day: at night there were 308 road accidents (56%); in the afternoon there were 242 road accidents (44%).

Huge value from the point of view of ensuring an economic safety of transport infrastructure and traffic safety is process of implementation and development of the new equipment, progressive technologies and innovative materials, transport and transit opportunities of Russia.

In 2016 on objects of reconstruction, repair and capital repairs of roads and road constructions and objects of content 22 innovative technologies on 56 objects for the total amount of 1 016 701,747 thousand rubles were applied:

1. On sections of highways with a cement-concrete covering for an exception of the reflected treshchinoobrazovaniye through again laid asphalt concrete layers, the method of crushing of plates using vibroresonant technology was chosen. The vibroresonant technology consists in a predotvrakshcheniye of formation of cracks in strengthening layers due to final fracture of a tsementobeton. Total area constituted 47241,9 sq.m.
2. Other method of repair of a cement-concrete covering is the method of fragmentation of a tsementobeton by impact of the shock and rotary mechanism. Total area of works constituted 71 505,0 sq.m.
3. On sites of capital repairs and repair of asphalt concrete coverings the basis device method by method of cold regeneration with addition of the knitting and mineral material on the total area of 161075,0 sq.m was applied.
4. For increase in crack resistance, delay of a koleeobrazovaniye and prolongation of service life of a covering the polymeric geogrid was applied to reinforcing of asphalt concrete coverings. Total area constituted 352 237,0 sq.m.

5. Nonwoven geosynthetic fabrics as a layer in front of the device of road clothes were applied to delay of process of penetration of soil particles into the crushed-stone basis. Total area constituted 119665,0 sq.m.

6. On the site of reconstruction in the Volgograd region the km 922 – km 932 10 km long used the device of the upper coat layer from a heavy tsementobeton, with the plasticizing BASF additive, with a total area of 61700,0 sq.m.

7. For increase in traffic safety, decrease in accident rate in production sites of a roadwork mobile autonomous traffic lights, simulators of devices of control of the high-speed mode were used.

Considerable part of new technologies leads to increase of property development costs. The effect at the same time is reached due to decrease in number of the road accidents, increase in reserve maintenance periods, durability of asphalt concrete coverings and designs of bridge constructions, cost reduction on operation, increase in aggregate term of service of a construction.

As we already mentioned, one of the moments of ensuring an economic safety of transport infrastructure are performance indicators and qualities of work characterizing professional qualification of specialists of division.

From our point of view, their skills in case of performance of works, shall contain the following characteristics:

1. Timely submission of information and offers on the received economy and its use, by results of the held competitions and auctions.
2. Qualified forming of the program of a roadwork the next years on reconstruction, capital repairs, repair and content of highways.
3. Improvement of quality of the performed works and timely remedial action revealed in the period of the warranty.
4. Absence and minimizing of the facts of the road accidents which reason unsatisfactory road conditions, non-admission of the facts of breaks and delays of movement of transit vehicles were.
5. Timely filling of all subsystems of the basic module "Repair and Content of Highways" as a part of the applied system "Management and Control of Accomplishment of a Roadwork on Content and Repair of Highways and Artificial Constructions on Them" of the Automated control system of Federal Highway Agency", including regarding forming of the work program, monitoring of holding procedures of the state order, monitoring of accomplishment of work programs.
6. Forming by the contract organizations involved on content of highways of work orders on performance of works in PTK "Dortransnavigation".
7. Fixed process of increase in professional skills and qualification of employees of FKU Updor Moscow-Volgograd (carrying out technical study, days of quality, participation in various conferences and seminars).
8. Implementation and use of scientific achievements in the technical and technical and economical and managerial sphere.

## Conclusion

Let's note that developed actions and offers on ensuring an economic safety of consumers of transport infrastructure which were partially used in work of FKU Updor Moscow-Volgograd received positive result. So following the results of 2016, from content of a research, it is possible to establish the fact that FKU Updor Moscow-Volgograd achieved decrease in number of road transport incidents with the same period of 2015 and 2014. The statistics of road transport incidents is not simple figures, but the saved human lives. To force to work the scheme "good roads-safe roads" not simply, it is no secret that not each road is safe and on turnover.

Thus, complex approbation and implementation of the offered organizational and economic tools will allow to enhance the mechanism of an economic safety of consumers of motor transportation infrastructure.

And competent use of a manpower and distribution of opportunities of FKU Updor Moscow-Volgograd with the maximum concentration of forces of qualified specialists on the most responsible and weak points, will allow to increase the rates of repair, to increase quality of works and to fixedly pay attention to questions of implementation of modern and effective remedies of the organization of

traffic, in close interaction with the interested services of regions.

## References

- Bezugly, N.S. (2010) Economic safety of the entity. Essence of an economic safety of the entity, *Russian entrepreneurship*, No. 4-1, pp. 63-67.
- Burda, I.Ya. (2013) Theoretical aspects of guaranteeing personnel safety as the constituting economic safety of the entity, *Problems of modern science*, No. 9, pp. 208-214.
- Gavricov, VA., Peshin, N.V. (2016) Analysis of indicators of quality of motor transportation services, *Questions of modern science and practice. University of V. I. Vernadsky*, No.2 (60), pp. 69-79.
- Goncharov, Yu.V. (2016) Information quality of road infrastructure in traffic safety, *Materials of the international scientific and technical conference*, pp. 181-182.
- Gorin, V.S., Stepanov, A.A., Fadeyeva, M.A.(2007) What is customer-oriented strategy in the market of motor transportation services and for what the portrait of the potential consumer is necessary, *Messenger of transport*, No.11, pp. 5-10.
- Danilevich D. V., Kolcheva O. V. Traffic safety as result of quality assurance in road economy//News of the Oryol state technical university. Series: Construction and transport. - 2009. - No. 3-23. - Page 85-88.
- Dresvyannikova, E.A. (2014) Traffic safety – a component of a homeland security of the country, *Administrative right and practice of administration*, No.6, pp. 65-78.
- Ilyakova, I.E., Savina, T.N. (2016) Ensuring scientific and technical potential of innovative development of the largest domestic corporations: assessment, problems, tendencies, *National interests: priorities and safety*, No.7(340), pp. 131-143.
- Klokova, M.I. (2014) An economic safety of the entity as a necessary element of enterprise management in modern market economy, *Systems management*, No.4(25), pp. 53-58.
- Konovalova, T.V., Nadiryan, S.L., Xining I.S. (2015) Features of information support of activities of the motor transportation entities for increase in traffic safety, *Scientific works of the Kuban state technological university*, No. 2, pp. 96-103.
- Kravchenko, P.A. (2009) Qualification of specialists – not used traffic safety resource, *Transport of the Russian Federation*, No.5(24), pp. 12-15.
- Kuznetsov, I.A. (2015) Economic safety of the consumer: prerequisites of methodological dualism of economic behaviour, *Social and economic phenomena and processes*, T.10, No.3, pp. 41-46.
- Limareva, E.S. (2016) Traffic safety-one of priority activities of the state, *Science and practice*, No.1(66), pp. 67-70.
- Makarov, D. B., Kuznetsov, I.A. (2014) Single transport system of the region: infrastructure aspect, *Tambov. Publishing house: "Business-Science-Society"*, 214 p.
- Molchanov, M.A. (2014) Personnel safety as element of an economic safety of the entities of production industries, *World of modern science*, No.3(25), pp.71-73.
- Humpbacks, A.A., Grigorov, P.P., Petrov, A.M. (2015) Transport safety of objects of transport infrastructure of a road transport, trucking facilities and road economy, *Kinel*, 238 p.
- Zvetcov, V.A., Zoidov, K.H. Medkov, A.A. (2012) Problems of an economic safety of transport and transit infrastructure of Russia, *Region Economy*, No.1, pp. 90-100.
- Yakovleva, S.I. (2004) Territorial functions, role and dysfunctions of infrastructure, *Bulletin of Tver state university. Geography and Geoecology series*, Is.1, pp. 23-24.

## The Psychological Aspects of a Problem of Well-being of the Students of Various Educational Institutions

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### Abstract

In the article psychological aspects of a problem of well-being of the person in modern conditions are considered. Based on the analysis of scientific sources, it was concluded that at the present time the study of subjective economic well-being should become an important direction for studying psychological well-being, taking into account the cross-cultural context, focusing attention on a group of the population of young people of 16-17 years old. The chosen research approach was aimed at studying such components of psychological well-being of students as: subjective economic well-being, perception of their personal competitiveness, peculiarities of religiosity and coping strategies and was conducted in sociocultural conditions of Cheboksary, Chuvash Republic, the Russian Federation. The study involved 105 young people (age of respondents  $17 \pm 0.51$ ). The study showed the existence of interrelationships of psychological well-being (indicators of subjective economic well-being, present and prospective future), perception of their personal competitiveness and dominant coping strategies and indicators of individual religiosity of students. Significant interrelations between the integral index of subjective economic well-being, revealing a generalized assessment of the present and future material life, and self-assessment of personal competitiveness, as well as with coping strategies "seeking social support", "solving problems" were revealed. It has shown the fact that students who have more favorable subjective economic well-being highly appreciate their ability to be successful in modern conditions, achieve their goals even in a competitive environment, rely on active behavioral problem-solving strategies and strategies for finding social support.

**Keywords:** psychological well-being, subjective economic well-being, personal competitiveness, religiosity, coping strategies, schoolchildren.

### Introduction

Modern Russian society is in the process of significant socio-economic, sociocultural transformational changes, the creation of qualitatively new economic conditions for life, the formation of fundamentally new social relations. Since the transition from one socio-economic system to another is always associated with great difficulties, the problems that arise while this cannot but affect the psychological well-being of the person. The subjective perception of well-being and unhappiness reflects these changes and is, on the

one hand, a serious indicator of the country's economic and political development, and on the other, a factor that largely determines human behavior in the field of politics and the economy.

The problem of the well-being of the individual is one of the fundamental problems in many scientific disciplines, but recently this subject has become the subject of attention of psychologists. In the foreign psychology of the individual, studies of psychological well-being have intensified since the second half of the 20th century. In addition to developing the methodological apparatus of research, special attention was paid to changes in the level of psychological well-being in connection with social, cross-cultural conditions, urbanization, religiosity and other factors (Bradburn N., Diener E., Oishi S., Lucas R.E., Deci E.L., Costa P.T., McCrae R. R., Easterlin R., Hermalin, Kenny, Ryan, Deci, Ryff C.D., Waterman A.S., and others).

In the psychology in Russia the subjective approach to the study of well-being, the search for the relationship of psychological well-being with various personality traits (meaningfulness of life, meaningful orientations, life strategies, the sovereignty of psychological space, etc.), the influence of various objective and subjective factors on the psychological well-being of the individual is of particular importance for scientists (Baranova A.V., Beskova T.V., Buchatskaya M.V., Voronina A.V., Gordeeva T.O., Dzhidaryan I.A., Idobayeva O.A., Sozontov A.E., Uglanova E.A., Fesenko P.P., Fetiskin N.P., Shamionov R.M., Shevelenkova T.D., Shiryayeva O.S., and others).

In recent years, studies have been carried out on the role of different types of internal and external motivation in the psychological well-being of university students (Gordeeva T. O., Sychev O.A., Osin E. N., 2013), self-attitude and self-esteem as predictors of the psychological well-being of the individual (Kozmina L. B., 2013), the relationship between the satisfaction of basic psychological needs and labor motivation and subjective well-being of employees (Osin E. N., Suchkov D. D., Gordeeva T. O., Ivanova T.Yu., 2013) and a number of others.

The authors have accumulated considerable empirical material on the study of various aspects and the determinant of psychological well-being.

From the point of T. D. Shevelenkova, P. P. Fesenko (Shevelenkova T. D., Fesenko P. P., 2005), psycho-psychological well-being is an integral indicator of the degree of a person's orientation to the realization of the main components of positive functioning, and also the degree of realization of this orientation. It is subjectively expressed in a sense of happiness, self-satisfaction and own life.

One of the promising areas for studying psychological well-being is to study its relationship with the religiosity of the individual. Religion as a social phenomenon functions in the form of beliefs and practical actions to which, as psychologists have proved, people turn when they struggle for their existence with their own forces in the conditions of their complex reality and when they are unable to solve their daily problems by their own efforts (Krysko V.G., 2006).

Traditionally, religiosity is regarded as one of the resources of the resistance of the individual to negative life situations, a significant personal resource, a refuge for comfort, stability and strength, hope for the best. For example, religiousness and social support are important personal resources in the fight against illness (Pargament K., Koenig H., Perez L., 2000; Dunaeva, 2012; Zakharova, A. N., Dulina, G. S., Gartfelder, D.V., Semenov V. L., 2018).

As a result of the research by M. N. Semenova (Semenova M. N., 2014) it was found differences in the relationship between the components of psychological well-being, religious orientations and religious beliefs in men and women during adulthood. T.V. Beskova (Beskova T. V., 2015) considered the correlation between psychological well-being and morality and religiousness of the individual. It was



revealed that certain components of morality and religiosity affect the feeling of psychological well-being or disadvantage of the individual.

Also, in our opinion, important and promising in modern conditions is the scientific problem connected with the study of subjective economic well-being, which has been actively developed recently thanks to research by V. A. Khashchenko. In the concept of V. A. Khashchenko (Khashchenko V. A., 2011) subjective economic welfare is defined as an integral psychological indicator of a person's life, expressing a person's attitude to his actual and future material well-being and is an essential element of the subjective well-being of a person. In the author's research (Khashchenko V. A., 2015), it is shown that the cumulative influence of the objective characteristics of an individual (age, level and type of education, marital status, type of household) on the subjective economic well-being of representatives of active working age is not so significant. It is non-linear in nature due to its mediation by the general level and type of subjective well-being of a person, the stage of the person's life cycle. Factors of gender and the presence of children act as the most significant predictors of economic well-being.

It should be noted that the cross-cultural context plays an important role in studies of the subjective well-being of the individual (Fisher R., 2012) Fisher R. stresses the need for greater involvement of cross-cultural psychologists in the study of well-being. On the basis of a theoretical and analytical review of the subjective and objective well-being, the basic inference is the thesis of the nonlinearity of this relationship and the crucial role of culture and the social context as mediating factors that affect the "refraction" of subjective well-being in the objective context by Dontsov A. I. with co-authors (Dontsov A. I., Perelygina, Rickel, 2016). Shamionov R. M. (Shamionov, 2014) cites data on the features of subjective welfare conditioned by the ethnopsychological status of the individual and the nature of interethnic relationships, making a conclusion about the high social, scientific, theoretical and practical importance of ethnopsychological studies of subjective well-being in Russia.

Currently, an actual, in our opinion, is the study of the psychological characteristics of the well-being of students of high school in the period of early adolescence. Meanwhile, as noted Burmykina I. V. (Burmikina I. V., 2000), the peculiarity of this age and social period is that this is the final stage in the formation of the personality in childhood, the primary socialization, the transition to the adulthood world that is opened before the graduates, where society will see in them independent subjects of various kinds of activity. There are changes in the structure of the life of a young man, causing the need for significant personal restructuring. The importance of this period is that those who do not have the necessary potential to some extent, can become disadapted in a society and are not able to adjust normally to the changing conditions of life.

This topic is considered by us in the context of students' search for effective strategies for adapting to changing the social role and status, the perception of their well-being and personal competitiveness in a changing socio-economic environment.

Subjective perception of their psychological well-being in the time perspective, expectations and confidence in a favorable future in the field of professional life are close in their orientation to the content side of research on personal competitiveness. The problem of the psychology of personal competitiveness of students in the sociocultural conditions of the Chuvash Republic was devoted to a number of works (Morova N. S., Zakharova A. N., Talanova T. V., Dulina G. S., Nikolaev E. L., 2017; Morova N. S., Zakharova A. N., Talanova T. V., Dulina G.S., Kadyshchev E. N., 2017). For example, in one of the studies of student youth, it was revealed that more than two-thirds of future specialists are not confident in their future competitiveness-their own economic future, not very appreciating their conditions of economic life and their changes in the system of economic expectations (Aleksandrov A. Y., Zakharova A. N., Nikolaev E. L., 2015).

Based on the analysis of scientific sources, our research approach was aimed at studying such components of psychological well-being as: subjective economic well-being, perception of one's personal competitiveness, features of religiosity and coping strategies and their interrelationships.

## Method and Results

The research was devoted to the study of these indicators among the students and conducted in sociocultural conditions in Cheboksary, the Chuvash Republic, the Russian Federation.

The study involved 105 young people (age of respondents:  $17 \pm 0.51$ ) studying in different educational institutions: 35 students of the 11th grades of the gymnasium, which is included in the 500 best educational organizations of the Russian Federation, showed high educational results in 2014-2015 academic year (group 1), 35 students of the 11th grade of the secondary general education school (group 2), 35 students of the technical school (group 3). 80% of respondents who took part in the study were young men, 20% were girls.

Research methods are: the analysis of scientific sources, questioning, the method of mathematical and statistical data processing, psychodiagnostic techniques, such as:

- Test for determining the structure of individual religiosity (Myagkov I. F., Shcherbatykh Yu.V., Kravtsova M.S., 1996);
- Technique "Indicator of coping strategies" by J. Amirkhan (Amirkhan, J.H., 1990) (Ilyin E. P., 2004);
- Methodology "Express diagnostics of personal competitiveness" (Fetiskin N. P., Kozlov V. V., Manuylov, G. M. 2002);
- Questionnaire "Subjective economic well-being" by V.A. Khashchenko (Khashchenko V. A., 2011).

The obtained data were processed by methods of mathematical-statistical analysis (relative values, single-factor analysis of variance, correlation analysis).

The questionnaire "Subjective economic prosperity" by V. A. Khashchenko makes it possible to measure subjective economic well-being, which is viewed as a relation of the individual to the material aspects of life and expresses the vital position in the sphere of material ideas and consumption. The questionnaire includes several scales - economic optimism, the current well-being of the family, financial deprivation, adequacy of income, economic anxiety (Khashchenko V.A., 2011). Integral (general) index of subjective economic well-being is a complex indicator that includes measurement of subjective assessments of different aspects of personal material life.

A single-factor analysis of the results of the three groups revealed that there are significant differences in the methodology of "subjective economic well-being" between groups across all scales.

For all indicators, the average values for indices were lower for students studying in an average special educational institution (college).

Schoolchildren who study in the secondary school have a higher degree of economic optimism, reflecting an optimistic assessment of external and internal conditions for the growth of material well-being compared to other groups studied.

Students who study at the gymnasium have a higher degree of subjective adequacy of income to the needs of the individual; evaluation of the family's well-being, reflecting subjective assessments of the financial situation of their families. At the same time, they have higher averaged indicators of financial deprivation than average pupils studying in the secondary school. They are more deprived of money; they have higher indicators of economic anxiety and anxiety, reflecting the degree of financial stress. Despite the presence of a certain share of economic anxiety and anxiety, the overall level of subjective economic well-being, as an integral psychological indicator of a person's life, expressing the person's attitude to his active and future material well-being was the highest among all in this group of students.

The degree of the personal competitiveness, i.e. the ability to achieve high results in the current socio-economic conditions, in a highly competitive environment, was highly rated by schoolchildren in Group 1 - students of the 11th grades of the gymnasium ( $14.85 \pm 8.12$ ). But among them were the majority of students who, in spite of high educational indicators, assessed their personal competitiveness at the middle and low levels. On the second place there were schoolchildren of group 2 - students of the secondary general school ( $13.4 \pm 7.81$ ). On the third place there were students of college ( $10 \pm 7.85$ ).

One-way analysis of the results of the three groups revealed that, according to the indicator of personal competitiveness, there are significant differences between groups ( $p \leq 0.05$ ).

The inclusion in the analysis of psychological factors of the specific features of the religiosity of the population of Russia acquires special significance in the conditions of a multipolar world in a country characterized by multi-confessionality and polyethnicity. From the data obtained by various groups of researchers, the number of people, who carry themselves to believers, during the 1990's. increased and by the end of the century amounted from 70% to 74% of the adult population of the country (Garadzha V. I., 2007). Only 25% of respondents did not consider themselves to be religious in the survey data on the religiosity of modern Russians. According to the general indicators of religiosity, which include students' answers to questions about the existence of God, the importance of religion in their lives and the existence of religion, Russian schoolchildren are in the middle position among a number of European countries (Kozyrev F. N., Valk P., 2009; Kozyrev F. N., 2012).

The study showed that the highest level of individual religiosity indicators according to the questionnaire "The structure of individual religiosity" in the sample as a whole ( $M \pm \sigma$ ) ( $5.62 \pm 2.44$ ) was shown on a scale reflecting the tendency to treat religion as philosophical concept (epistemological roots of religion). This trend is most clearly manifested in group 1 (studying in the gymnasium) ( $5.83 \pm 2.49$ ).

In second place ( $5.43 \pm 2.64$ ) is the tendency to view religion as a source of support and consolation. This indicator is also higher for schoolchildren studying in the gymnasium.

The following are rates of individual religiosity according to the scales "External signs of religiosity" ( $4.99 \pm 3.13$ ) and "belief in the creator and recognition of the existence of a higher power" ( $4.93 \pm 2.94$ ), i.e. such students are entrusted to the existence of some higher power and they have external signs of religiosity: they seek to conform to the norms of religious belief with the help of external religious attributes, celebrate religious holidays, but they do not attend church regularly, they do not observe fasts.

Of all the components of individual religiosity, the least inclined are those that show manifestations of the existence of religious self-awareness ( $3.52 \pm 3.08$ ), the need for believing, the perception of religion as an example of moral norms of behavior, the identification of religion and magic.

A single-factor analysis of the variance of the individual religiosity in the groups examined showed no statistically significant differences between them.

Achieving high results in the current socio-economic situation is largely due to the effective resolution of problems. Studies in the socio-cultural conditions of Chuvash republic indicate the prevalence of active

problem-solving strategies and strategies aimed at seeking social support over passive avoidance strategies in a healthy population.

A single-factor analysis of the results using the method of "Indicator of coping strategies" by J. Amirkhan in the groups examined showed the presence of statistically significant differences between them at a high level of importance on the scale "Search for social support" ( $p \leq 0.05$ ).

The dominant coping strategy ( $23.64 \pm 4.28$ ) for the students was a problem-solving strategy - an active behavioral strategy in which a person tries to use all available personal resources to find possible ways to effectively solve the problem has proved to be the most inherent in each of the three groups of students. Comparative analysis showed that this strategy is most often used by students of the secondary general education school (group 2) ( $24.54 \pm 3.98$ ), then group 1 ( $24.08 \pm 4.53$ ), then group 3 ( $22.28 \pm 4.06$ ).

In the second place for each of the groups (the total for the sample is  $21.50 \pm 4.97$ ) was the strategy of finding social support, i.e. active behavioral strategy, in which a person for effective resolution of the problem turns for help and support to his environment. Such a strategy from all groups is most common for students in the gymnasium (group 1) ( $23.2 \pm 4.86$ ), then group 2 ( $21.25 \pm 5.39$ ), college students least rely on the help of family, friends, significant other people ( $20.02 \pm 4.16$ ).

In the third place for students of the study (total sample of  $19.89 \pm 3.94$ ) was the avoidance strategy, such behavioral strategy, in which a person tries to avoid contact with the surrounding reality, run from solving problems. An illness or the use of alcohol, drugs can be used as a way out from solving problems. Comparative analysis revealed that such a strategy from all groups is more often used by students of secondary school (group 2).

In connection with the research approach chosen by us, we were interested in the interrelationship between psychological well-being, personal competitiveness and religious characteristics of students, their coping strategies.

The mathematical-statistical analysis of the results of the study included also the Pearson correlation analysis.

Correlation analysis revealed a significant interrelation between the integral (general) index of subjective economic well-being, measuring the subjective assessment of material life, and self-assessment of personal competitiveness ( $r = 0.23$ ,  $p \leq 0.05$ ). Students who have more favorable subjective economic well-being highly appreciate their ability to be successful in the current conditions, to achieve their goals even in a competitive environment.

Positive relationships between the integral (general) index of subjective economic well-being and coping strategies "solving problems" ( $r = 0.21$ ,  $p \leq 0.05$ ), "social support search" ( $r = 0.26$ ,  $p \leq 0.01$ ), and with such an indicator of individual religiosity as "external signs of religiosity" ( $r = 0.26$ ,  $p \leq 0.01$ ) were also revealed.

Such a component of subjective economic prosperity as the IEO is the index of economic optimism and confidence, has a significant relationship with the self-assessment of personal competitiveness ( $r = 0.23$ ,  $p \leq 0.05$ ), coping strategies "solving the problem" ( $r = 0.29$ ,  $p \leq 0.01$ ) and "search for social support" ( $r = 0.32$ ,  $p \leq 0.01$ ). Students are optimistic about the external and internal conditions of growth of material goods, perceive themselves as more competitive personality. Optimistic perception of their material present and future is based on the social support of their environment, on the confidence in their ability to solve problems.

The index of economic optimism and confidence has a significant correlation with such indicators of individual religiosity as "search in religion for support and comfort" ( $r = 0.21$ ,  $p \leq 0.05$ ) and "extraneous signs of religiosity" ( $r = 0.21$ ,  $p \leq 0.05$ ), with no more significant relationships with any components of the individual religious.

The study showed that the IFD - index of financial deprivations and IEA - economic anxiety, reflecting the degree of lack of material resources, does not have significant interrelations with the characteristics studied (personal competitiveness, indicators of individual religiosity, coping strategies).

The analysis of the relationship between the perception of their personal competitiveness and the indicators of individual religiosity revealed significant positive relationships between personal competitiveness and the scale "the tendency to seek support and consolation in religion" ( $r = 0.31$ ,  $p \leq 0.01$ ), the scale "ratio of the subject to religion as a model of moral norms of behavior" ( $r = 0.26$ ,  $p \leq 0.01$ ) by the scale "presence of religious identity and need for belief" ( $r = 0.22$ ,  $p \leq 0.05$ ), which is possible that support for students of religion is one of the coping resources of the individual, help in overcoming difficult life situations, in achieving high results.

The analysis of the relationship between the perception of their personal competitiveness and dominant coping strategies revealed significant positive relationships between personal competitiveness and such coping strategy as a "problem solving strategy" ( $r = 0.27$ ,  $p \leq 0.01$ ). Thus, self-evaluation of the possibility of achieving high results in the academic and future professional is not related to avoiding problems, but is aimed at their solution.

## Conclusion

The article deals with the psychological aspects of well-being of the personality in the current socio-economic conditions. Based on the analysis of scientific sources, it was concluded that the study of subjective economic welfare should become an important direction in the study of psychological well-being; taking into account the cross-cultural context; focus attention on the group of people of 16-17 years.

The study of the psychological characteristics of the well-being of students of high school is examined by us in the context of their search for effective strategies for adapting to changing the social role and status, and the perception of opportunities for achieving well-being in a changing socio-economic environment.

The chosen research approach was aimed at studying such components of psychological well-being of students as: subjective economic well-being, perception of their personal competitiveness, peculiarities of religiosity and coping strategies and was conducted in sociocultural conditions of Cheboksary, Chuvash Republic, the Russian Federation. The study involved 105 young people (age of respondents  $17 \pm 0.51$ ), studying in various educational institutions.

The study showed the existence of interrelationships of psychological well-being (indicators of subjective economic well-being, present and prospective future), perception of their personal competitiveness and dominant coping strategies and indicators of individual religiosity of students.

An analysis of the results of young people aged 16-17 studying in various educational institutions revealed that there are significant differences between groups in terms of indicators of subjective economic well-being, personal competitiveness and coping strategies. There were no significant differences between the groups according to the psychological features of religiosity.

Subjective economic well-being, being an important psychosocial characteristic of the individual as a subject of economic activity, reflects not only the level of perception and assessment of actual well-being

and well-being, but also economic expectations, i.e. the attainment of well-being in the future. As a whole it was highly evaluated by schoolchildren who study at the gymnasium, despite the presence of a certain share of economic anxiety and anxiety. The average rates for indices for all indicators were lower for students attending college. Schoolchildren of the secondary school have a higher degree of economic optimism, reflecting an optimistic assessment of external and internal conditions of growth in material well-being compared to other groups studied.

Significant interrelations between the integral index of subjective economic prosperity, showing a generalized assessment of the present and future material life, and self-evaluation of personal competitiveness, as well as with coping strategies "seeking social support", "solving problems", i.e. students who have more favorable subjective economic well-being highly appreciate their ability to be successful in modern conditions, achieve their goals even in a competitive environment, rely on active behavioral problem-solving strategies and strategies for finding social support.

Based on the results of the study, the students are provided with recommendations on psycho-psychological work for the development of psychological well-being and personal competitiveness in three areas - educational, training and consulting. The basis of the programs being developed are didactic features of pedagogical interaction as the basis of university education (Kryukova N. I. & Zakharova A. N., 2017), ethno-cultural and social dominants of pedagogical education in the conditions of the region (Morova N.S., Talanova T. V., 2015), criteria and indicators of performance monitoring (Kutuev R. A. & Mashkin N. A., 2017).

The research shows that the most effective development would be the earlier development of personal competitiveness, which could be realized in the context of modern tendencies of psychological and pedagogical support of gifted children, applied in the system of interaction "school - higher education institution" (Alexandrov A. Yu. & Zakharova A. N., 2018).

The polypragmatic approach is used to develop the competences of students, as the integrity of dialectical, search, synergetic and competent approaches that ensure success and effectiveness in developing the competence of students in the educational area (Erdyneeva, K.G., Nikolaev, E. L., 2016), which requires special professional competence of teachers (Drovnikov A. S., Nikolaev E. L., 2016).

## References

- Aleksandrov, A.Yu. and Zakharova, A.N. (2015) New Challenges in Engineering Education: Personal Advancement for Better Marketability of Future Professionals. *International Conference on Interactive Collaborative Learning (ICL) Proceedings*, 452-454.
- Alexandrov, A.Yu. and Zakharova, A.N. (2018) Modern tendencies of psychological and pedagogical support of gifted children. *The European Proceedings of Social & Behavioural Sciences*, 669-678.
- Amirkhan, J.H. (1990) A Factor Analytically Derived Measurement Coping: The Coping Strategy Indicator. *Journal of Personality and Social Psychology*, 59, 1066-1074.
- Beskova, T. V. (2015) Correlation of psychological well-being with morality and religiosity of personality. *Bulletin of Moscow State Regional University*, 4, 1-9.
- Burmykina, I. V. (2000) Social adaptation of school youth in a transforming society. Abstract of diss. to that sociological sciences, Lipetsk.
- Dontsov, A. I. and Perelygina, E. B. (2016) Objective and subjective well-being: two approaches to the problem under investigation. *Questions of psychology*, 5, 1-14.
- Drovnikov, A. S. and Nikolaev, E.L (2016) Teachers professional competence assessment technology in qualification improvement process. *International Review of Management and Marketing*, 6 (1), 111-115.

- Dunaeva, N.I. (2012) Religiosity as a social factor in the resistance of the person to negative life situation. *The world of science, culture, education*, 1, 73-75.
- Erdyneeva, K. G. and Nikolaev, E.L. (2016) Upgrading educational quality through synergy of teaching and research. *International Review of Management and Marketing*, 6 (1), 106-110.
- Garadzha, V. I. (2007) Dynamics of religiosity in Russia in the XX - beginning of the XXI century. *Sociology of religion*. Moscow.
- Gordeeva, T. O. and Sychev, O. A. (2013) Internal and external educational motivation of students: sources and consequences for psychological well-being. *Questions of psychology*, 1, 35-45.
- Fisher, R. (2012) Applied cross-cultural psychology of social changes and development of society: on the example of the study of well-being and corruption. *Psychology. Journal of the Higher School of Economics*, 9, 1, 23-42.
- Fetiskin, N. P., Kozlov, V. V. and Manuylov, G. M. (2002) Express diagnostics of personal competitiveness. *Socio-psychological diagnosis of personality development and small groups*. M., Izd-vo Institute of Psychotherapy, 113-114.
- Khashchenko, V. A. (2011) Subjective welfare scale and subjective economic well-being. *Psikhologicheskii Zhurnal*, 24-28.
- Khashchenko, V. A. (2015) Socio-demographic determinants of subjective economic well-being. *Education and self-development*, 3, 18-30.
- Ilyin, E. P. (2004) *The psychology of individual differences*. St. Petersburg: Peter, 554-556.
- Kozyrev, F. N. (2012) Religious views of schoolchildren in Europe and St. Petersburg, according to the international study REDCo. *Bulletin of the Russian Academy of Civil Service*, 1, 199-206.
- Kozyrev, F. & Valk P. (2009) Saint-Petersburg Students' Views about Religion in Education - Results of the Quantitative Survey. *Teenagers' Perspectives on the Role of Religion in their Lives, Schools and Societies. A European Quantitative Study*, Waxmann: Muenster, New York, Munchen, Berlin, 311-349.
- Kozmina, L.B. (2013) Self-Attitude and Self-Evaluation as Predictors of the Psychological Well-Being of the Personality of Students-Psychologists. *Historical and Socio-Educational Thought*, 1 (17).
- Krysko, V.G. (2006) *Social Psychology*. Moscow: Omega-L, 271.
- Kryukova, N.I. and Zakharova, A.N. (2017) Didactic features of pedagogical interaction. *Man In India*, 97 (3), 29-41.
- Kutuev, R.A. and Mashkin, N. A. (2017) Methodological guidance of educational monitoring effectiveness. *Modern Journal of Language Teaching Methods*, 7 (3), 405-410.
- Morova, N. S. and Talanova T. V. (2015) Ethnocultural and social dominants of pedagogical education in conditions of national region. *Review of European Studies*, 7 (8), 182-188.
- Morova, N. S., Zakharova, A.N., and Talanova, T.V. (2017) Peculiarities of professional education of students of psychological specialties of different forms of education at the stage of higher education. *Proceedings of the 30th International Business Information Management Association (IBIMA)*, ISBN: 978-0-9860419-9-0, 8-9 November 2017, Madrid, Spain, 5522-5527.
- Morova, N. S., Zakharova, A. N. and Talanova, T. V. (2017) Psychology of personal competitiveness of students in the system of higher education. *Proceedings of the 30th International Business Information Management Association (IBIMA)*, ISBN: 978-0-9860419-9-0, 8-9 November 2017, Madrid, Spain, 460-4468.
- Myagkov, I. F., Shcherbatykh, Yu.V. and Kravtsova, M.S. (1996) Psychological analysis of the level of individual religiosity. *Psychological Journal*, 17, 6, 119-122.

Osin, E. N., Suchkov, D. D., Gordeeva, T. O. and Ivanova, T.Yu. (2015) Satisfaction of basic psychological needs as a source of labor motivation and subjective well-being of Russian employees. *Psychology. Journal of the Higher School of Economics*, 12, 4, 103-121.

Pargament, K. & Koenig, H. (2000) The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of Clinical Psychology*, 56, 4, 519-543.

Semenova, M.N.(2014) Psychological well-being and religious orientation of the personality in the period of adulthood. *Discussion*, 3, 104-110.

Shamionov, R. M. (2014) Ethnocultural factors of subjective well-being of the individual. *Psychological journal*, 35, 4, 68-81.

Shevelenkova, T. D., Fesenko, P. P. (2005) Psychological well-being of the individual (a review of the basic concepts and research methodology). *Psychological diagnostics*, 3, 95-129.

Zakharova, A.N. and Dulina, G.S. (2018) Orthodox believers' religiousness in modern society: study of features and gender specifics. *European Proceedings of Social and Behavioral Sciences*. XXXV, 1441-1452.



## **Entrepreneurial Intentions, Students' Personal Characteristics and Contextual Factors: A Comparative Study**

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### **Abstract**

This paper aims to investigate students' intentions of Princess Sumaya University for Technology (PSUT) in Jordan, and Kuwait University (KU) in Kuwait toward entrepreneurship after their graduation, and how they differ based on their individual characteristics, contextual and demographic factors. In order to accomplish the research objectives, a conceptual framework was designed. The conceptual framework consists of four major constructs: individual characteristics, contextual factors, demographics' factors and entrepreneurial Intentions. This research is an exploratory study. The data were collected through a self-administrated questionnaire from an convenient sample of 250 third and fourth year business students at both universities. The responses rate was about 83%. The findings of this study showed that student's intention to become entrepreneurs after graduation (intend vs. will not intend) differ in terms of their individual characteristics and contextual factors in both universities together, but they were not different in terms of their demographics' characteristics; gender and university.

**Keywords:** Entrepreneurial Intentions, Students' Personal Characteristics, Contextual Factors, Jordan, Kuwait

### **Introduction**

This study discusses entrepreneurship, which is an increasingly researched field with considerable academic efforts. It is an important topic as it occupies an important position in countries' economies. Much efforts focus on the entrepreneurship education, which helps to develop and gain momentum, and which contributes to comprehend the entire topic. Entrepreneurship, particularly in the developed countries, is viewed as a major strategy that can contribute in solving economic and social issues such as unemployment issues that can be resolved by encouraging entrepreneurs to start their own businesses. Entrepreneurship education has become an essential economic and social phenomenon and an academic and teaching field (Fayolle & Gailly, 2008:569; GEM, 2006; Niyonkuru, 2005:6). With the rapid evolution of more complex technologies and globalization, creation and development of the innovative private initiatives gained a distinguished interest. Jordan and Kuwait are among the countries which view entrepreneurship as an opportunity to produce positive changes in economic and social spheres by encouraging citizens to start organizing and achieving their own projects and be self-employed. The

reason behind this encouragement refers to the fact that governments are not able to provide sufficient job opportunities in the public sector than was previously (AL Zu'bi, 2018).

The current study has attempted to answer the following questions:

1. Do PSUT and KU students intend to become entrepreneurs after graduation?
2. Do PSUT and KU students consider that their universities offer an effective entrepreneurship education, which helps them to become entrepreneurs?
3. Do PSUT and KU students consider that their universities provide sufficient facilities and incentives to encourage them to become entrepreneurs following their graduation?
4. Are PSUT and KU students' intentions to become entrepreneurs after graduation differ or similar based on their individual characteristics, contextual factor and demographic characteristics?
5. Do PSUT and KU students have positive individual characteristics, which can influence their intentions toward entrepreneurship?
6. Do PSUT and KU students consider contextual conditions in their countries positive enough to influence their intentions toward entrepreneurship?

This paper organized as follows. It offers the research questions, comprehensively reviews the literature and previous studies that are related to the research variables. Then, presents the methodology in which the research is organized where it includes research objectives, research instrument, population, sample and procedures, the method of data collection, study variables measurement and instrument design, scales reliability and validity test, and statistic treatment. Next, the collected data make use of the research tool, which was analyzed and discussed pursuant to the research objectives. Finally, a summary of the major findings, recommendations and conclusions is introduced in this section.

## **Literature Review**

This section provides a literature review related to the research study.

### ***Literature Review***

This section introduces a literature search that is relevant to the topic to guide research. Many researchers have studied entrepreneurship as follows; McClelland provides a list of traits of successful entrepreneurs (McClelland 1987). Begley and Boyd examine the prevalence of five psychological attributes for a sample of 239 members from the Smaller Business Association of New England established entrepreneurs. The examined attributes are: need for achievement, locus of control, risk-taking tolerance, tolerance of ambiguity and type of behavior. The study investigated the attributes, which distinguish entrepreneurs from non-entrepreneurs, and whether or not the entrepreneurial attributes relate to the financial performance. The study results show that entrepreneurs score significantly higher than non-entrepreneurs does on three dimensions: the need for achievement, risk-taking tolerance and tolerance of ambiguity. Both groups manifested an internal locus of control and shared a perception by which they can influence events in their lives and be free from external forces (Begley & Boyd, 1987). Robinson and others explained the Entrepreneurship Attitude Orientation (EAO) by using 63 undergraduate students.

The study reveals important difference between known groups for the entire four EAO subscales (personal control, self-esteem, achievement and innovation) (Robinson et. al. 1991).

Baron & Markman suggest that entrepreneurs' social skills play an important role in their success. A high level of social capital, built on a favorable reputation, relevant previous experience, and direct personal contacts, often assists entrepreneurs in gaining access to venture capitalists, potential customers and others. Additionally, the nature of the entrepreneurs' face-to-face interactions can strongly influence their success. Specific social skills make first favorable impressions that could adapt to a wide range of social situations, and can be persuasive, can influence the quality of these interactions. Furthermore, social skills can help entrepreneurs to expand their personal networks to contribute to their social capital and take advantage of such opportunities to reap important benefits (Baron & Markman, 2000).

Baron and Markman measure several aspects of social competence in two different industries (cosmetics and high-tech). The study results indicate that one aspect of social competence is positively related to financial success for both entrepreneurs' groups. Furthermore, social adaptability relates to the financial success for entrepreneurs through the cosmetics industry, and expressiveness is related to such a success related to the entrepreneurs within the high-tech industry. The findings also show a high level of social capital, a favorable reputation and extensive social network, which assists entrepreneurs in gaining access to persons who are considered important for their success (Baron & Markman, 2003). Collins et al. investigate how motivational characteristics can motivate people to become entrepreneurs, and why some people are more successful than others. The study analyzed the relationship between the achievement motivation and the entrepreneurial behavior. It is found to be proven from the research findings that the achievement motivation significantly correlated with both choices; the entrepreneurial career and entrepreneurial performance, and between both projective and self-report measures of the achievement motivation were valid (Collinset al. 2004).

Littunen examines the characteristics of the entrepreneurial personality and the effects of changes in the entrepreneur's personal relationships. The research findings show that in order to become an entrepreneur and to act as an entrepreneur, it is important to include both aspects of the entrepreneur's learning process, which has an effect on the personality characteristics of the entrepreneur. Changes in the entrepreneur's relations with others have an effect on the entrepreneur's personality characteristics (Littunen, 2000). Baum and Locke focus on 229 entrepreneur-chief executive officers and 106 associates within a single industry. The research results reveals that goals, self-efficacy and communicated vision have direct effects on the venture growth. Such factors mediated the effects of passion, tenacity, and new resource skill on subsequent growth. Moreover, the study findings show that the communicated vision and self-efficacy are related to goals, and tenacity is related to a new resource skill (Baum & Locke, 2004; Shannak et al., 2010; Alkalha et al., 2012).

Bhandari's study examined Indian business students' desire to become entrepreneurs in the future. Study findings showed that many personal motivating factors play a vital role toward entrepreneurship (Bhandari, 2006). Al-Kasasbeh focuses on a random sample of Petra University students in Jordan. It examines students' attitudes toward entrepreneurship. The research results show that (48.4%) of respondents are thinking of becoming entrepreneurs, while (49.3%) are not thinking of becoming so (Al-Kasasbeh, 2008). Regnihas investigated the role of simulation as a teaching method in preparing students to become entrepreneurs. Study findings show that simulation methods are effective in motivating students to become entrepreneurs (Regni, 2010). Rauch & Frese analyzed the personality traits by matching them to the tasks of entrepreneurs. The research results reveal significant correlations between personal traits (achievement, generalized self-efficacy, innovativeness, stress tolerance, need for autonomy, proactive personality and entrepreneurial behavior, business creation, business success) (Rauch & Frese, 2007).

Tajeddini & Mueller study the high-tech entrepreneurs in Switzerland and the UK. It investigates two issues. The first is the extent to which they differ in terms of the entrepreneurial characteristics. The second issue study includes the motivational characteristics and variables that are associated with the

entrepreneurial behavior that is spurring people to become entrepreneurs. The study findings show that some entrepreneurial characteristics such as autonomy, risk-taking tolerance and locus of control are higher among UK techno-entrepreneurs, while other characteristics such as the need for achievement, tolerance for ambiguity, innovativeness and confidence are higher among Swiss techno-entrepreneurs (Tajeddini & Mueller, 2009). Naser & Alomari compare entrepreneurship characteristics of graduate students of Amman Arab University in Jordan and Damascus University in Syria. The study findings reveal significant positive correlations between the entrepreneurship characteristics and entrepreneurship. Additionally, the study results show important modifications between both groups according to the entrepreneurship characteristics and entrepreneurship behavior (Naser & Alomari, 2011).

Gürol & Atsan investigate a random sample of two Turkish fourth-year university students who explores the entrepreneurship profile to compare entrepreneurship attitudes including non-entrepreneurially inclined students. The research used six traits in order to define the entrepreneurial profile of students. These traits represent the need for achievement, locus of control, risk-taking tolerance and tolerance for ambiguity, innovativeness and self-confidence. Students are asked, "What are you planning to do after graduation?" in order to discriminate between those who are entrepreneurially inclined and those who are not. The questionnaire is administered to students with questions that are related to demographic variables, entrepreneurial inclination and six entrepreneurial traits. The study results show that except the tolerance made for self-confidence and ambiguity, the entire entrepreneurial traits are seen to be higher through entrepreneurially inclined students in comparison with entrepreneurially non-inclined students. The entrepreneurially inclined students incur greater risks when bringing greater innovativeness, tolerance, internal locus of control and greater need for achievement (Gürol & Atsan, 2006). Ozaralli & Rivenburgh study the U.S. and Turkish student's entrepreneurial attitudes where 589 senior and junior students are surveyed at two universities; a Turkish University and an American University. It can be inferred from the results pertaining to the study that although students have a positive approach towards entrepreneurship, both groups show a low level of entrepreneurial attitudes. Moreover, the results show significant correlations between entrepreneurial attitudes and tolerance, risk-taking, innovativeness, and personality attributes of optimism (Ozaralli & Rivenburgh, 2016).

The literature review shows that extensive research investigates entrepreneurship from many perspectives and in different settings. Nonetheless, to the best knowledge of the researcher, no study deals specifically on the relationship between entrepreneurship's intentions, individual characteristics and contextual factors in Jordan or in Kuwait. This justifies the need for conducting this exploratory comparative research, which is the contribution to the literature.

## **Research Methodology**

### ***Introduction***

This section discusses the research methodology that is used to collect, analyze and interpret the collected data. The study followed a descriptive analytical approach by using primary and secondary sources. The research tool is a structured questionnaire that is aimed at examining students' intentions toward entrepreneurship. The secondary and primary data are used in this research. The secondary data is derived from books, journal articles and the World Wide Web. The section is divided into 4 sections, which comprise the study population and sample, data collection, data methods and data analysis.

### ***Study Population and Sample***

Study population consists of all third and fourth-year-business students selected from PSUT and KU in 2018. The population according to the registration departments in universities reached 429 students, 174

in PSUT and 255 in KU. The sample was a convenient sample. It consists of 250 students, which meets the statistical standards. The total number of 203 completed questionnaires were returned, which accounts for 81.2% response rate. According to the sample profile, Table 1 illustrates the distribution of the sample. PSUT students constituted 42.4% and KU students 57.6% and 69% were females and 31% were males from both universities.

**Table 1: Sample Profile**

Demographic characteristics	Frequency	Percentage
<b>University</b>		
1. PSUT	86	42.4
2. KU	117	57.6
Total	203	100.0
<b>Gender</b>		
1. Male	63	31.0
2. Female	140	69.0
3. Total	203	100.0
<b>Nationality</b>		
1. Jordanian	81	39.9
2. Kuwaiti	110	54.2
3. Other	12	5.9
4. Total	203	100.0
<b>Total</b>	<b>203</b>	<b>100</b>

***Data Collection and Scale of Measurement***

Data was collected from secondary and primary sources. The secondary sources included journal articles, books and theses. Primary Sources were mainly derived from collected questionnaires. The questionnaire was drawn from relevant literature, and was checked for its external validity by experts before it was distributed to the study sample. Moreover, a pilot study was conducted on 25 students to ensure that questions are obvious and understandable.

Measurement is defined as "the rules for assigning of numbers to objects in such a way as to represent quantities of attribute" (Hair et al. 2010). The details items and scales consist of the following:

1. **General information:** this section of the questionnaire includes general questions about the students' demographic characteristics such as the gender, university and nationality.
2. **The dependent variables (the students' intentions to become entrepreneurs):** The participants are asked to indicate whether they intend to become entrepreneurs after graduation. Respondents are asked to choose one of the following answers: (1) intend to become entrepreneurs (2) will not intend to become entrepreneurs.

**The independent variables:** This section of the questionnaire includes all the independent variables (factors) in this study (see Table 2). All items (individual characteristics and contextual factors) were derived from previous studies and measured by using a 5-point Likert scale, which ranged from 1 = strongly disagree, to five = strongly agree. Questions were mainly close-end questions with few open-ended and yes/no questions.

**Table 2: References of the Independent and Dependent Variables**

<b>Variables Type</b>	<b>Variables</b>		<b>Source</b>
<b>Independent Variables</b>	<b>Individual Characteristics</b>	Optimism	Shapero&Sokol, 1982
		Innovativeness	Gupta et al. 2004 Chen, 2007
		Risk Taking	Hmieleski& Corbett, 2006
		Need for Achievement	McClelland, 1965 Rauch &Frese, 2007 Boissin et al., 2009
	<b>Contextual Factors</b>	Personal experiential activities	Seelig, 2012 Zaki, 2012
		Entrepreneurship education & Incentives	Gnyawali&Fogel, 1994 Rauch &Frese, 2007 Fayolle&Gailly, 2008 Román et al. 2013 Amorós&Bosma,2014
		Family exposure to entrepreneurship	Carr&Sequeira, 2007
		Socio-economic factors	Gnyawali&Fogel, 1994 Russell, 2004 Malcolm, 2013 FitzRoy et al. 2012 Amorós&Bosma, 2014
		Cultural factors	Lent et al. 2000 Hayton et al. 2002 Russell, 2004 Hofstede, 2014
<b>Dependent Variable</b>	<b>Entrepreneurial Intentions</b>		Hmieleski& Corbett,2006 Carr&Sequeira, 2007

***Data Collection Methods***

A research tool collected the primary data, which is a questionnaire, and which is developed from the literature on the subject. The questionnaire is administered to the third and fourth-year-business students at PSUT and KU since they are exposed to courses in management and entrepreneurship. The questionnaire consists of three parts. The first part includes 3 demographic items. The second part consists of 37 items. The first 17 items of the questionnaire measure four individual characteristics, which are optimism, innovativeness, risk-taking tolerance and the need for achievement. The other 20 items measure contextual factors, which include personal experiential activities, entrepreneurship education, family experiences in entrepreneurship, socio-economic conditions and cultural factors. The third part includes three close-ended and two open-ended questions regarding facilities and obstacles facing entrepreneurship opportunities.

The Cronbach alpha is conducted to ensure internal consistency for the entire questions. Table3.3 shows that the total Cronbach’s alpha reached 0.865, which indicates to a high internal consistency as the most

often measure of reliability ranges from 0 to 1 with values ranging from 0.60 to 0.70 as the lower limit of acceptability (Sekaran & Bougie, 2013).

**Table 3: Cronbach's Alpha**

Optimism (4 questions)	0.700
Innovation (5 questions)	0.809
Risk taking (4 questions)	0.726
Achievement (4 questions)	0.741
Persona experiential activities (4 questions)	0.746
entrepreneurship education (4 questions)	0.713
Family experiences in entrepreneurship (4 questions)	0.830
Social & economic conditions (4 questions)	0.863
Cultural factors questions (4 questions)	0.718
<b>All questions (37 questions)</b>	<b>0.865</b>

The face validity of the questionnaire is ensured through a pilot study by presenting the questionnaire to 5 faculty members of KU and PSUT. The format of the questionnaire is modified according to their comments and suggestions. Additionally, a pilot study is conducted on 25 students and is repeated after two weeks to assure stability. The items of the questionnaire is measured on a five-point Likert scale (1) “strongly disagree,” (2) “disagree,” (3) “neutral,” (4) “agree,” and (5) “strongly agree”. When measuring items, respondents were asked about their degree of agreement or disagreement. Calculated weights of respondents’ answers on a five-point-Likert’s scale are interpreted as follows: Less than 3 means low level, 3-3.5 means medium, 3.51-3.99 means high level, and 4 and above means very high level.

## **Data Analysis and Results**

### *Analyzing Data*

Descriptive statistical methods are used to analyze the collected data. These methods comprise frequencies, percentages, means, standard deviations, variance and inferential statistics using (Version 25) of the SPSS software. After analyzing the data, the findings of the study questions are comprised as follows:

#### **1. Do PSUT and KU students intend to become entrepreneurs after their graduation?**

In response to this question, the study results show that the response of the majority of students is their agreement in becoming entrepreneurs following their graduation. As shown in (Table 4), 87.2% of PSUT students' mentions that they intend to become entrepreneurs after their graduation in comparison with KU students (78.6%).

**Table 4: Students’ Intentions toward Entrepreneurship**

UNIVERSITY	PSUT	KU	TOTAL
YES	75 87.2%	92 78.6%	167 82.2%
NO	11 12.8%	25 21.4 %	36 17.8%
TOTAL	86 100%	117 100%	203 100%

**2. Do PSUT and KU students think that their universities offer good entrepreneurship education, which help them to become entrepreneurs?**

In response to this question, 90.7% of PSUT students mention that the university does so (see Table 5). It organizes workshops, seminars and other activities related to entrepreneurship in order to assist them in becoming entrepreneurs after their graduation compared to KU students, who represented 80.3%. Furthermore, 9.3% of PSUT students mentioned that the university does not organize workshops, seminars and other activities related to entrepreneurship to help them become entrepreneurs following their graduation in comparison with 19.7% of KU students.

**Table 5: Students’ Responses on Whether Universities Offer Relevant Entrepreneurship Education or not**

UNIVERSITY	PSUT	KU	TOTAL
YES	78 90.7%	94 80.3%	172 84.7%
NO	8 9.3%	23 19.7%	31 15.3%
TOTAL	86 100%	117 100%	203 100%

In terms of developing the curricula periodically, Table 6 shows that 84.8% of PSUT students mention that the university updates curricula relates to entrepreneurship to assist them in becoming entrepreneurs after their graduation compared to 85.4%of KU students. Moreover, 15.2%of PSUT students mention that the university does not update curricula relates to entrepreneurship to assist them in becoming entrepreneurs after graduation compared to 14.6%of KU students.

**Table 6: Universities Update Curricula Periodically to become More Relevant**

UNIVERSITY	PSUT	KU	TOTAL
YES	73 84.8%	100 85.4%	173 85.2%
NO	13 15.2%	17 14.6%	30 14.8%
TOTAL	86 100%	117 100%	203 100%



### 3. Do PSUT and KU students see that their universities provide facilities and incentives to encourage them in becoming entrepreneurs when they graduate?

Referring back to the question, the University provides incentives and business incubators for students in order to assist them start along with their own study results (see Table 7). Based on this table, 61.6% of PSUT students mention that the university provides incentives and business incubators to assist them in becoming entrepreneurs after their graduation compared to 35.8% of KU students. Furthermore, 38.4% of PSUT students mention that they do not intend to become entrepreneurs after their graduation compared to 64.2% of KU students.

**Table 7: Universities Provide Incentives and Business Incubators**

UNIVERSITY	PSUT	KU	TOTAL
YES	53 61.6%	42 35.8%	95 46.7%
NO	33 38.4%	75 64.2%	108 53.3%
TOTAL	86 100%	117 100	203 100%

### 4. Are PSUT and KU students' intentions toward entrepreneurship the same or different?

As shown in Table 8, it is mentioned by 87.2% of PSUT students that they intend to become entrepreneurs after their graduation compared to 78.6% of KU students. Moreover, 12.8% of PSUT students' mention that they do not intend to become entrepreneurs after their graduation compared to 21.4% of KU students.

**Table 8: Students' Intentions toward Entrepreneurship According to University**

UNIVERSITY	PSUT	KU	TOTAL
YES	75 87.2%	92 78.6%	167 82.2%
NO	11 12.8%	25 21.4 %	36 17.8%
TOTAL	86 100%	117 100%	203 100%

With regards to nationality, 88.8% of Jordanian students express their intentions in becoming entrepreneurs, and 11.2% show no interest in doing so (see Table 9). Regarding Kuwaiti students, 78% respond that they intend to become entrepreneurs and 22% responded that they do not intend to do so (see Table 9). As far as students of other nationalities are concerned, 75% respond that they intend to become entrepreneurs, and 25% mention that they do not think to do so. It can be inferred from the results that Jordanian students are 10.8% more inclined to become entrepreneurship than Kuwaiti students are, and 13.8% more than students from other nationalities are.

**Table9: Students' Intentions toward Entrepreneurship According to Nationality**

NATIONALITY	Yes	%	N0	%	Total	%
Jordanians	72	88.8%	9	11.2%	81	100%
Kuwaitis	86	78%	24	22%	110	100%
Other	9	75%	3	25%	12	100%
Total	167	82.3%	36	17.7%	203	100%

These results are explained despite the fact that Jordan and Kuwait are passing through critical conditions and experiencing similar issues with regards to narrowing job opportunities, particularly in the public sector. Nevertheless, it is still more difficult for Jordanian students than their Kuwaiti colleagues to start their own projects and to become entrepreneurs. The reason behind this refers to the better economic conditions incurred in Kuwait than Jordan, which makes it more critical for Jordanian students to depend on themselves in creating their own jobs in comparison with the case with Kuwaiti students. Knowing that Kuwait is an oil producing country, it uses to have yearly budget surpluses most of the years before it decreased its oil prices in the last decade. On the other hand, Jordan is facing hard and critical economic conditions, and is struggling for economic survival. Economic conditions in Jordan left very limited room for government to provide job opportunities in the public sector. Hence, unemployment is increasing to unprecedented levels. Therefore, Jordanian graduates including all citizens clearly understand that they have to depend on themselves in creating job opportunities. These conditions, in turn, made Jordanian students hope to become entrepreneurs and be able to start setting up their own businesses when they graduate in order to get out from the vicious circle of unemployment.

**5. Do PSUT and KU students have positive individual characteristics, which can influence their intentions toward entrepreneurship?**

Data analysis shows how individual characteristics of PSUT and KU students influence their intentions to become entrepreneurs. With regards to optimism of PSUT and KU students that is measured based on the Likert's five-point scale, it is found that this measure reached high levels (see Table 10). Different calculated means of PSUT students' reached 4.06 for achievement, 4.05 for innovativeness, 4.02 for risk-taking and 4.29 for the need for achievement. These means reflect very high qualities of individual characteristics, which influence highly students' positive intentions toward entrepreneurship.

The calculated means of KU students' intentions are lower in comparison to PSUT students' intentions within the same scale. The calculated means of KU students' intentions reached 3.91 for optimism, 3.53 for innovation, 3.71 for risk-taking, and 3.94 for the need for achievement. While the calculated means of optimisms in PSUT and KU are found to be at high levels, students' optimism levels are found higher in PSUT than in KU.

**Table 10: The Calculated Means and Standard Deviations of Individual Characteristics Influencing PSUT and KU Students' Intentions toward Entrepreneurship**

UNIVERSITY		Optimism	Innovation.	Risk taking	N.for achievement
PSUT	Mean	4.06	4.05	4.02	4.29
	N	86	86	86	86
	Std. Deviation	.62	.54	.63	.57
KU	Mean	3.91	3.53	3.71	3.94
	N	117	117	117	117
	Std. Deviation	.68	.79	.83	.77
Total	Mean	3.97	3.75	3.84	4.09
	N	203	203	203	203
	Std. Deviation	.65	.74	.77	.71

Differences in the levels of individual characteristics of PSUT and KU students are explained based on different situations in which both groups face. PSUT students face acute situation compared to KU students. This situation might be a motivating factor, which convince PSUT students to depend more on themselves in creating job opportunities by starting to set up their own projects.

**6. Do PSUT and KU students consider contextual conditions in their countries positive enough to influence their intentions toward entrepreneurship?**

Study results regarding the contextual factors, which influence PSUT and KU students' intentions toward entrepreneurship are shown in Table11. These factors are classified into five categories, which comprise personal experiential activities, entrepreneurship education, family experiences in entrepreneurship, social and economic conditions and cultural factors. The calculated means of the contextual factors of PSUT students that are measured according to the Likert's five-point scale reached 4.06 for personal experiential activities, 3.28 for entrepreneurship education, 3.64 for family experiences in entrepreneurship, 2.49 for socio-economic conditions and 3.40 for cultural factors.

**Table 11: The Calculated Means and Standard Deviations of Contextual Factors Influencing PSUT and KU Students' Intentions toward Entrepreneurship**

UNIVERSITY		Persona l Exp.	Entrep. Edu.	Famil y Exp.	Socio- economic factors	Cult. Factors	Overall Mean
PSUT	Mean	4.05	3.28	3.64	2.49	3.40	3.40
	N	86	86	86	86	86	86
	Std. Deviation	.55	.70	.96	1.09	.77	.77
KU	Mean	3.75	3.12	3.44	3.27	3.65	3.65
	N	117	117	117	117	117	117
	Std. Deviation	.97	.90	.94	.89	.79	.79
Total	Mean	3.87	3.19	3.53	2.94	3.54	3.54
	N	203	203	203	203	203	203
	Std. Deviation	.85	.83	.98	1.05	.79	.79

Regarding KU students, the calculated means of the contextual factors for KU students, which influence their intentions toward entrepreneurship are measured based on a five-point scale as follows: 3.75 for personal experience, 3.12 for entrepreneurship education, 3.44 for family experiences in entrepreneurship, 3.27 for socio-economic conditions and 3.65 for cultural factors. However, based on the calculated overall mean of KU students, the results show that the KU means of these factors (personal experiential activities, entrepreneurship education, family experiences related to entrepreneurship) are lower than the PSUT means. Never the less, the KU means of the socio-economic conditions and cultural factors are higher than PSUT. These results are obvious based on the fact that economic and cultural conditions in Kuwait are more conducive to entrepreneurship than economic conditions in Jordan. The reason behind this refers to the fact that Kuwaitis are more business-oriented than Jordanians are, as Kuwaitis are involved in commerce for so long and before discovering oil in comparison with Jordanians who are historically farmers.

To sum up, the study findings show that PSUT and KU students' intentions toward entrepreneurship are influenced by the individual's characteristics and contextual factors. The investigated individual characteristics, which are discussed by this study, include optimism, innovativeness, risk-taking tolerance and the need for achievement. Additionally, the contextual factors that are discussed by this study include personal experiential activities, entrepreneurship education, family experiences in entrepreneurship, socio-economic conditions and cultural factors. It can be inferred from these results that the overall mean of contextual factors for KU students are seen to have more favorable contextual conditions to entrepreneurship than PSUT students do.

## Conclusions

With regards to PSUT and KU students' intentions toward entrepreneurship, the study results show that 82.2% of respondents in both universities intend to become entrepreneurs after their graduation, and create their own projects/businesses. Only a minority of students of 17.8% responded that they do not intend to do so. By providing comparisons between the PSUT and KU students' intentions toward entrepreneurs, study results showed that 87.2% of PSUT students mentioned that they intend to become

entrepreneurs, and 12.8% mentioned that do not intend to become so. In case of the KU students, 78.6% mentioned that they intend to become entrepreneurs, and 21.4% mentioned that they do not intend to become so. The results show that Jordanian students are more inclined to become entrepreneurs than Kuwaiti students.

Regarding to whether PSUT and KU students provide entrepreneurship education, which enable them to become entrepreneurs after their graduation, the study results show that (84.7%) of the study sample stated that the two universities offer relevant entrepreneurship education in terms of courses, training programs, workshops and seminars on entrepreneurship. Only 15.3% of the respondents stated that the two universities do not provide the needed education. Hence, it can be concluded that the two universities give considerable attention to entrepreneurship in various forms, which help students to become entrepreneurs.

On the other hand, regarding to whether the two universities provide incentives and business incubators for students to help them become entrepreneurs, and to start their own projects, 53.3% of responses show that the universities do not provide the needed support and incentives while 46.7% state that they do. This result shows a gap that both universities have to do more to bridge this gap. They have to find other ways to provide more support to encourage students to become entrepreneurs once they graduate.

Based on the individual characteristics of PSUT and KU students on their intentions to become entrepreneurs, the study results show that these characteristics (optimism, innovativeness and risk-taking tolerance) were significantly differentiating between students who intend to become entrepreneurs and those who will not intend whether they were taken together or separately in both universities.

The study findings show that the entire examined individual characteristics scored extremely high 4 points on a five-point scale regarding PSUT students. This result implies that PSUT students' individual characteristics are strong enough to influence students' intentions toward entrepreneurship. In the case of KU students, the calculated means of three individual characteristics (innovativeness, risk-taking tolerance and need for achievement) are at high levels (3-4), and one individual characteristic (optimism) is at an extremely high-level, which is more than 4 points on a five-point scale. These results imply that KU students' individual characteristics are lower when they are compared with those PSUT students.

With respect to the role of the contextual factors and their influence on PSUT and KU students' intentions toward entrepreneurship, the study results show that all examined factors (personal experiential activities, entrepreneurship education, family experiences in entrepreneurship, social and economic conditions, and cultural factors) were significantly differentiating between students who intend to become entrepreneurs and those who will not intend whether they were taken together or separately in both universities.

The influence of these factors on PSUT students' intentions ranged from 2.49 for socio-economic factors to 4.06 for personal experiential activities. On a five-point scale, the influence of other contextual factors is 3.28 for entrepreneurship education, 3.40 for cultural factors and 3.64 for family experiences in entrepreneurship. In the Kuwaiti context, the influence of the contextual factors on entrepreneurship reached 3.12 for entrepreneurship education to 3.75 for Personal experiential activities, 3.65 for cultural factors, 3.44 for family experiences, and 3.27 for socio-economic conditions. These results show that the three contextual factors (personal experiential activities, entrepreneurship education and family experiences) in KU students are found to be less influential towards entrepreneurship in comparison with their influence on PSUT students. However, the socio-economic conditions and cultural factors seem to influence KU students' intentions toward entrepreneurship more than they do for PSUT students. This result is obvious since the economic and cultural conditions in Kuwait are more conducive to entrepreneurship than in Jordan. The socio-economic conditions seemed to be more favorable in Kuwait and make their influence on students' intentions to become entrepreneurs more effective compared to Jordanians who face less favorable socio-economic conditions. This is because Kuwaitis have been long

involved in commerce before Jordanians, even before Kuwait became an oil exporting country. Kuwaitis became more motivated to start projects, which was not the case with Jordanians.

Based on the conclusions, some key recommendations are suggested, and which comprise that PSUT and KU must exert more efforts for providing more support and incentive plans to students in order to enable them to start setting up projects and businesses after their graduation. This is because 53.2% of the students state that the universities do not provide enough incentives or business incubators, while 46.8% state that the universities do so. Also, the majority of students in both universities express their intentions to become entrepreneurs. It is important that PSUT and KU exert more efforts to motivate students in becoming entrepreneurs following their graduation by reviewing and developing entrepreneurship educational programs to be more effective.

## References

- Alkalha, Z., Al-Zu'bi, Z., Al-Dmour, H., & Alshurideh, M. (2012). Investigating the Effects of Human Resource Policies on Organizational Performance: An Empirical Study on Commercial Banks Operating in Jordan. *European Journal of Economics, Finance and Administrative Sciences*, 51, 44-64.
- AlKasasbeh, M. (2008). The Preparedness toward Entrepreneurship: An Exploratory Study of Petra University Students. A Conference Paper submitted to the Ninth Conference of Arab Organization for Administrative Sciences on 9-11 November.
- AL Zu'bi, B. (2018). Entrepreneurship can help the Youth Create Jobs. *The Jordan Times*, Apr 23.
- Amorós, J.E., & Bosma, N. (2014). Global Entrepreneurship Research Association. *Global Entrepreneurship Monitor. 2013 Global Report. Fifteen Years of Assessing*.
- Baron, & Markman (2003). Beyond Social Capital: The Role of Entrepreneurs' Social Competence in their Financial Success. *Journal of Business Venturing*, 18(1), 41-60.
- Baron, R.A., & Markman, G.D. (2000). Beyond Social Capital: How Social Skills can Enhance Entrepreneurs' Success. *ACAD MANAGE PERSPECT*, 14(1), 106-116.
- Baum, J.R., & Locke, E.A. (2004). The Relationship of Entrepreneurial Traits, Skill, and Motivation to Subsequent Venture Growth. *Journal of Applied Psychology*, 89(4), 587-598.
- Begley, T., & Boyd, D. (1987). Psychological Characteristics associated with Performance in Entrepreneurial Firms and Smaller Businesses. *Journal of Business Venturing*, 2(1), 79-93.
- Bhandari, N.C. (2006). Intentions for Entrepreneurship among Students in India. *The Journal for Entrepreneurship*, 15(2), 169-179.
- Boissin, J.P., Chollet, B., & Emin, S. (2009). Les déterminants de l'intention de créer une entreprise chez les étudiants: un test empirique. *M@n@gement*, 12(1), 28-51.
- Carr, J.C., & Sequeira, J.M. (2007). Prior Family Business Exposure as Intergenerational Influence and Entrepreneurial Intent: A Theory of Planned Behavior Approach. *Journal of Business Research*, 60, 1090-1098.
- Chen, M.H. (2007). Entrepreneurial Leadership and New Ventures: Creativity on Entrepreneurial Teams. *Creativity and Innovation Management*, 16(3), 239-249.
- Collins, J., Hanges, P., & Locke, E. (2004). The Relationship of Achievement Motivation to Entrepreneurial Behavior: A Meta-Analysis. *Human Performance*, 17(1), 95-117.

- Fayolle A., &Gailly, B. (2008). From Craft to Science.Teaching Models and Learning Processes in Entrepreneurship Education. *J. Eur. Indust. Train*, 32(7), 569-593.
- FitzRoy, P.T., Hulbert, J.M. &Ghobadian, A. (2012).Strategic Management.The Challenge of Creating Value.Second edition. Abingdon: Routledge.
- GEM (2006).Global Entrepreneurship Monitor Report.Babson College.
- Gnyawali, D.R., &Fogel, D.S. (1994). Environments for Entrepreneurship Development: Key Dimensions and Research Implications. *Entrepreneurship: Theory &Practice*, 18(4), 43-62.
- Gupta, V., MacMillan, I.C. &Surie, G. (2004). Entrepreneurial Leadership: Developing and Measuring a Cross-Cultural Construct. *Journal of Business Venturing*, 19(2), 241-260.
- Gürol, Y., &Atsan, N. (2006). Entrepreneurial Characteristics amongst UniversityStudents: Some Insights for Entrepreneurship Education and Training in Turkey. *Education + Training*, 48(1), 25-38.
- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2010). *Multivariate Data Analysis (7th ed.)*. New Jersey: Prentice-Hall.
- Hayton, J.C., George, G., & Zahra, S.A. (2002). National Culture and Entrepreneurship: A Review of Behavioral Research. *Entrepreneurship: Theory & Practice*, 26(4), 33-52.
- Hmieleski, K.M., & Corbett, A.C. (2006).Proclivity for Improvisation as a Predictor of Entrepreneurial Intentions. *Journal of Small Business Management*, 44, 45-63.
- Hofstede, G. (2014). National Culture Dimensions.The Hofstede Centre.<http://geert-hofstede.com/national-culture.html>.
- Lent, R.W., Brown, S.D., &Hackett, G. (2000). Contextual Supports and Barriers to Career Choice: A Social Cognitive Analysis. *Journal of Counseling Psychology*, 47(1), 36-49.
- Littunen, H. (2000). Entrepreneurship and the Characteristics of the Entrepreneurial Personality. *International Journal of Entrepreneurial Behavior & Research*, 6(6), 295-310.
- Malcolm, G. (2013). *David and Goliath: Underdogs, Misfits, and the Art of Battling Giants*. New York: Little, Brown and Company.
- McClelland, D.C. (1965). Achievement and Entrepreneurship: A Longitudinal Study. *Journal of Personality and Social Psychology*, 1(4), 389-392.
- McClelland, D.C. (1987). Characteristics of Successful Entrepreneurs.The *Journal of Creative Behavior*, 21(3), 219-233.
- Naser, J., &Alomari, G. (2011).Measuring Entrepreneurship Characteristics of Business Graduate Students and their Effect on Entrepreneurship Businesses: A Comparative Study.*Journal of Damascus University of Economics and Law*, 27(4), 139-168.
- Niyonkuru, R. (2005). Entrepreneurship Education at Tertiary Institutions in Rwanda: A Situational Analysis. Western Cape, University of Western Cape.
- Ozaralli, N., &Rivenburgh, N.K. (2016). Entrepreneurial Intention: Antecedents to Entrepreneurial Behavior in the U.S.A. and Turkey. *Journal of Global Entrepreneurship Research*, 6(3).

- Rauch, A., &Frese, M. (2007). Let us put the Person back into Entrepreneurship Research: A Meta-Analysis on the Relationship between Business Owners' Personality Traits, Business Creation, and Success.European Journal of Work and Organizational Psychology,16(4), 353-385.
- Regni, R. (2010). Entrepreneurship Methods of Preparing Students, in a Classroom Environment, through the use of Simulation, the Techniques of Opening a Small Business.The International Journal of Learning, 16(12).
- Robinson, P., Stimpson, D., Huefner, J., & Hunt, H.K. (1991).An Attitude Approach to the Prediction of Entrepreneurship.Entrepreneurship Theory and Practice. Summer, 13-31.
- Román, C., Congregado, E.,&Milán, J.M. (2013). Start-up Incentives: Entrepreneurship Policy or Active Labor Market Program? Journal of Business Venturing, 28(1), 151-175.
- Russell, R. D. (2004). Cultural Influences on Entrepreneurship: Implications for the Emergence of New Ventures in Latin America. Journal of Transnational Management, 10(1), 37-59.
- Seelig, T. (2012). Ingenious: A Crash Course on Creativity. New York: HarperCollins.
- Sekaran, U., &Bougie, R. (2013). Research Methods for Business: A Skill-Building Approach (6th ed.). New York: Wiley.
- Shannak, R., Obeidat, B., & Almajali, D. (2010). Information Technology Investments: A Literature Review. Proceedings of the 14th IBIMA Conference on Global Business Transformation through Innovation and Knowledge Management: An Academic Perspective, Istanbul-Turkey, 23rd-24th June, pp.1356-1368.
- Shapero, A.,&Sokol, L. (1982). The Social Dimensions of Entrepreneurship, Encyclopedia of Entrepreneurship, Englewood Cliffs: Prentice Hall, chap. IV, IV (1982), pp. 72-90.
- Tajeddini, K., & Mueller, S.L. (2009). Entrepreneurial Characteristics in Switzerland and the UK: A Comparative Study of Techno-Entrepreneurs.Journal of International Entrepreneurship, 7(1).
- Zaki, J. (July/August 2012). The Curious Perils of Seeing the other Side.Scientific American Mind, 20-21.



# Managerial Reengineering and Efficiency

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## Abstract

One of the most complex ways of managerial change is the management system redesign, respectively the managerial reengineering, respectively the reorganization and redesign of the organization management, according to a rigorous methodology. For more than 3 decades there has been talked about reengineering. First, there was the reengineering of business processes, then the reengineering of the organization and its management, without achieving a unitary approach to the steps to be taken in order to benefit from an efficient and effective management, generating efficiency at the organization level. Regardless of the present hypostasis - the managerial change as itself, or as a strategic option in the context of the organization's global strategy or as managerial methodological approach - managerial reengineering is a difficult and complex approach requiring active and responsible engagement on the part of a dedicated specialists team. Given the amount of time needed to design and test the new management system project, managerial reengineering undoubtedly has a pronounced strategic dimension. Our work focuses on both its methodological aspects, as well as its implications on the efficiency of the organization.

**Keywords :** managerial reengineering, reengineering methodology, management efficiency, decisions quality.

## Introduction in Reengineering

The 1990s began with an outstanding achievement in management area, *business process reengineering (BPR)*, considered as a real revolution in company management (*Hammer, Champy, 1993*). The term reengineering, exciting and, at the same time, revolutionary, had a well-targeted goal: business processes, added value generators and determinants in the definition of an organization's object of activity. *Reengineering generally means rethinking / redesigning and redoing a certain "something" that can be a business process, a management process or the management system.* If the reengineering of business processes has put an emphasis on fundamental, profound and radical rethinking and redesigning of work processes and, in particular, those generating added value (business processes) in order to significantly improve the performance, the managerial reengineering insists on reconsolidation and redesigning of the organization management as a whole.

In the first case, the methodologies used in BPR are found in a variety of variants, most of them being developments or adaptations of the methodological conception of the two American promoters, M. Hammer and J. Champy, structured in six stages or steps:

- Launch of the reengineering action in order to clarify the necessity and opportunity of reengineering of the major factors that require the rebuilding of business processes from the company efficiency point of view;

- Drawing up the company's "process map", which graphically highlights the three types of work processes existing at the time of the reengineering action, the links between them and the impact, positive or negative, on the manner and degree of objectives achievement. An important remark: the development and promotion of quality management systems, subsequent to business processes reengineering (1993), refers to the SIPOC diagram and process map; the SIPOC diagram provides indications of a particular process (S-supplier, internal or external supplier, I-input, input materials and process data, P-process, process to be analyzed, O-output, data and products or services as process results, C-customer, the client of the products or services offered by the process) before it is included in the process map. This is a graphical representation of the processes identified in the organization. The process map illustrates the process fluxes that influence quality: inputs and outputs of the process; activities and responsibilities; process route, parallel processes and process loops; decision points; interactions with other processes;
- Establish the processes submitted to reengineering. From this point of view, there may be several situations: the processes to be reconsidered and redesigned refer to the firm as a whole; only a group of processes is approached (for example, the activities integrated into a function); reengineering involves a single process, representative and with great impact on the functionality and efficiency of the firm. The fundamental principle of reengineering of "everything or nothing" has its explanation in the fact that the redesigned process or processes must be addressed in their complexity and completeness;
- Formation of the overall image of the processes or process subject to reengineering, exploiting the information derived from the analysis of their viability, the dysfunctions and strengths that characterize them, the causes that generated them, the links with other processes as it results from the review of the process map;
- Reengineering the business process/processes in the sense of their rethinking and redesigning. In fact, there is a reconsideration of the business processes / process in terms of their (his) role in achieving multiple objectives, especially strategic, and their (his) procedural, structural-organizational and human resizing;
- Operationalization of the process / processes radically changed / changed by reengineering and, implicitly, processes re-mapping.

The extension of reengineering at the level of small and medium-sized enterprises is marked by the contribution of R. McAdam (*McAdam, 2002*) who formulated some methodological aspects of a positivist and phenomenological nature applicable to this sector, who criticizes the unreasonable takeover of the reengineering methodology promoted by these large companies. This is a positivist, step-by-step mechanical methodology based on the cause-effect relationship, especially for large organizations with a stable organizational structure.

The examination of methodological variants of reengineering allows us to draw some conclusions:

- Most, if not all of them, are adaptations / developments / diversifications of the business process redesign methodology, promoted by Hammer and Champy in 1993; they are considered the "parents" of reengineering.
- All have a central axis that provides them with the same approach to the complex mechanism of change through reengineering - presentation, analysis, reengineering, implementation, evaluation (*Stan, 2007; Brilman & Herard, 2006; Hussein et al., 2014*).
- The essence of change is the business processes, plus the auxiliary (support) and management ones, though these latter two categories are not "points of attraction" for the promoters of such methodological scenarios. Less emphasizing or, in certain situations, neglecting the processes that do not directly contribute to obtaining an economic substance, can be considered a limitation of the reengineering methodologies.
- None of the variants presented will "in-depth attack" all the components of the organization's management system, at the level of which such profound change occurs.

- The result of the operationalization of any methodological variant is the same: considerable improvement of some managerial and economic-financial performance indicators, in the context of obtaining a competitive advantage.

There is a tendency to absolutise the role of BPR and to treat it as a miracle solution for competitiveness, efficiency and effectiveness. In fact, it has many advantages but also serious limits and must be approached differently, on a case-by-case basis, depending on the constructive and functional particularities of the company and its management.

The aim of the paper is to analyze the main features of managerial reengineering based on the analysis of the literature approaches. The proposed methodology includes a qualitative approach to research by: analyzing the main approaches of the specialized literature in the field of managerial reengineering, highlighting the essential features of the managerial reengineering process and the reengineering - efficiency relationship.

## Managerial Reengineering Model

Two years after the publication of *Reengineering the Corporation: A Manifesto for Business Revolution*, to which I have already referred, James Champy, co-author of this paper, publishes *Reengineering Management: the Mandate for New Leadership*; four coordinates are at the very bases of this complex and difficult approach (Champy, 1995, p.17):

- *Nothing is simple.* Stability belongs to the past. The economic environment is changing as we speak.
- From now on, *all of our efforts, whatever they may be, are no longer sufficient.* At the present moment, one not only have to manage the change, but also challenge it, on a large scale and at all speed.
- *Everything is questionable!* The old management methods are no longer viable. Organigrams, pay scales, hierarchies, all the panoply of command techniques are no longer up to date.
- *Everyone is requested to change!* The change is not limited to its technical dimension. It targets not only the activity of managers, but also their profound identity, not only the idea of tasks execution, but their behaviour, not only what they know, but what they think, not only the vision of the world, but also the way of living it.

The use of these coordinates requires, in the opinion of Champy (*op.cit.*, pp. 15-16), difficult answers to equally difficult questions, related to:

- *Organization's finality:* What is the enterprise's vocation? What is the utility of its processes? What is the utility of its products? What is the utility of the team, the job, the tasks? What is our reason of existence?
- *Organizational culture:* The extent to which reengineering calls for radical transformation of enterprise culture, based on a new ambience, on goodwill and mutual trust.
- *Processes and Performance:* How do we operationalize the processes we want? How will the necessary performance be achieved? How will criteria be set in order to allow the evaluation of the results? What features define a good manager?
- *Individuals:* Who do we want to collaborate with? How do we find these people inside or outside the enterprise? How do we instil the desire to work with us?

The ideas and arguments presented by J.Champy are useful in shaping methodological variants of managerial reengineering, which take into account not only the management processes, but also the

results of their exercise, respectively the management system with its five major components - methodological, decisional, information, organizational and human resources.

*Managerial reengineering* can therefore be approached in three ways: as a way of managerial and organizational change, as a fundamental strategic option in the context of the organization's overall strategy or as a way of managerial methodical approach.

*The managerial reengineering model we refer to (Verboncu, 2018):*

- First step: the *diagnostic study*, materialized in: the strengths and causes that generate them, the weaknesses and causes of their production, the potential of managerial and economic viability and the strategic and tactical recommendations for enhancing this potential.
- *Objectives* - the quantitative and / or qualitative expression of the purpose for which the organization or a subdivision of it was founded. These are categorized as fundamental, derived, specific and individual objectives and appear as a consequence of realistic strategies and policies promotion; imply a radical change of attitude of the organization and its management for present time and future, reckoned in terms of performance. Objectives make individuals and groups of individuals feel responsible, imposing a pronounced strategic and tactical dimension, necessary for a proper position on the specific market, and - ultimately - are very good benchmarks for functioning and performance evaluation.
- Processes - in order to achieve the objectives, adequate work processes with a different degree of aggregation are needed. Their delimitation and dimensioning into business processes (main processes), support processes and management processes are determined by the complexity of objectives in which they are directly involved. Because the construction of the objectives system takes place "top down", the process edifice, necessary for their realization, is outlined from complex to simple. As such, procedural remodeling, materialized in new work processes, the development of the existing ones, the diminution or elimination of others, seeks to ensure a full concordance between objectives and processes amid the elaboration of a "process map" in which are included the main activities generating added value.
- Structures - Labor processes, regardless of their degree of aggregation, must have an adequate structural and organizational support, ie an organizational structure conducive to the achievement of the objectives. This is why, the third step in the managerial redesign is the structural redesign, which is concretized in the redimensioning of necessary management and execution positions and functions, from the functional and operational compartments, together with their "arrangement" in a predefined configuration through hierarchical levels, hierarchical weights and organizational relationships. Also, it is necessary to design the convenient organizational formula according to the dimensional and functional characteristics of the remodeling processes and the contextual influences - a much flattened structure, a holonic structure, in which the holons can be the management centers delimited mainly processual or structural-organizational. The team of specialists who provide the managerial redesign of the organization has two options: either finalizes the organizational formula at this stage, or it outlines a preliminary version, which will be defined in the next sequence ("People"), depending on the changes made in the other managerial subsystems, but especially in the managerial instruments. For example, the promotion of management based on profit centers causes major structural and organizational changes, mainly generated by managerial and economic decentralization at cost center level.
- People - The next step is decisive in ensuring a high organizational viability as it aims at "endowing" management and execution positions with people with the necessary expertise. Competence is the key element where compatibility of people with posts is regarded; the personal authority given by knowledge, professional and managerial skills and abilities must satisfy the official authority with which the managerial positions are invested, namely the right to decide. Consequently, the next managerial component, subject to redesign, is human resource

management, a highly dynamic and vulnerable managerial "area" where recruitment, selection, assignment, evaluation, motivation, improvement, promotion and protection of employees and also, the modeling of organizational culture, are key activities. The professionalisation of management is ensured through quality human resources, because:

- managers are directly involved in substantiating and adopting decisions; for this, they appeal to managerial instruments and pertinent information transmitted through streamlined ascendent informational channels;
- executives initiate actions necessary to operationalize the decisions, capitalizing on information transmitted mainly through descending routes.

That is why the quality of decisions and actions is dependent not only on the manner and ways of decision-making redesign, but also on methodological, managerial and informational redesign solutions.

As far as the decision-making component of management is concerned, it is necessary to make fundamental changes in:

- a. Rigorous delimitation and reshaping of authority or formal competence on hierarchical levels;
- b. Improving the quality of decisions through scientific substantiation, through "empowering" them, ensuring that their adoption, application and formulation are operative;
- c. Typological improvement of adopted decisions, in order to increase the share of strategic and tactical decisions, risk and uncertainties decisions at higher hierarchical levels;
- d. Decision-making methodologies;
- e. Promoting a true risk management.

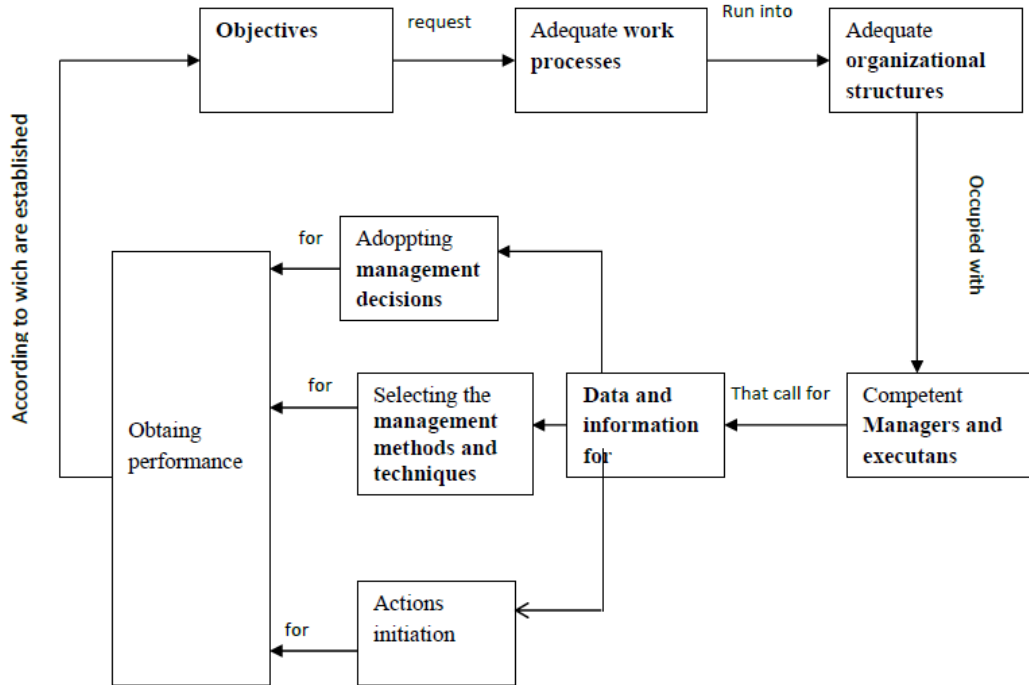
At his turn, information redesign implies:

- a. Improving the quality and quantity of information;
- b. Rationalizing the information situations and their routes;
- c. Increasing the degree of business, support and management processes computerization, through the promotion of high performance IT systems;
- d. Sophistication of information procedures.

Since without a judiciously outlined methodological-managerial component, the manager's performance can not be a scientific one, a special attention must be paid to the redesign of the methodological subsystem, through promoting a modern managerial instrument - with emphasis on objective management or its evolved version, profit centers based management - and general or specific rigorous methodologies. This fourth step of the reengineering methodology provides the outline of the new management system configuration, the operationalization of which must increase the efficiency and effectiveness.

- *Implementation / application of managerial reengineering solutions*, a sequence requiring the decision-making and action intervention of managers and executives; it is very important to support the top management in the successfully operationalization of the new management system, which implies permanent monitoring and effective, active and responsible involvement whenever there are deviations from the configuration and functionality of the management system and its components as designed and redesigned by specialists. Such involvement is likely to improve the organizational climate and, obviously, a series of parameters of organizational culture, turning it into an influential variable in the success of organizational and managerial change through reengineering.
- *Results* - The redesigned management after this methodological scenario and operationalized, generates results that should normally take on the significance of managerial performance, which furtherly generates economic performance. If managerial performance is the sole responsibility of managers, the economic performance is a combined responsibility of managers and executives (Guibert et al., 2004; Guedj, 2010; Mougin, 2007; Owen, 2018).

The links between the main coordinates of managerial reengineering are outlined in Figure 1.



**Fig. 1: Interdependencies between managerial components in management reengineering**  
(source: the approach of the authors)

### Management quality and efficiency

In order to highlight the influences of management reengineering on its quality and efficiency, it is necessary to clarify the content of the two concepts in advance.

Quality determines the efficiency and effectiveness of management. Mostly, the quality of management, unlike its effectiveness, can not be quantified. As the decision is the essence of management, we can also say that the quality of management is mainly conditioned, by the quality of managerial decisions. The multidimensionality of the management quality (MQ) concept is explained by the following variables:

- The quality of adopted decisions (Qd)
- The quality of the used managerial instruments (Qmi)
- The quality of used information (Qi)
- The quality of process and structural organization (Qpso)
- The quality of people - managers and executives (Qp)

In a simplified version, management quality can be mathematically expressed through a function like:

$$MQ = f(Qd, Qmi, Qi, Qpso, Qp),$$

And the quality of the decisions, through the expression:

$$Qd = f(Qmi, Qi, Qp)$$

*The quality of decisions* is reflected in five parameters: scientific substantiation, opportunity, „empowering”, integration into organization decisions, comprehensibility; *the quality of information*, which ensures rigorous decision making, is highlighted by: realism, multilateralism, adaptability, dynamism and opportunity; *the quality of people* (decision-makers) is ensured by their professionalism.

Management efficiency (ME) is given by the direct efficiency of the major components of the management system and indirect efficiency:

$$\text{Direct efficiency (EdM)} = f(\text{Esm, Esd, Esi, Eso, Emru})$$

- a. *The efficiency of the methodological subsystem (Esm)*, evidenced by the degree of applied methodology at the level of each management function (the share of managerial instruments and other methodological elements found in the exercise of prevision, organization, coordination, training and control-evaluation);
- b. *The efficiency of the decisional subsystem (Esd)*, materialized in decision intensity and operational intensity (decision-implementation) at different management levels;
- c. *The efficiency of the informational subsystem (Esi)*, reflected in the degree of management processes computerization, the degree of satisfaction of the managers informational needs at the level of each organizational echelon;
- d. *The efficiency of the organizational subsystem (Eso)*, measured by the hierarchical weighting, the degree of flattening of the organizational structure, the degree of posts occupation, the degree of processual coverage of the objectives, the degree of structural and organizational coverage of the work processes, s.o.);
- e. *The efficiency of human resource management (Emru)*, reflected by the fluctuation of the human factor, the size of the average salary, the socio-professional structure of the staff s.o.

The indirect efficiency of management (EiM) is highlighted by the economic efficiency. This type of efficiency is expressed by volume and efficiency (qualitative) indicators.

## **The Impact of Managerial Reengineering Upon Quality and Efficiency**

In our view, influences on the *quality of management* are reflected in:

- Considerable amelioration of the decisions quality resulting from the exercise of management functions, in particular by enhancing their scientific substantiation;
- Improving the quality of decisional documents and processes through promoting specific methodological elements of substantiation, adoption, application and evaluation of decisions;
- Improving the quality of the information circulated in/by the informational system, the quality of information procedures and the accuracy of information routes;
- Imprinting features of order, discipline and rigor in the course of work processes, mainly by promoting appropriate methodologies for conceiving, running and maintaining the functioning of management and its major components;
- Increasing the quality of the human factor, both by improving its managerial and professional competence, as well as by a more judicious synchronization with the official authority granted to the occupied positions;

On the other hand, *management efficiency* is marked by managerial reengineering through:

- Increasing the decisional intensity at all organizational echelons, the problems faced by the organization and its organizational subdivisions with increased chances of decision-making;

- The operational intensity, highlighted by the degree of decisions implementation, is on a positive trajectory, both through the involvement of the contractors and a more efficient allocation of resources per organizational subdivisions, depending on the volume, complexity and difficulty of their specific objectives;
- Absolute and relative amplification of the managerial instruments used in the management processes and at the level of each function (the degree of managerial methodology will increase considerably);
- Increases the level of awareness of the managers performance in each of the three organizational echelons. In practice, there will be no manager who will not resort to at least one management method, such as profit center based management or objectives based management;
- Accelerating preoccupations to increase the degree of management processes computerization (using the IT version of scoreboard and/or the management through exceptions will make a decisive contribution to achieving this objective);
- The information intensity will record high levels, on one hand, by specifying the information needs of each manager and, on the other hand, by satisfying these needs with the help of the scoreboard, the management through exceptions, used either by itself or in the context of profit centers based management or of objectives based management;
- The absolute reduction in the number of hierarchical levels in enterprises that promote managerial reengineering and, consequently, the degree of flattening of the organizational structure is improving;
- Balancing the hierarchical weights of managers placed on the same hierarchical level;
- The degree of procedural coverage of the objectives assumed for a certain period tends to record the maximum level (100%), through the reengineering of business processes and especially through managerial reengineering;
- The degree of structural- organizational coverage of the work processes also increases up to 100% through managerial reengineering or only of the organizational component of the management;
- The degree of staff retention increases through the reduction of fluctuation at all employees levels.

In the same time, one must not neglect the influences on the *economic and financial results* obtained from the decisions implementation. The most relevant are due to the promotion of evolved managerial instruments, such as the profit centers based management, project management s.o. On the background of improving the organizational culture, favorable premises are created for increasing the productivity of labor, wages, profit, while satisfying, at a superior level, the economic interests of the main stakeholders.

## **Conclusions**

Undoubtedly, the reengineering of the management system is the most important way of organizational and managerial change at the organization level. Driven by economic, social and managerial reasoning, such an approach involves the existence of professional managers capable of understanding and sequentially address rethinking and, in particular, redesigning management according to scenarios, also professional, scientifically rigorous.

The main research findings of this paper are: highlighting the main features of managerial reengineering and analysis of the managerial reengineering relationship - efficiency, defining the direct and indirect efficiency of the management system. The success of managerial reengineering is ensured by the full support of the top management of the organization, the establishment and functioning of the management specialists teams and the accuracy of the operationalized methodology. The same conditions must be fulfilled when managerial reengineering is exercised by management consultants - responsibility, attitude, involvement. The continuous reporting to the assumed objectives, whose achievement directly contribute



to the validation of a well-known truth sustained for more than 6 decades by specialists: management is one of the most important factors of growth and economic development, of macro and microeconomic efficiency.

## References

- Brilman, J., Herard, J. (2006) Les meilleures pratiques de management, Editions d'Organisation, Paris
- Champy, J. (1995) Reengineering du management, Edition DUNOD, Paris
- Drucker, P. (2008) Despre decizie și eficacitate, Meteor Press Publishing House, Bucharest
- Guedj, J.-P. (2010) Manager avec efficacite, Editions Breal, Paris
- Guibert, V., Rejon, C., Dumont, H. (2004) Comment manager, Editions d'Organisation, Paris
- Hammer, M. and Champy, J. (1993) Reengineering the Corporation: A Manifesto for Business Revolution, Harper Collins, New York
- Hussein, B., Hammoud, M., Bazzi, H. and Haj-Ali (2014) 'PRISM-Process Reengineering Integrated Spiral Model: An Agile Approach to Business Process Reengineering (BPR) ', *International Journal of Business and Management* 9 (10), 134
- McAdam R. (2002) ' Large Scale Innovation – Reengineering Methodology in SMEs,Positivistic and Phenomenological Approaches',*International Small Business Journal*,SAGE Publications, 20(1), 33–52
- Mougin, Y. (2007) La performance? Soyez tranquille: je la surveille de pres, AFNOR, Paris
- Owen, J. (2018) How to Manage, The definitive guide to effective management, Fifth edition, Pearson Education Ltd
- Stan, C.S. (2007) Reengineeringul – o nouă filosofie a managementului, Expert Publishing House, Bucharest
- Verboncu, I. (2018) Cum conducem? Între amatorism și profesionalism, Universitary Publishing House, Bucharest
- Bonini, C P. (1963) Simulation of Information and Decision Systems in the Firm, Prentice-Hall, Englewood Cliffs, New Jersey.
- Sabri, EH and Beamon, M. (2000), 'A Multi-Objective Approach to Simultaneous Strategic and Operational Planning in Supply Chain Design,' *Omega: an International Journal of Management Science* 28 (1), 581-598.

# Project Portfolio Management in Romanian R&D Organizations

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## Abstract

This article presents the results of the project portfolio management in Romanian R & D organizations as a result of questionnaire research of the managers of the organizations, the project managers and the researchers who are members of the project teams. The research objectives in this paper are: establishing the main features of project portfolio management within Romanian organizations, highlighting the main methods used to select projects within the project portfolio, analyzing the level of maturity of organizations in managing project portfolios. The three categories of staff surveyed consider almost equally that the two stages of project portfolio management within R & D organizations are: project identification, categorization and prioritization; selection and portfolio balancing. According to research results, most Romanian

R & D organizations are still at the first maturity level in project portfolio management.

**Keywords:** project, portfolio, management, research, organizations

## Introduction

Romanian research and development organizations are involved in research projects in the field of fundamental research, applied research, experimental development and innovation. Various actors are involved in R & D projects: research-development institutes, universities and research centers, research-development companies, other actors involved in the scientific research and technological development market.

For all the actors involved in the R & D activity, the way in which the project portfolio is managed within the organization is of particular importance. The financial, material and human resources of Romanian R & D organizations are limited and therefore the issue of project portfolio management is of fundamental importance to this type of organization, very often closely related to its own survival.

As the demand for R & D projects in the private sector is relatively limited, most research projects are carried out by organizations that are public property, which emphasizes the importance of the problem studied in this paper. With the exception of those with fully funded public funding (universities and institutes subordinated to the Romanian Academy), the rest of the research organizations (R & D institutes, private research institutes, private firms with R & D departments) are depending on the structure of the project portfolio in terms of sustainability of their own activity, especially in the short term.

Among the member countries of the European Union, Romania has one of the lowest public budget allocations for R & D activity (0.3% of GDP) and private funding is not a sufficiently solid source of funding to be a counterpart to public funding. Working in this context, managers of R & D organizations in Romania are forced to set up their project portfolio so as to contribute to the survival of their own organizations and to reach some organizational goals on R & D.

Since the issue of project portfolio management in R & D organizations in Romania has been relatively little studied in this article, the main features of portfolio management in these organizations are analyzed.

## Literature Review

In the literature, the issue of portfolio management and project portfolio management within R & D organizations has been the subject of many studies and research. The concepts of project portfolio and project portfolio management have many definitions and approaches. In the sense of Project Management Body of Knowledge (2008), the portfolio is a collection of projects or programs and other works that are grouped together to facilitate effective management of that work to meet strategic business objectives. Archer and Ghasemzadeh (1999) considered the portfolio of projects to be a collection of projects and programs that were grouped together to facilitate effective management of that work to meet strategic business objectives. Martinsuo and Dietrich (2002) defined the portfolio of projects as a collection of projects to be managed concurrently under a single management umbrella.

Approaching the whole portfolio of projects as a portfolio started from the idea that they can be implemented more easily under a single coordination than independent and that project portfolio management facilitates the achievement of the organization's overall objectives and minimize project risks. The development of the project portfolio management concept has been favored by two organizational needs: the need to prioritize projects in which the organization will be involved, taking into account the potential benefits and the need to optimize the use of resources at the organization level and to solve conflicts that arise between project managers in the use of resources.

The approach to managing the portfolio of projects is also very different, especially when it comes to stepping up this process. Project Management Body of Knowledge (2008) considers that project portfolio management at the organization level includes the following main components: project identification, categorization and prioritization; project opportunity assessment, portfolio governance, portfolio risk management. Other approaches add portfolio management to two other components: portfolio resource management (Krebs, 2009) and portfolio communication and change management (Artto and Dietrich, 2004). Wideman (2004) considers that there are ten important steps in managing the portfolio of projects: portfolios; identifying needs and opportunities; selecting and prioritizing; balance and optimize the portfolio; authorization; planning and execution; portfolio status reporting and portfolio improvement.

Project portfolio management encompasses all the processes that determine what type of projects will be included in the portfolio, assess and prioritize projects, monitor overall performance, and adjust portfolio content to meet the objectives of the organization and portfolio.

There are a number of authors who have developed a series of maturity models in portfolio project management. The maturity model developed by De Reyck et al. (2005) implies three levels of maturity of the organization in portfolio inventory, portfolio administration and portfolio optimization. In the first stage of the model developed by De Reyck et al. (2005) the following processes are carried out: centralized project management, risk assessment procedures, resource constraints, In the second stage of the model developed by De Reyck et al. (2005) the main processes implemented are: project categorization and evaluation of customer impact of project portfolio results. The third level of the model developed by De Reyck et al. (2005) the following processes are carried out: project portfolio

committees, financial evaluation of the portfolio, interdependence management and tracking project benefits. Jeffery and Leliveld (2004) considered that there are three levels of maturity in the management of portfolio defined, managed, synchronized projects portfolios. In the first stage of the model developed by Jeffery and Leliveld all projects are in the same database and the project management office appears. In the second stage of this model, financial metrics are used to prioritize projects and there is a hierarchy of projects within the organization. The third stage is the monitoring of projects' earned value and review sessions with business unit.

In addition to the above, many other project portfolio management models are available: the PMI OPM3 model, the P3M3 developed by Axelos and the Gartner's PPM Model. The PMI OPM3 model consists of three elements that are interdependent in knowledge, assessment and improvement. The OPM3 cycle includes five fundamental steps: prepare for evaluation, implement improvements, and improve the process. The P3M3 model comprises five levels of maturity: awareness, repeatable, defined, managed, optimized. Gartner's model is structured on five levels of maturity: reactive, emerging disciplines, initial integration, effective integration, effective innovation.

Project portfolio management in R & D activity presents some particular aspects in relation to portfolio management of projects in other areas of activity. Mikkola (2000) considered that the R & D Project Portfolio Matrix can be used as a tool for analyzing the R & D projects portfolio by taking into account the competitive advantages of the firm and the benefits that R & D projects can end users. In the same author's conception, shifting emphasis from research to development in this area favors project portfolio management, as expected results are not only those related to the scientific or technical objectives of the projects but also to the cash-flow, recovery and other indicators economic efficiency of projects.

The selection of projects for creating / modifying the portfolio of projects and maximizing the portfolio value of projects can be achieved using methods such as multi-criteria decision analysis, robust portfolio modeling, return on investment, expected commercial value, productivity index, contingent portfolio programming, goal programming, scoring models, bubble diagrams. Besides or in the absence of their knowledge / use, they can also be used as criteria for the ranking of research and development projects: the value of the projects, the probability of their success, the value of the costs involved in the implementation of the projects and the additional opportunities that any project the portfolio is brought to the organization. Another criterion that could be used for project selection is "the use of life cycle cost" (Simion, Nicolescu and Cioc, 2018). The optimal portfolio will be the one that will have the minimum lifecycle cost"(Simion, Nicolescu and Cioc, 2018).

## Research Methodology

Taking into account the main approaches in the literature on project portfolio management and the results obtained in previous studies for the research presented in this article, the following objectives were set:

- establishing the main features of project portfolio management within Romanian organizations (understanding and application of the concept, use of portfolio management in development research organizations);
- highlighting the main methods used to select projects within the project portfolio;
- analyzing the level of maturity of organizations in managing project portfolios.

To achieve these objectives, a research methodology has been used that includes the following steps:

- selection of R & D organizations to participate in the survey based on a questionnaire. The selection of organizations was carried out on a sample of organizations participating in competitions within the National R & D Program. 32 R & D organizations were selected, representing a statistically and typologically representative sample of Romanian R & D activity;

- drawing up questionnaires on the management of project portfolios in Romanian organizations. The questionnaire elaborated had 4 sections: one on the peculiarities of the organization, the second on the characteristics of the respondents; third on methods used in project portfolio management, and fourth on maturity level in project portfolio management (including the benefits of project portfolios management);
- selection of respondents in organizations. 150 questionnaires were distributed by mail and 115 valid responses were received from organizational managers, project management departments, project managers and project team members;
- collecting and processing questionnaire responses for data analysis;
- analyzing the data obtained and formulating the conclusions of the project portfolio management research within the organizations active in the field of R & D in Romania.

The methodology used allows preliminary conclusions to be drawn on the management of project portfolios in Romanian R & D organizations. In formulating and applying this methodology, it was taken into account that in Romanian R & D organizations strategic management is applied in an incipient, empirical form, and they are rather oriented on short-term results.

## Research Results

In the structure of the sample, according to Table 1, the R & D organizations in natural sciences and engineering are best represented, followed by R & D organizations in social sciences and humanities.

**Table 1 : Structure of research organizations in the sample according to the NACE code**

No.	NACE code	Percent
1.	Research and development in social sciences and humanities	27%
2.	Research and development in natural sciences and engineering	65%
3.	Research and development in biotechnology	8%

Table 2 shows the size of the organizations in the sample according to the number of their employees. The best represented in the sample are organizations with between 51 and 249 employees holding almost 60% of the total number of respondents. This is understandable because in Romania most of the national research and development institutes are medium-sized enterprises.

The majority of respondents in organizations with over 250 employees are professors / researchers from universities that are part of the teams of different projects, stating that there are very few university researchers employed in universities in Romania who are employed exclusively for research and development activity.

**Table 2 : The size of R & D organizations by number of employees**

No.	NACE code	Percent
1.	Organizations that have up to 9 employees	6%
2.	Organizations with between 10 and 50 employees	34%
3.	Organizations with between 51 and 249 employees	58%
4.	Organizations that have over 250 employees	2%

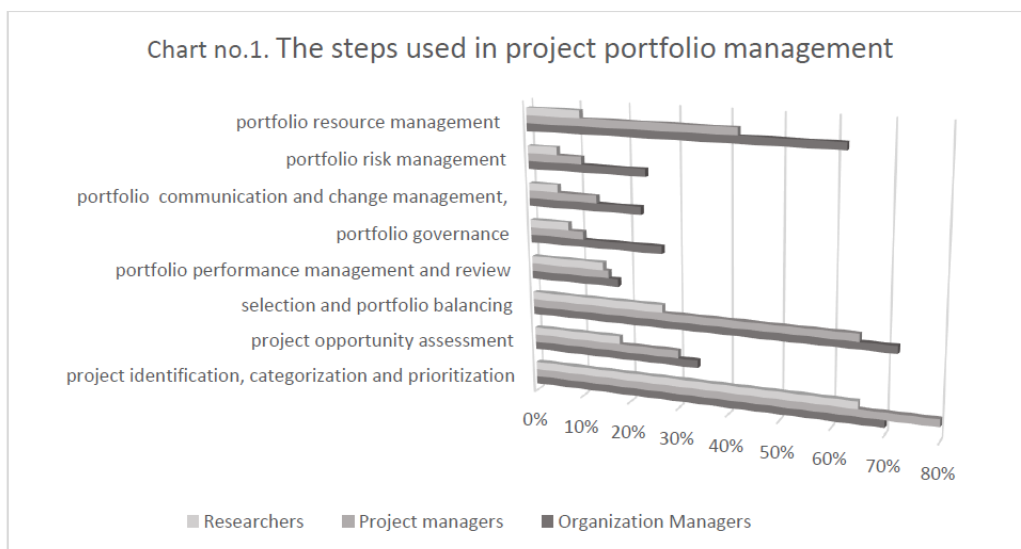
The steps used in project portfolio management are presented in chart no.1. on the steps used in managing project portfolios in the view of organizational managers, researchers and project managers.

The three categories of staff surveyed consider almost equally that the two stages of project portfolio management within the R & D organizations are:

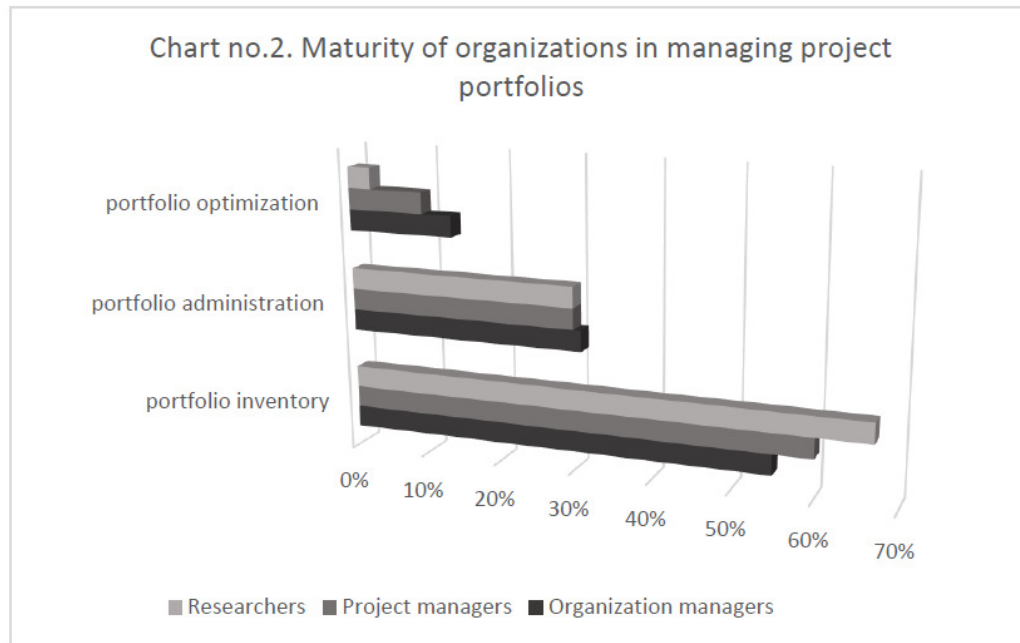
- project identification, categorization and prioritization;
- selection and portfolio balancing.

Researchers do not attach importance to resource management at project portfolio level because they are not involved in this stage. Unlike them, project managers attach great importance to this stage and have the same vision as the managers of the organizations in this regard.

Both organizational managers and project managers give less importance to the portfolio performance management and review, portfolio governance, project opportunity assessment and portfolio risk management stages. For project managers and for organizational organizations, it is surprising that they do not attach great importance to the portfolios performance stage and review for it is one of the key milestones in project portfolio management. Portfolio performance monitoring is one of the main benefits of organizational project management portfolio.



The following graph presents the responses of organizational managers, project managers and researchers involved in project teams on the maturity of organizations in project portfolio management. Subjects were questioned using De Reyck et al. (2005) approach to maturity levels of organizations in portfolio management. The model developed by De Reyck et al. (2005) was chosen because it is the easiest to address in the case of organizations active in the field of research and development in Romania. For the other models, maturity level assessment is difficult to achieve either due to lack of necessary information or because they are general maturity models and are not specific to research and development.



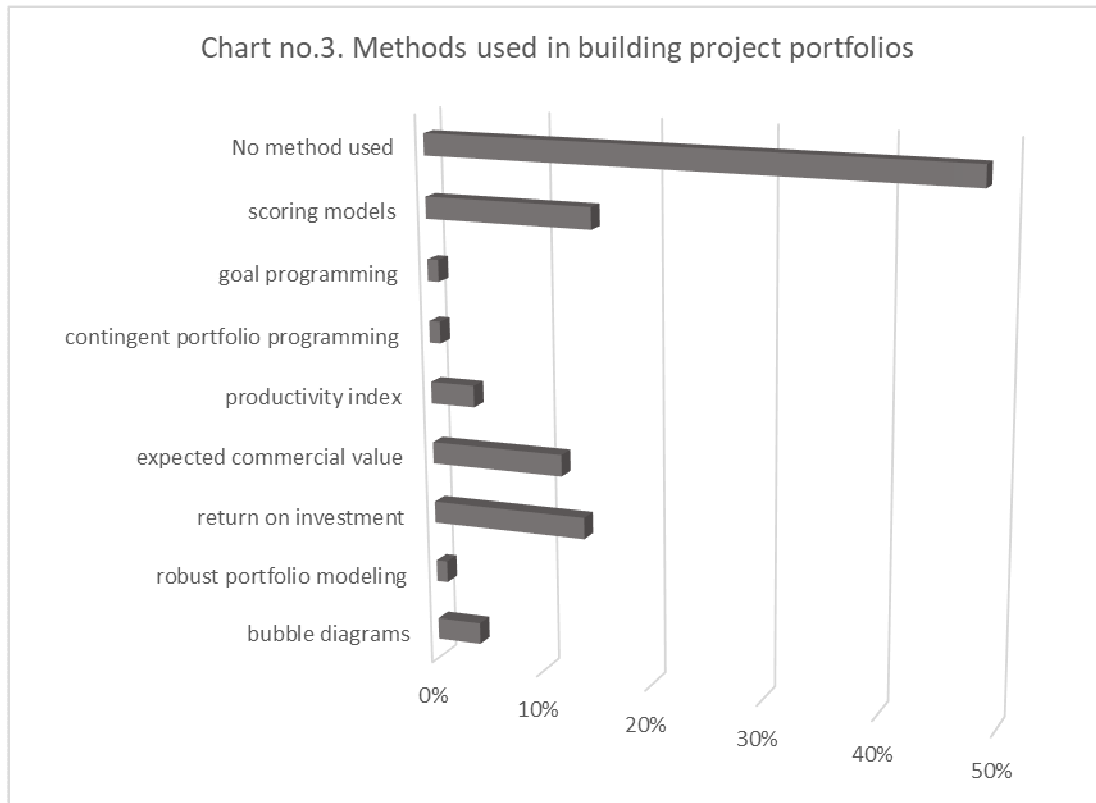
The questioned subjects had a similar view of the maturity of organizations in managing project portfolios. Everyone thinks their own organizations are in the portfolio inventory stage. However, organizational managers tend to be more optimistic about the level of maturity of R & D organizations in portfolio project management.

If the level of portfolio administration is also relatively equally represented in the opinions of the subjects surveyed regarding the level of portfolio optimization are radically different. The number of researchers who believe that their organizations have reached this level is much lower than the number of organizational managers who believe that their own organizations have such a high maturity level in managing project portfolios.

Project managers also share the vision of organizational managers to a lesser extent. The situation is explained by the fact that:

- within research and development organizations, researchers do not have access to information on the global situation at the portfolio or organization level
- researchers are focused on their own projects and only perceive the effects of portfolio management on their own activities;
- conflicts exist between project managers and organization managers about allocating resources at project portfolio level.

The next chart shows the situation of organizations in the sample regarding the use of tools and techniques applicable to portfolio project management.



Almost half of those questioned about the methods used to manage R & D projects portfolios have shown that no method of setting up the project portfolio at the organization level is used. The inclusion of projects in the portfolio is, in the opinion of 50% of the respondents, in an empirical way, without the application of a method mentioned in the questionnaire.

Of the methods used are very few methods or models that are more sophisticated from a mathematical point of view such as goal programming or robust portfolio modeling. Methods such as scoring models, expected commercial value and return of investments are more commonly used.

The most frequently used criteria used for project selection in project portfolios are the value of projects, the existence of the necessary resources, the complexity of the projects and the difficulty of carrying out the projects. Surprisingly, among the criteria mentioned, project profit is very rare. This is explained by the fact that most of the organizations surveyed are in the public domain and profit is not an important element in the appreciation of managers at the organization level. Also, their partners, private organizations, do not consider research projects as an important source of profit for their own organizations. The value of projects is the most important criterion in the selection of the project portfolio.

Another important result of the research is represented by the advantages offered by the project portfolio management for the organization and for the teams involved in the implementation of the projects. From the perspective of project managers within R & D organizations, the most important benefits of portfolio management are:

- the possibility of controlling the flow of projects within the organization;
- facilitating the allocation / reallocation of resources among projects within the organization;



- the use of economic criteria in the process of project selection and portfolio creation;
- eliminating some barriers in the communication process between project managers and other managers within the organization;
- removing sources of conflict between project managers during project deployment.

From the perspective of project managers and researchers involved in R & D projects, the management of project portfolios at the level of R & D organizations has three major advantages:

- faster access to organization resources;
- allows to know the evolution of projects and to adopt measures for those in difficulty;
- ensures the transfer of knowledge between ongoing projects.

This latter feature is essential for R & D organizations. Making projects within these organizations requires quick access to new research knowledge, methods and techniques that is facilitated by project portfolio management at the organization level.

## Conclusions

The results of the research presented in this article confine the fact that the project portfolios management within the Romanian research and development organizations is still at an early stage. The three categories of subjects surveyed consider it to the same extent that the main stages of portfolio project management are: project identification, categorization and prioritization; selection and portfolio balancing.

Nearly half of the surveyed subjects are unaware of the methods used to manage project portfolios within the R & D organizations they work in. The most important criterion used to select projects within R & D organizations in Romania is their value as organizations have to provide a portfolio of projects to ensure their short and medium-term survival. From this point of view, Romanian R & D organizations are less oriented towards a strategic approach to building a portfolio of projects and more operationally oriented.

Both the managers of the organizations and the staff involved in the projects consider that project portfolio management has countless advantages for both the organization's management and the project management itself. The most important advantage from the perspective of R & D managers is the possibility of controlling the flow of projects within the organization and the advantage most often mentioned by project managers and researchers was to have faster access to the organization's resources.

## References

- Archer N. and Ghasemzadeh F. (1999). An integrated framework for project portfolio selection. *International Journal of Project Management*, Vol. 17, pp. 207–216.
- De Reyck, B., Grushka-Cockayne, Y., Martin Lockett, M., Calderini, S. R, Moura, M. and Sloper, A. (2005). The Impact of Project Portfolio Management on Information Technology Projects, *International Journal of Project Management* 23(7), 524– 537.
- Dye L., and Pennypacker. J. (1999). Project Portfolio Management. Selecting and Prioritizing Projects for Competitive Advantage. Center for Business Practices, USA.
- Jeffery, M., Leliveld, I. (2004). Best practices in IT portfolio management, *MIT Sloan Management Review* 45(3), 40–49.

Simion, C.-P.; Nicolescu, C.; Cioc, M.(2018). Selection of Energy Efficiency Projects for Dwelling Stock to Achieve Optimal Project Portfolio at the Regional Level by Applying LCC. An Analysis Based on Three Scenarios in the South-Muntenia Region of Romania. *Energies*, 11, 1586.

Young M. and Conboy K., (2013). Contemporary project portfolio management: Reflections on the development of an Australian Competency Standard for Project Portfolio Management. *International Journal of Project Management*, 31, 1089–1100.

Wideman M (2004). A Management Framework for Project, Program and Portfolio Integration. Chapter 8-A: Model with portfolio potential. Trafford Publishing, Victoria, BC, Canada.

Project Management Institute (2008). A Guide To The Project Management Body Of Knowledge (PMBOK Guides), 4<sup>th</sup>ed. Project Management Institute, Newtown Square, PA.

## **The Place and Role of Indirect Taxes in Romania and the E.U**

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### **Abstract**

The paper aims to highlight the importance of indirect taxes in certain EU countries and the impact on the income of the population in the balance with taxes collected at state budgets, Indirect taxes are perceived by all those who consume goods of the kind imposed or benefit from certain services, regardless of their income, wealth or personal situation, The importance of the theme lies in the way in which indirect taxes are levied on the fiscal policy adopted and the consolidation of the tax system, but also in the development stage of a country that is dependent, in a nation marked by the history of its own tax system, and the way it is designed and functioning, At the level of the European Union (EU), tax policy is subordinated to the Treaty establishing the European Community which provides for the elimination of customs duties between Member States and any other measures having similar effect and to ensure free competition within the common market, in particular with regard to indirect taxes (value added tax and excise duties), The most important long-term objective is to eliminate differences in rates and methods of indirect taxation, to harmonize indirect taxation legislation, including tax bases and tax rates, The paper presents a succinct comparison of Romania's indirect taxes with those registered within the European Union.

**Keywords:** Indirect Taxes, Value Added Tax, Tax Policy, Excise Taxes, Taxes

### **Material and Method**

The research methodology used in the paper considered the bibliographic study of the internal and international literature; collection of concrete information within the area under investigation; ordering, processing and presenting results in synthetic form; Making a tax questionnaire; analysis and interpretation of results, formulation of conclusions and recommendations, The data required for our analysis have been taken from the EU website<sup>1</sup> in line with the EU standard tax classification,

### **Introduction**

In order to obtain the financial resources needed to cover the public expenditures, the indirect taxes, along with the direct ones, were established.

From the fiscal point of view, public spending was financed by taxing consumption (indirect taxes), taxation of income both on the salary and the profits of companies, This tax structure in Europe translates the center of gravity of the tax burden on households that consume a lot, earn important revenues and have important properties.

Indirect taxes have been introduced in contemporary states since the third decade of the 20th century, Among the data and subsequent aspects of the modern evolution of indirect taxes, an important moment was the introduction in France of "fractional payments" and value added tax (VAT) in France in 1948, According to this procedure, each producer paid the sales tax or to the supply of his goods reduced by the tax he has borne through the price of the goods purchased for the purpose of producing his goods, Due to the positive effects of the introduction of VAT in France, the concept

and procedure of that tax were adopted in 1960 by the European Economic Community Two directives adopted in 1967 (Nos, 67/227 and 67/228) provided that those countries which were not already applying VAT would be obliged to introduce it within a certain timeframe, and the new members of the European Community were asked to change their system accordingly Including issues of avoiding double taxation, the European Community's tax decisions have almost exclusively focused on indirect taxation: customs duties, on the one hand, VAT and excise duties, on the other, Concern on indirect taxation is still evident from the first articles of the Treaty establishing the European Community (Article 3), since it has been evident from the outset the indirect taxation burden on the functioning of the EU internal market.

Value Added Tax called VAT Simplified is the most significant indirect tax, which has a rather substantial contribution to state budgets.

Value-added tax is a relatively recent tax, but given its rapid expansion - being used in more than 120 countries - it can be considered the most-developed tax in the 21st century.

VAT is defined as "that indirect tax due to the state budget, which applies at each stage of the economic (manufacturing, distribution) circuit of a finished product, to the added value achieved in each stage by all contributors to produce and sell that product until it reaches the final consumer, The main tax change was the general application of value added tax, which replaced a lot of indirect taxes levied by Member States, The Member States reached an agreement in 1977 on a common basis for calculating VAT, although it was the subject of many exceptions, The agreement was, however, sufficient to enable the Community to collect part of its own resources, the maximum VAT rate being 1%, increased from 1986 to 1,4%.

The main legislative regulations in the field of indirect taxation are:

- In the value added tax:

Sixth Council Directive no, 77/388 / EEC of 17 May 1977 on the harmonization of the laws of the Member States relating to turnover taxes - Common System of VAT.

Thirteenth Council Directive no, 86/560 / EEC of 17 November 1986 on the harmonization of the laws of the Member States relating to turnover taxes - the method of repayment of VAT to taxable persons outside the territory of the European Community.

Indirect taxes are more lenient, being included in the sales price of products (service tariffs), and buyers' dissatisfaction is directed against the economic operators who practice the increased prices and not the state, which ordered the increase in taxes, which led to the price: the buyer does not know how much of the price paid for the product (service) returns to the economic agent and how much it reaches the public treasury.

A strong impetus for the harmonization of indirect taxes was given by the adoption in 1985 of a concrete term for the creation of the internal market of the European Community in the White Section, elaborated by Lord Cockfield and presented in June 1985, and stated with determination that these taxes should be close "in order to eliminate any controls at inter-communal borders, In July 1987, the European Commission submitted its proposals, which it considered should be implemented by the Member States by 31 December 1992 at the latest.

The system of indirect taxes includes various levies. It is common practice: A, consumption taxes divided into: Product consumption taxes (excise duties); General sales taxes (turnover) grouped into: cumulative tax, single tax, value added tax; B, tax monopolies divided into: Tax monopolies on production; sales tax monopolies; Tax monopolies on production and sales; C, Customs duties which may be: Customs duties on imports; Customs export duties; Customs duties for transit; D, traditional taxes that can be: Stamp duties; Registration fees; Taxes on the circulation of wealth; Parafiscal charges and other taxes, (Herbei M., 2005)

## Results and Discussions

As a rule, the contribution of indirect taxes to the formation of state tax revenues is reduceder than that of direct taxes, The share of indirect taxes in total tax receipts is somewhat different from one country to another, In Romania, where economic development is very weak, the indirect tax rate exceeds 40 percent,

At EU level there are quite a lot of differences between Member States in tax rates, from 48,9% in Denmark to 27% in Bulgaria in 2015, highlighting the significant differences between EU Member States in in terms of fiscal policy, Above the EU average of 36,1% Denmark, Sweden, Belgium, France, Austria, Italy, Finland, Germany, the Netherlands, Slovenia, the United Kingdom, Hungary and Luxembourg are in decreasing order, Bereduced the EU average, countries such as Cyprus, Portugal, Czech Republic, Malta, Estonia, Spain, Greece, Poland, Ireland, Slovakia, Romania, Latvia, Lithuania and Bulgaria are also in descending order,

**Table 1a: The structure of tax revenues in the Member States of the European Union at the level of 2015**

Member States	Indirect taxes	Direct taxes	Contributions
Belgium	29,3	38,9	31,81
Bulgaria	53,5	19,4	27,1
Czech Republic	36,5	21,3	42,3
Denmark	35,2	65,8	0,1
Germany	28,5	32,4	39,2
Estonia	43,2	23,4	33,4
Ireland	37,3	46,3	16,4
Greece	44,5	26,1	29,4
Spain	35,5	31,7	34,2
France	35,0	28,7	36,9
Croatia	52,4	15,9	31,7
Italiy	35,5	34,4	30,1
Cyprus	45,1	29,5	25,4
Latvia	44,4	27,0	28,6
Lithuania	41,4	18,8	40,0
Luxembourg	32,3	38,9	28,8
Hungary	48,4	18,0	33,5
Malta	40,7	42,3	17,0

Source: [www.ec.europa.eu](http://www.ec.europa.eu)

**Table 1b: The structure of tax revenues in the Member States of the European Union at the level of 2015**

State membre	Impozite indirecte	Impozite directe	Contributii
Netherlands	31,0	31,1	37,7
Austria	33,4	32,9	33,6
Poland	40,1	21,4	38,9
Portugal	42,4	31,4	26,1
Romania	47,6	23,5	28,8
Slovenia	40,7	19,8	39,5
Slovakia	34,1	23,0	42,9
Finland	32,5	38,5	29,0
Sweden	51,1	42,5	6,4
United Kingdom	39,0	42,6	18,4
EU 28	35,14	34,2	30,9

Source: [www.ec.europa.eu](http://www.ec.europa.eu)

At Community level, Community legislation on indirect taxes and their harmonization are based on the provisions of the EC Treaty in the Official Journal of the European Communities, By 2015, the average rate of indirect taxes in total tax revenue in the EU28 was 35,14%, Over the average, the folreducing countries were: Bulgaria (53,5%), Czech Republic (36,5%), Denmark (35,2%), Estonia (43,2%), Greece Croatia (52,4% (45,1%), Latvia (44,4%), Lithuania (41,4%), Hungary (48,4% ), Poland (40,1%) Portugal (42,4%), Romania (47,6%), Slovenia (40,7%), Sweden (51,1%) and the United Kingdom (39,0%), Indirect taxes are paid to the budget as a rule by industry, traders, etc, but are borne by consumers as it is included in the sale price of the goods.

Indirect Tax in 2017 provides a high-level overview of the developments we consider significant, but it is not exhaustive. Indirect taxation is constantly changing, whether as a result of government instigation or amendment for reducing successful challenges. There may be changes that affect your business that we have not discussed in this publication. However, details about global and country-specific developments can be found at [ey.com/indirect-tax](http://ey.com/indirect-tax). In addition, information about indirect tax developments and obligations can be found in our global tax alerts library ([ey.com/tax-alerts](http://ey.com/tax-alerts)); the regularly updated electronic VAT Assurance (eVA) information service; the Worldwide VAT, GST and Sales Tax Guide; Tax Insights ([taxinsights.ey.com](http://taxinsights.ey.com)); and our periodic Indirect Tax Briefing publication.

Despite being a harmonized EU tax, the extensive regulatory leeway the Member States enjoy has given rise to notable heterogeneity both in the marginal rates applied and in the breadth of the base subject to VAT. As regards standard VAT rates, prior to the crisis they ranged from 25% in Denmark and Sweden to 15% in Luxembourg. In relation to the base, some Member States apply reduced super-reduced rates – substantially below the standard rate – to a wide range of goods in the consumer basket. This divergence in rates and in the width of the VAT bases has given rise to notable differences in the VAT revenue-raising capacity of the EU countries, with levels of over 9% of GDP in Croatia, Denmark, Sweden, Bulgaria, Hungary and Finland compared with 5.5% in Spain. In Spain, this reduction in the effective rate was magnified to 33%, owing to the application of reduced rates that affected more than 40% of consumer spending in 2014 and with 12% of additional spending that was exempt or to which VAT was not applied. The combination of these two effects means that more than 50% of household spending in Spain was not subject to the standard VAT rate, a percentage only exceeded by Greece, Ireland and Portugal. In Spain's case, the definition of the base entails a difference in the effective as opposed to the standard VAT rate of 5.9 pp, which breaks down into 2.2 pp due to food processing; 1.4 pp to hotels, restaurants and package holidays; 1 pp to

healthcare, education and culture; 0.7 pp to housing; 0.2 pp to transport and 0.3 pp to other exemptions or reduced rates.

**Table 2: Total weight of indirect taxes on GDP between 2000-2017**

The country	2000	2002	2004	2006	2008	2010	2014	2016	2017	Ranking	Income 2017
Belgium	13,6	13,2	13,4	13,6	13,1	13,3	13,4	13,4	13,6	17	50.999
Bulgaria	13,8	12,6	16,3	17,2	17,8	15,1	15,4	15,4	15,6	6	6.218
Czech Republic	10,8	10,3	11,3	10,8	10,9	11,4	12,3	12,3	12,5	21	19.032
Denmark	17,2	17,5	17,6	18,1	17,2	16,8	16,9	16,9	17,2	4	41.959
Germany	11,3	11,0	10,8	10,8	11,2	11,3	11,4	11,4	11,6	24	309.268
Estonia	12,3	12,5	12,3	13,5	12,3	14,2	14,2	14,2	14,4	12	2.512
Ireland	13,5	12,4	13,2	14,1	12,5	11,6	11,2	11,2	11,4	26	18.671
Greece	14,2	13,3	12,0	12,7	12,7	12,5	12,7	12,7	12,9	20	24.975
Spain	12,0	11,6	12,2	12,8	10,1	10,7	10,7	10,7	10,9	27	111.913
France	15,8	15,4	15,6	15,6	15,2	15,1	15,7	15,7	15,9	5	323.763
Croatia	:	19,8	18,8	18,6	18,0	18,0	18,2	18,2	18,5	3	8.091
Italy	15,1	14,6	14,3	15,0	14,0	14,3	15,2	15,2	15,4	7	241.739
Cyprus	12,2	12,9	16,4	17,2	17,9	15,6	15,0	15,0	15,2	8	2.707
Latvia	12,4	11,3	11,9	13,2	11,2	11,5	11,8	11,8	12,0	23	2.665
Lithuania	12,6	12,4	11,2	11,4	11,9	12,0	11,4	11,4	11,6	25	3.814
Luxembourg	14,0	13,0	13,5	12,8	12,6	12,4	13,0	13,0	13,2	19	5.647
Hungary	16,6	15,0	16,3	15,3	16,0	17,3	18,5	18,5	18,8	2	18.165
Malta	12,0	12,6	14,0	15,0	14,4	13,5	13,7	13,7	13,9	14	953.201
Netherlands	12,5	12,7	12,9	13,1	12,7	12,5	11,9	11,9	12,1	22	72.131
Austria	15,2	15,3	15,0	14,3	14,4	14,8	14,8	14,8	15,0	9	46.269
Poland	12,6	13,2	13,1	14,5	14,4	13,8	13,1	13,1	13,3	18	50.791
Portugal	13,5	14,0	13,9	15,1	14,3	13,6	13,9	13,9	14,1	13	23.279
Romania	12,2	11,6	11,7	12,8	12,0	12,1	13,4	13,4	13,6	16	17.878
Slovenia	15,7	15,8	15,8	15,2	14,4	14,3	14,6	14,6	14,8	11	5.231
Slovakia	12,5	11,4	12,3	11,5	10,8	10,4	10,2	10,2	10,4	28	7.369
Finland	13,9	13,7	14,0	13,9	13,1	13,6	14,7	14,7	14,9	10	28.680
Sweden	16,4	16,6	16,5	16,8	18,1	18,0	18,7	18,7	19,0	1	77.506

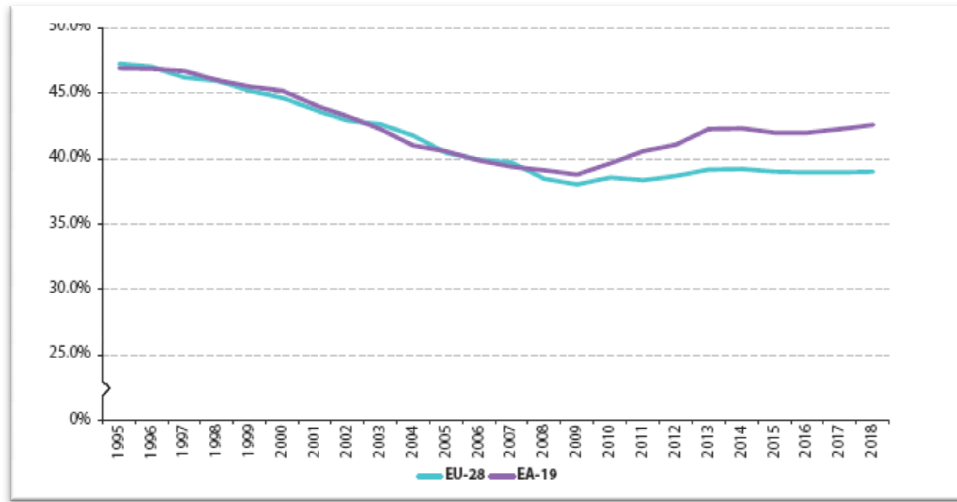
United Kingdom	13,7	13,3	13,1	12,7	12,2	13,0	13,7	13,7	13,9	15	267.542
EU 28								0,0	0,0	Total	1.8839,10
Average	:	13,4	13,3	13,5	13,1	13,2	13,6	13,6	13,8		
Arithmetic	:	13,5	13,9	14,2	13,8	13,7	13,9	13,9	14,1		
EA-18										Total	1.329,362
Average	13,5	13,2	13,2	13,4	12,9	12,9	13,3	13,3	13,5		
Arithmetic	13,4	13,1	13,5	13,9	13,2	13,1	13,2	13,2	13,4		

Source: Processing based on data provided by Eurostat

As a ratio of GDP, in 2017 tax revenue (including net social contributions) accounted for 40,0 % of GDP in the European Union (EU-28) and 41,3 % of GDP in the euro area (EA-19), Compared with 2015, slight increases in the ratio are observed for the EU-28 and the euro area. The most competitive countries in the European Union and those in the first place in terms of indirect tax revenues registered in 2014 were Sweden, Hungary and Croatia, Between 2000 and 2017 the share of indirect taxes on GDP had both increasing and decreasing trends; the share was not less than 10% but did not exceed 20%, Differences over the years have been reduced at -0,1% for the United Kingdom, but also high 29%, as is the case for Cyprus, For EU-28 between 2007-2009, the share of taxes had a trend (13,4%, 13,1%, 12,9%) and a sharp increase of 13,2% in 2010, On the other hand, EA-18 did not see any major change, and the differences between 2000-2017 had a value of -0,2%.

The contribution in terms of revenue of excise duties in the Spanish tax system has been systematically below that observed in the EU countries: 2.2% of GDP in 2012 against 3.2% of GDP on average in the EU27. This lesser tax burden affects excise duties as a whole, but it is particularly significant in the case of tobacco and alcohol, with revenue-raising capacity of 0.9% of GDP in 2012 compared with 1.2% on average in the EU27. Regarding tobacco taxes, the data provided by the European Commission (2013) show, however, that the weight accounted for by taxes relative to the weighted average price of tobacco in Spain is now aligned with the EU27 average, following the successive increases made in recent years. EU-28 revenues from labor taxation amounted to 19.3 % of GDP in 2016 compared with 19.1 % in 2015 with revenue paid by employers and by employees both recording increases. The share of labor tax revenues in GDP rose sharply between 2007 and 2009 (from 18.4 % to 19.2 %), and since then has fluctuated in a range between 19 % and 19.6 %. However, the share of labor taxation in total EU-28 tax revenues has fallen since 2010 (from 51.2 % to 49.8 % in 2016). In 2016 more Member states (17) recorded higher labor tax revenues in relation to GDP than the previous year than lower revenues (11), with the largest increases observed in Sweden (+0.9 percentage points) and Lithuania (+0.7 p.p.), and the sharpest falls in Belgium (-1 p.p.) and Austria (-0.9 p.p.).





**Figure 1: Development of top personal income tax rate, 1995-2018**

The top personal income tax (PIT) rate was 39 % at the start of 2018 for the EU-28 (simple average), the same as in 2017 (Figure 1). It had fallen sharply from 47.2 % in 1995 to 38 % in 2009. Since then the average top rate increased to around the 39 % level, but has not moved substantially since 2013. The average rate for the euro area increased to 42.6 % in 2018, from 42.3 % in 2017. Latvia and France raised their top rates (Table 2) – by 8.4 % and 1.3 % respectively – while Portugal, Romania and Finland all dropped their rates (by 3.2, 6.0 and 0.3 percentage points respectively).

The weight in GDP of revenue arising from taxes on capital is higher than the EU27 average, owing to higher taxes on wealth, while the taxes on corporate income and on capital are similar. Generally, the implied rates on capital are slightly higher than those of Spain’s Community counterparts. In the specific case of corporate income tax, the effective theoretical rates (average and marginal) are also higher. Further, revenue arising from taxes on property is higher, in particular that derived from asset transactions.

**Table 3: Structure of indirect taxes in the period 2000 – 2017**

Indirect taxes	2000	2002	2004	2006	2008	2010	2013	2014	2016	2017
% din PIB										
VAT	6,5	7,1	6,7	7,9	7,9	7,6	8,7	8,5	8,9	9,1
Excise duties and consumption taxes	3,0	2,6	3,6	3,2	2,7	3,3	3,5	3,5	3,6	3,5

Source: Processing based on data provided by Eurostat

Starting 2010, the standard VAT rate is 24%. A reduced rate of 9% applies to goods such as pharmaceuticals, medical equipment for the handicapped, books, newspapers, school textbooks, access to cultural and accommodation services and assimilated services, and from 1 September 2015 to bread, bakery products, bakery flour, wheat and rye. Non-deductible VAT exemptions apply inter alia to medical treatments, some educational and cultural activities, public postal services, financial transactions, and insurance and reinsurance,

Romania applies harmonized excise duties on alcohol, tobacco, energy products and electricity. From 1 September 2015, the UN-harmonized excise duty also applies to the purchase and sale of luxury

goods such as jewelry, machines with a cylinder capacity of more than 3 000 cm<sup>3</sup>, yachts and other ships, sporting guns and clothing natural fur,

Romania relies primarily on indirect taxation, income tax on consumption is also slightly above the EU average. Following an upward trend, the Consumer Tax Impact Ratio was 20,9% in 2014, 1,1 percentage points above the EU-28 average (19,9%),

Revenues collected from excise duties amounted to 21,1 billion RON (3,36% of GDP) in 2015, indicating a reduction than expected earnings, Compared with the previous year, the revenue from the collection of excise duties registered a level of 0,88 billion RON (+ 3,36%), reflecting increases in the level of excise duty on certain products (petrol, diesel, cigarettes, alcohol and luxury), It is worth mentioning that the increase in excise duties on luxury products and alcohol was a measure introduced to offset the effect of reducing the VAT rate on bread, flour and wheat on budget receipts, In Romania, the standard rate of value added tax (VAT) does not change in 2018, remaining at 19% the same as in 2017, Please note that tax legislation provides for reduced VAT rates for certain supplies of goods and services.

Directive 92/77/EEC provided for a minimum standard rate of 15%, to be reviewed every two years. The Council subsequently extended the period of validity of the minimum rate until the end of 2017. In addition, Member States could apply one or two reduced rates of a minimum of 5% to certain goods and services. Member States were also able to continue applying rates below the minimum (including zero) on goods and services if such rates were already in place before 1 January 1991. In 2009, Directive 2009/47/EC concerning reduced rates of value added tax for certain labour-intensive local services was adopted. In 2016, the Commission adopted a proposal for a Council directive to apply the same VAT rates to electronically supplied publications as Member States currently apply to printed publications. Parliament approved the Commission's proposal in June 2017. In January 2018, the Commission adopted a proposal on the reform of VAT rates (COM(2018) 0020). The proposal aims to increase flexibility by allowing Member States to benefit from reduced and zero rates that exist in other Member States. [<http://www.europarl.europa.eu/factsheets/en/sheet/81/indirect-taxation>].

**Table 4: VAT rates in the countries of the European Union**

	Rată TVA	2004	2006	2010	2013	2014	2015	2016	2017
<b>Belgium</b>	Standard	21	21	21	21	21	21	21	21
	Reduced	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
<b>Bulgaria</b>	Standard	20	20	20	20	20	20	20	20
	Reduced	-	-	7	9	9	9	9	9
<b>Czech Republic</b>	Standard	19	19	20	20	20	21	21	21
	Reduced	5	5	10	10	14	15	15	15
<b>Denmark</b>	Standard	25	25	25	25	25	25	25	25
	Reduced	-	-	-	-	-	-	-	-
<b>Germany</b>	Standard	16	16	19	19	19	19	19	19
	Reduced	7	7	7	7	7	7	7	7
<b>Estonia</b>	Standard	18	18	20	20	20	20	20	20
	Reduced	5	5	9	9	9	9	9	9
<b>Ireland</b>	Standard	21	21	21	21	23	23	23	23
	Reduced	13,5	13,5	13,5	13,5	13,5	13,5	13,5	13,5
<b>Greece</b>	Standard	18	19	23	23	23	23	23	23
	Reduced	8	9	5,5/11	6,5/13	6,5/13	6,5/13	6,5/13	6,5/13
<b>Spain</b>	Standard	16	16	18	18	18	21	21	21
	Reduced	7	7	8	8	8	10	10	10

<b>France</b>	Standard	19,6	19,6	19,6	19,6	19,6	19,6	20,0	20,0
	Reduced	5,5	5,5	5,5	5,5	5,5/7	5,5/7	5,5/10	5,5/10
<b>Croatia</b>	Standard	22	22	22	22	23	23	23	23
	Reduced		10	10	10	10	5/10	5/13	5/13
<b>Italy</b>	Standard	20	20	20	20	21	21	22	22
	Reduced	10	10	10	10	10	10	1	1
<b>Cyprus</b>	Standard	15	15	15	15	17	18	19	19
	Reduced	5	5/8	5/8	5/8	5/8	5/8	5/9	5/9
<b>Latvia</b>	Standard	18	18	21	22	22	21	21	21
	Reduced	5	5	10	12	12	12	12	12
<b>Lithuania</b>	Standard	18	18	21	21	21	21	21	21
	Reduced	5/9	5/9	5/9	5/9	5/9	5/9	5/9	5/9
<b>Luxemburg</b>	Standard	15	15	15	15	15	15	15	15
	Reduced	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
<b>Hungary</b>	Standard	25	20	25	25	27	27	27	27
	Reduced	5/15	5/15	5/18	5/18	5/18	5/18	5/18	5/18
<b>Malta</b>	Standard	18	18	18	18	18	18	18	18
	Reduced	5	5	5	5/7	5/7	5/7	5/7	5/7
<b>Netherlands</b>	Standard	19	19	19	19	19	21	21	21
	Reduced	6	6	6	6	6	6	6	6
<b>Austria</b>	Standard	20	20	20	20	20	20	20	20
	Reduced	10	10	10	10	10	10	10	10
<b>Poland</b>	Standard	22	22	22	23	23	23	23	23
	Reduced	7	7	7	5/8	5/8	5/8	5/8	5/8
<b>Portugal</b>	Standard	19	21	21	23	23	23	23	23
	Reduced	5/12	5/12	6/13	6/13	6/13	6/13	6/13	6/13
<b>Romania</b>	Standard	19	19	24	24	24	24	20	19
	Reduced	9	9	5/9	5/9	5/9	5/9	5/9	5/9
<b>Slovenia</b>	Standard	20	20	20	20	20	22	22	22
	Reduced	8,5	8,5	8,5	8,5	8,5	9,5	9,5	9,5
<b>Slovakia</b>	Standard	19	19	19	20	20	20	20	20
	Reduced	-	-	6/10	10	10	10	10	10
<b>Finland</b>	Standard	22	22	23	23	23	24	24	24
	Reduced	8/17	8/17	9/13	9/13	9/13	10/14	10/14	10/14
<b>Sweden</b>	Standard	25	25	25	25	25	25	25	25
	Reduced	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
<b>United Kingdom</b>	Standard	17,5	17,5	17,5	20,0	20,0	20,0	20,0	20,0
	Reduced	5	5	5	5	5	5	5	5
<b>EU-28</b>	Standard	19,5	19,5	20,5	20,8	21,1	21,5	21,5	19,9
<b>EA-18</b>	Standard	18,6	18,8	19,6	19,8	20,1	20,5	20,7	19,9

Source: Processing based on data provided by Eurostat

The EU sets the broad VAT rules through European VAT Directives, and has set the minimum standard VAT rate at 15%. The 28 member states are otherwise free to set their standard VAT rates. The EU also permits a maximum of two reduced rates, the reduced of which must be 5% or above. Some countries have variations on this, including a third, reduced VAT rate, which they had in place prior to their accession to the EU. Member states have now agreed that they will be free to set the reduced rates on most goods and services, including: e-books; domestic fuel; clothing; and female hygiene products.

The value added tax was introduced in Romania on July 1, 1993 by Government Ordinance no. 3/1992, Standard rate was set at 18%, The zero rate was foreseen for export operations by economic agents based in Romania, The 9% reduced rate for certain foodstuffs and pharmaceuticals of strict necessity was introduced on 1 January 1995, From 1 February 1998, the standard quota was increased to 22% and the reduced rate to 11%, In 2000, the standard quota is 19% and the reduced rate is elected, Elimination of the reduced rate affects the income of the poor, for whom primary consumer goods and medicines have a high share of total consumption,

The VAT proposal recognizes limits on the medium-term revenue-raising potential of other major tax instruments, given recent increases in those categories. An appropriate balance is required. VAT is an efficient, certain source of revenue provided that its design is kept simple. Increasing the VAT rate by one percentage point is estimated to have the least detrimental effects on economic growth and employment over the medium term.

In Austria, the standard rate is 20 %. There is a reduced rate at 10 % that among other supplies apply to medicine and books. There is a reduced rate at 13 % that among other supplies apply to accommodation in hotels and domestic flights. There exist several exemptions (0%) that e.g. include medical treatment in the area of human medicine and the export of goods. [<https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/indirect-tax-rates-table.html>].

In Netherlands, the standard rate is 21%. There is a reduced rate at 6% that among other supplies apply to foods, drinks (excluding alcoholic beverages), passenger transport and newspapers and magazines. There is a zero rate that among other supplies apply to exports, intra-Community supplies and services regarding goods not yet imported and supplies of seagoing vessels. There are exempt supplies that include certain financial services, insurance services, education and health and welfare to mention a few.

In Germany the standard rate is 19%. There is a reduced rate at 7% that among other supplies apply to food, books/newspapers, short term accommodation including certain connected services and short distance passenger transport. There is a zero rate that among other supplies apply to exports, intra-Community supplies and certain transactions involving ships and aircrafts. Special rates (5.5% and 10.7%) apply under the farmers flat-rate scheme. There are exempt supplies that include certain financial and insurance services, supplies of land, health, welfare and education to mention a few.

After a series of changes, the following reduced tax rates are now in place: The standard rate applies to the tax base for taxable transactions that are not tax-exempt or not subject to reduced rates and its level is: (a) 20% as from 1 January 2016 and until 31 December 2016; (b) 19% as from 1 January 2017.

The reduced rate of 9% applies to the taxable base for the following services and / or supplies of goods (delivery of the following goods: food, including beverages, except alcoholic beverages, intended for human and animal consumption, livestock and live birds of domestic species, seeds, plants and ingredients used in the preparation of foodstuffs, products used to supplement or replace food, The CN codes corresponding to these goods are established by methodological rules.

The 5% reduced rate applies to the tax base for the following deliveries of goods and services (school textbooks, books, newspapers and magazines, except for those exclusively or mainly for advertising).

The following table shows quarterly earnings over a 5-year period starting in 2010.

**Table5: VAT receipts, analysis period 2010-2017**

Romania	2010	2011	2012	2013	2014	2015	2016	2017	(+/-%) 2017 compare with 2010
Q1	1755,9	2387,9	2350,8	2657,5	2511,7	3063,2	2514,9	3067,1	+74,7
Q2	2142,4	2777,2	2766,5	2889,5	2903,5	3191,4	2907,2	3195,4	+49,2
Q3	2738,6	2879,2	2965,2	3115,2	3054	3152,7	3057,8	3156,7	+15,3
Q4	2832,3	3353,3	3111,4	3246,8	3186,3	3200	3190,3	3204,0	+13,1

Source: Eurostat, expressed in millions of Euro,

It is noted that the maximum recorded is in 2011, in the last quarter, with a value of 3353,3 million, VAT at the EU level Known worldwide, initially adopted in France, this tax has expanded to several countries in Europe, Latin America, Africa, etc. The level and structure of VAT rates vary widely from one country to another. All countries practice at least two alreducedances, sometimes 3: a standard rate, and two reduced.

## Conclusions

The European Union is considered to be a high tax area. The levels of taxing in the European Union date back to the last third of the 20th century. Thus, since that period, the role of the public sector has expanded, which has led to a strong increase in the share of taxes in the 1970s and, to a lesser extent, in the 1980s and early 1990s.

At first glance, Romania has a competitive fiscal system in the region, a flat tax rate of 16% and a standard rate of 19% VAT, suggesting a favorable climate for existing companies or new investors, Nevertheless, the Romanian tax system loses competitiveness, given the frequency of legislative changes, unclear, contradictory or insufficiently regulated areas and the inefficiency of the administrative and judicial apparatus.

The tax system over the last ten years has undergone numerous, unpredictable and sometimes controversial changes that have influenced the business environment, neutralizing financial forecasts or business plans. The lack of sophistication of the regulatory tax framework in some key areas can not meet the complexity of today's business in European and international context. This often translates into an uncertainty about the tax impact on transactions.

The most competitive countries in the European Union and those in the first place in terms of indirect tax revenues registered in 2014 were Sweden, Hungary and Croatia.

Another aspect envisaged in Chapter Two is that the increase in VAT rates continued after 2010, albeit at a reduceder pace. Four countries have raised their standard rates in 2014. In Hungary, where the VAT rate was 25%, in force since 2008, it rose even more by two points in 2014. In 2015, nine countries increased VAT rates, With the exception of the Nordic countries, many of the Member States that apply above average VAT rates in 2015 are those facing financial difficulties and strong pressure for consolidation,

The efficiency of VAT taxation in Romania in the year 2015, 56%, is significantly reduceder than that recorded in Estonia (83%), Slovenia (71%) and Czech Republic (71%), Romania collected 8,47% of GDP from VAT revenues in 2015, compared with 8,45% of GDP in Estonia, 8,64% in Slovenia and 9,22% in Bulgaria, whereas the standard VAT rate in these countries it was 20% (compared to 24% in Romania). At 2015, reduceder taxing efficiency as defined above was noticeable in Slovakia, Latvia and Poland.

From the studies conducted in the third chapter, we mention that Romania has a VAT rate in 2015 that increased to 24% as of July 1, 2010 when it was 19% and the standalone quota was 9%,

However, the situation in our country is not very favorable because in Romania the VAT rate is one of the highest quotas in the EU. Given that our country's financial situation cannot be compared to that of other countries: Sweden has a fairly high VAT rate, but it also has considerable incomes, and France and Germany are in the position of Romania, o by July 1, 2010, the VAT rate being a positive one. A positive side highlights that in Romania, the tobacco industry is the second largest taxpayer to the state budget, according to oil companies, The next year, a new excise tax on electronic cigarettes is to take effect in Romania, This new excise tax is already in force in Italy since the beginning of the year,

## Bibliography

1. Basno, C., Dardac, N., European Monetary Banking Integration, Didactic and Pedagogical Ed., Bucharest, 2001;
2. Cățineanu, .F, Donath Liliana, Seulean Victoria - Public Finances, Ed. Mirton, Timișoara 1997
3. Costache A., Taxation, "Spiru Haret" University, Bucharest, 2007;
4. Daianu, D., Vrânceanu, R., Romania and the European Union: inflated, balance of payments, growth
5. Donath Liliana - Public Finances and Tax Management Elements, Ed. Marineasa, Timisoara, 2004
6. Florian Bercea - Public Finances, Didactic and Pedagogical Publishing House, Bucharest, 2002
7. González, M., Genaro, D., La ampliación de UE: luces y sombras, Ed,FundaciónCaja Rural de Granada, Granada, 2005;
8. Ignat, I., From the Common Market to the Single Currency, Ed. Economică, Bucharest, 2002;
9. Laciță N.,G, Cioponea Mariana Cristina,- Public Finances and Taxation, Romanian Tomorrow Foundation, Bucharest 2004
10. Leonte Dorina, Cioponea Mariana Cristina - Public Finance, Ed, Of the Romanian Maine Foundation, Bucharest 2001
11. Marcuța Liviu, Marcuța Alina, Tindeche Cristina, Analysis of Romanian GDP during crisis, 20th International Economic Conference-IECS 2013, Post Crisis Economy: Challenges and opportunities, 2013
12. Morar I., D - Introduction to the study of public finances, University of Oradea, Oradea, 2001
13. Mosteanu T., European fiscal and budgetary policies, University Publishing House, Bucharest, 2005;
14. Mutașcu M., - Public Finances, Ed, Art Press, Timișoara 2005
15. Negrea Alexandru - Public Finances, Ex Ponto Publishing House, Constanta, 2009
16. Stoica, O., European Financial and Monetary Integration - Jean Monnet Course, June Junimea Iasi, 2003;
17. Văcărel Iulian - Public Finances, Didactic and Pedagogical Ed., Bucharest, 1992
18. Working Paper No, 1 of April 2004 - Melguizo, A., Taguas, D., - "La ampliación europea al e is, mucho más que economía";
19. [www, eurostst, ro](http://www.eurostat.com)
20. \*\* [www,wikipedia,ro](http://www.wikipedia.ro)
21. [http://www, bnr, ro;](http://www.bnr.ro)
22. [http://www, cerpe, ro/workingp, aspx;](http://www.cerpe.ro/workingp.aspx)
23. [www, cnp, ro ;](http://www.cnp.ro)
24. [http://europa, eu, int/ index\\_ en, htm;](http://europa.eu.int/index_en.htm)
25. [www, eurostat, com;](http://www.eurostat.com)
26. [www, fmi, ro;](http://www.fmi.ro)
27. [http://www, insse, ro;](http://www.insse.ro)
28. [www, mefromania, ro;](http://www.mefromania.ro)
29. [http://www, mfinante, ro;](http://www.mfinante.ro)
30. \*\*\* Taxation Trends in the European Union, Comisia Europeană, 2009;
31. \*\*\* COM (2001) 260 „Tax policy in the European Union -Priorities for the years ahead”;

## A Study of News Credibility and Trust on Social Media

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### Abstract

Individuals join Social Networking Sites (SNS) to share information within various community contexts. One source for the shared information and associated discussions are the shared SNS posts. In this study, we propose a research model that represents antecedents of trust in posts in the SNS. After gathering data from SNS users, we expect to find that content credibility and source credibility as antecedents of trust. In addition, we expect that involvement in the post moderates the effect of source credibility and content credibility on trust.

**Keywords:** Content credibility, source credibility, emotional involvement, cognitive involvement.

### Introduction

Social Networking Sites (SNS) remain the most preferred means of group communication on the Internet. SNSs provide a worldwide communication conduit for like-minded groups that form around specific goals, interests or visions. Perhaps the most popular SNS, Facebook, maintains well over a billion users since its introduction in February 2004. Facebook is currently the most visited SNS worldwide (Fowler, 2012). This massive adoption of Facebook and increasing number of users coupled with Facebook's substantial web traffic demonstrates the potential of a SNS to impact worldwide events and effect change in many realms, such as the environment, politics, and other social causes. A majority of this change is achieved through sharing of information and news from trusted sources such as frequented sites, friends and followers well-known to a particular SNS community.

In general, people join groups for reasons such as a feeling of belonging and affiliation, information sharing, and helping each other for various purposes such as exchanging information and maintaining long term relationships (Ridings & Gefen, 2004). Similarly, by joining a SNS, individuals seek information, social support, friendship, and recreation. Therefore, access to information and information sharing is an important motivation for people to join a SNS. Most of the SNS information is shared from trusted group members' posts and enriched via resulting group interactions.

These interactions play a critical role in group cohesion. Past research demonstrates the importance of trust in interpersonal interactions (e.g., Mayer, Davis, & Schoorman, 1995; McAllister, 1995). Similar findings were reflected in other web usage studies for both group dynamics and transactional information (e.g., Gil & Artz, 2007). In the late 90s and early 00s, the studies addressed trust in ecommerce transactions as well (e.g., Jarvenpaa, Tractinsky, & Saarinen, 1999; McKnight, Choudhury, & Kacmar, 2002).

However, the concept of trust in Computer-Mediated Communications (CMC) via SNSs, still requires additional research to pinpoint what factors impact trust in these like-minded interpersonal interactions. In this study, we address why SNS members might more readily trust a post from a trusted group member even if the information in the post might not as credible external people deem it to be. Our study proposes a research model that represents the antecedents of trust in SNS posts. We expect to find that source credibility and content credibility have a major impact on trust in social media postings.

In order to evaluate our research model, we will conduct a scenario-based experiment. The results of our study will have several academic and practical contributions. Our research is one of the first that expands on the factors that affect SNS users' trust of the news in social media even when it might contradict the mainstream news accounts. In addition, our research model investigates the importance of group involvement as factors that moderate antecedents of trust. Our findings will be important for practitioners who work in the area of SNSs in differentiating misinformation/fake news from accurate information thereby increasing trust in SNS interactions among users.

## Literature Review

Trust issues are critical challenges for web-based systems (Berners-Lee, Hall, & Hendler, 2006; Pavlou, 2003; Rubin & DE Geer, 1998). In particular, trust in websites has been extensively studied in the context of ecommerce as an important predictor of successful online shopping (Corbitt, Thanasankit, & Yi, 2003; Gefen, 2000; Gefen, Karahanna, & Straub, 2003; Kim, Ferrin, & Rao, 2008; Pavlou, 2003; Suh & Han, 2003). According to Flavián et al. (2006) trust consists of three user perceptions: honesty, benevolence, and competence of the trust target.

Trust in news is discussed in a more limited number of studies. Kohring and Matthes (2007) posit that trust in news emerged under the label of media credibility. In addition, the concept of source credibility was proposed by Hovland, Janis, and Kelley (1953) to underscore the importance of communication sources. Therefore, credibility was suggested as a universal characteristic of the sources of communication (Kohring & Matthes, 2007). However, a number of researchers believe that there is a lack of theoretical foundation for the concept of trust and credibility in news media literature (Kioussis, 2001; Metzger, Flanagin, Eyal, Lemus, & McCann, 2003). Kohring et al. (2007) argue that there is not clear that the two components indicated by Hovland et al. (1953) are dimensions for source credibility or are reasons for its credibility.

The concept of credibility as an important indicator of trust in news media in two domains: source credibility and medium credibility. Source credibility is related to the way that communicators' characteristics affect the processing of messages while medium credibility focuses on the credibility of the channel through which the message is communicated (Kioussis, 2001). On the other hand Metzger et al. (Metzger et al., 2003) argue that the concept of credibility is important in three domains: source, message, and media. They posit three domains because the lack of control over contemporary news media forces consumers to be responsible for their own validity checks.

The Elaboration Likelihood Model (ELM) also addressed the concept of message influence in communication environments. ELM explains how people process messages that aim to convince them (Bhattacharjee & Sanford, 2006). According to the ELM model the effectiveness of a message could be specified by a central or peripheral route. In case of central route, the person who receives the message generally assesses the quality aspects of the message. This route demands high cognitive effort by the person. On the other hand, the peripheral route of message processing does not require a great deal of cognitive efforts (Cheung, Sia, & Kuan, 2012).

## Research Model and Hypotheses

This study argues that credibility of news source and content is a major factor that affects trust in news in social media. Source credibility is another factor that is an important indicator of trustworthiness in communications (Hovland & Weiss, 1951). We agree with the definition that source credibility is a combined effect of "(1) the extent to which a communicator is perceived to be a source of valid assertions (his 'expertness') and (2) the degree of confidence in the communicator's intent to communicate the assertions he considers most valid (his 'trustworthiness')" (Giffin, 1967, p. 106). Therefore, we specify source credibility and content credibility as two important indicators of trust in SNS posts.

Expertise of the source could be an important factor for SNS users to trust in news. If an individual see a post which is posted by an someone/account which has expertise in that post's topic, he or she would trust the news more compare to the situation that an agent without any expertise and professional experience is the topic of the news. In addition when the SNS users have a perception about the trustworthiness of the source of the post they will trust in the post more. The content of the pos is an antecedent of the trustworthiness of a post on social media. According to the literature, people trust information which is well presented and has higher information quality more (Lucassen & Schraagen, 2011).

Gefen (2000) also argues that users' familiarity with an e-commerce website is an important factor that affects trust in the site. So, familiarity also could be an important trust indicator in SNSs because people in these environments primarily interact with a section of people with whom they are either close friends or totally unfamiliar with (in the case of newcomers). Hsu et al. (2007) also posit familiarity as important to trust in information-based environments. They argued that information-based trust is based on the familiarity of one party about the predictability of the other party's behavior. Therefore, in the SNS context familiarity with the SNS user who posts a new story adds to the credibility of the SNS user and, by extension, the news.

Based on Elaboration Likelihood Model (ELM) that was applied in a study by Groves et al. (2004), individuals who have more interest in the survey topic would spend high amounts of cognitive effort compared to others who do not have interest in the study topic. In our research model (Figure 1) we argue that involvement to the post's topic could be an important factor that moderates the effect of trust on users' intention to share a news in social networks.



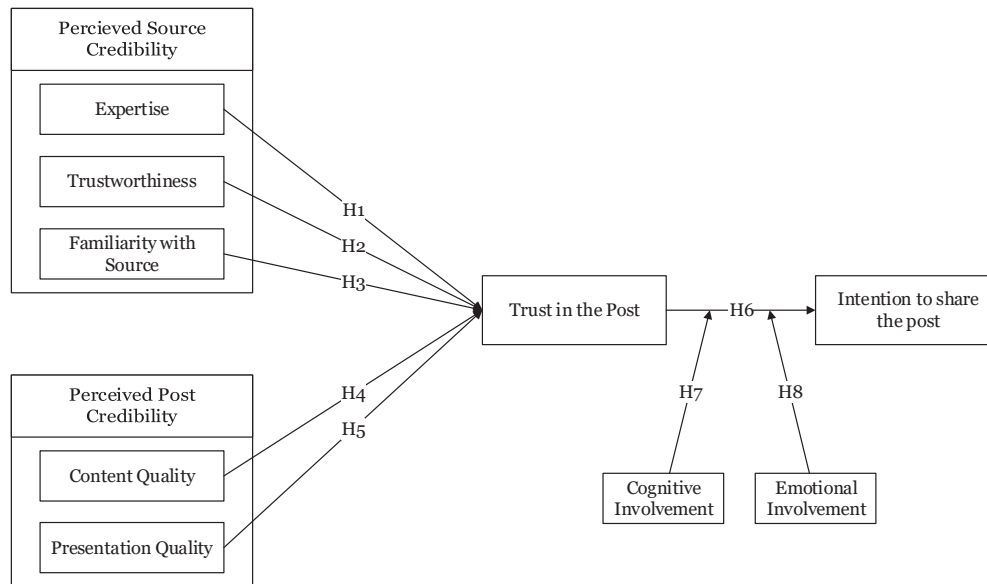


Figure 1: Research Model

## Methodology

We will conduct a scenario-based experiment designed to measure the impact of trust in a SNS post, taking into account the moderating effect of involvement and the users' cultural background on the effect of these antecedents. We will provide different scenarios to measure primary source credibility and content credibility and culminate with respondents filling out a questionnaire that measures their involvement with the post's topic. We will also collect their cultural background information as part of their demographic attributes. In other words, users will read the scenario then we will measure their involvement and their trust in social media posts via a questionnaire.

## Expected Contributions

Our study results will have several implications for both academics and practitioners. First, our study applies existing theories in the trust literature to explain trust in SNS news. Our study is one of the first that does empirical research to measure trust in this context. While there are a number of researchers who have addressed trust issues in news media (e.g., Kiouisis, 2001; Metzger et al., 2003), the concept of trust in SNS news has not been adequately addressed. Second, the results of our study will indicate the importance of two kinds of credibility--content and source--and its impact on trust in SNS news postings. Since most of the SNS posts have different levels of sources and content, we will examine credibility within these layers.

All of the above is especially important because of the current spread of misinformation and fake news in social media sites, which has resulted in an increase of mistrust and scepticism among SNS users and the news that they share with one another. Ultimately, our study should provide insights into how SNS developers could increase trust in the SNS context and develop SNS into a more popular source of news. By increasing source and content credibility, SNSs could make SNS news more trustworthy for users and consequently increase the number of SNS users as they move to re-join SNS communities.

## References

- Berners-Lee, T., Hall, W. and Hendler, JA. (2006), 'A framework for web science,' Now Pub.
- Bhattacharjee, A. and Sanford, C. (2006), 'Influence processes for information technology acceptance: an elaboration likelihood model,' *MIS Quarterly*, 805–825.
- Cheung, CMY., Sia, CL. and Kuan, KKY. (2012), 'Is This Review Believable? A Study of Factors Affecting the Credibility of Online Consumer Reviews from an ELM Perspective,' *Journal of the Association for Information Systems*, 13(8).
- Corbitt, BJ., Thanasankit, T. and Yi, H. (2003), 'Trust and e-commerce: a study of consumer perceptions,' *Electronic Commerce Research and Applications*, 2(3), 203–215.
- Flavián, C., Guinalú, M. and Gurrea, R. (2006), 'The role played by perceived usability, satisfaction and consumer

- trust on website loyalty,' *Information & Management*, 43(1), 1–14.
- Fowler, GA. (2012), 'Facebook: One billion and counting,' *The Wall Street Journal*, B1.
- Gefen, D. (2000), 'E-commerce: the role of familiarity and trust,' *Omega*, 28(6), 725–737.
- Gefen, D., Karahanna, E. and Straub, DW. (2003), 'Trust and TAM in online shopping: an integrated model,' *MIS Quarterly*, 51–90.
- Giffin, K. (1967), 'The contribution of studies of source credibility to a theory of interpersonal trust in the communication process,' *Psychological Bulletin*, 68(2), 104.
- Gil, Y. and Artz, D. (2007), 'Towards content trust of web resources,' *Web Semantics: Science, Services and Agents on the World Wide Web*, 5(4), 227–239.
- Groves, RM., Presser, S. and Dipko, S. (2004), 'The role of topic interest in survey participation decisions,' *Public Opinion Quarterly*, 68(1), 2–31.
- Hovland, CI., Janis, IL. and Kelley, HH. (1953), 'Communication and persuasion; psychological studies of opinion change.
- Hovland, CI. and Weiss, W. (1951), 'The influence of source credibility on communication effectiveness,' *Public Opinion Quarterly*, 15(4), 635–650.
- Hsu, MH., Ju, TL., Yen, CH., and Chang, CM. (2007), 'Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations,' *International Journal of Human-Computer Studies*, 65(2), 153–169.
- Jarvenpaa, SL., Tractinsky, N. and Saarinen, L. (1999), 'Consumer trust in an Internet store: A cross-cultural validation,' *Journal of Computer-Mediated Communication*, 5(2), 1–33.
- Kim, DJ., Ferrin, DL., and Rao, HR. (2008), 'A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents,' *Decision Support Systems*, 44(2), 544–564.
- Kiousis, S. (2001), 'Public trust or mistrust? Perceptions of media credibility in the information age,' *Mass Communication & Society*, 4(4), 381–403.
- Kohring, M. and Matthes, J. (2007), 'Trust in news media development and validation of a multidimensional scale,' *Communication Research*, 34(2), 231–252.
- Lucassen, T. and Schraagen, J.M. (2011), 'Factual accuracy and trust in information: The role of expertise,' *Journal of the American Society for Information Science and Technology*, 62(7), 1232–1242.
- Mayer, RC., Davis, JH. and Schoorman, FD. (1995), 'An integrative model of organizational trust,' *Academy of Management Review*, 709–734.
- McAllister, DJ. (1995), 'Affect-and cognition-based trust as foundations for interpersonal cooperation in organizations,' *Academy of Management Journal*, 38(1), 24–59.
- McKnight, DH., Choudhury, V. and Kacmar, C. (2002), 'Developing and validating trust measures for e-commerce: an integrative typology,' *Information Systems Research*, 13(3), 334–359.
- Metzger, MJ., Flanagin, AJ., Eyal, K., Lemus, DR. and McCann, RM. (2003), 'Credibility for the 21st century: Integrating perspectives on source, message, and media credibility in the contemporary media environment,' *Communication Yearbook*, 27, 293–336.
- Pavlou, P. A. (2003), 'Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model,' *International Journal of Electronic Commerce*, 7(3), 101–134.
- Ridings, CM., and Gefen, D. (2004), 'Virtual community attraction: Why people hang out online,' *Journal of Computer-Mediated Communication*, 10(1), 0.
- Rubin, AD., and Geer, J. (1998), 'A survey of Web security,' *Computer*, 31(9), 34–41.
- Suh, B. and Han, I. (2003), 'The impact of customer trust and perception of security control on the acceptance of electronic commerce,' *International Journal of Electronic Commerce*, 7, 135–161.

# The Analysis of Obstacles to Human Capital Assessment and Accounting: Theoretical and Methodological Approaches

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## Abstract

In a changing world characterized by an acute crisis of resources, it is necessary to rethink the issue of human resources, the only one that is practically unlimited and renewable in time. Human capital is one of the most important factor that, over the last decades, has decisively contributed to the economic success of developed countries. The linkage of human capital with the other factors of production used in the economy, the computerized society, the technical, quality and efficiency of the production of goods and services has become an undeniable truth in the modern world. It follows that no sustainable growth and development strategy would become effective if the importance of human capital were to be minimized or ignored. Regarding these considerations, we aimed to accomplish this approach, to carry out a theoretical and methodological analysis that addresses the main obstacles in evaluating and accounting for human capital. The paper finalizes with relevant conclusions, resulting from the considerable researches carried out due to the obvious importance of human capital in the economy, as well as the development of the human resources accounting system.

**Keywords:** Human Capital, valuation, accounting, intangible assets, obstacles.

## Introduction

In order to achieve human capital accounting, we need to find the appropriate methods for its assessment. Human capital is all of the skills, knowledge and intelligence of the assignees. Although of overwhelming importance in achieving an entity's performance, human capital does not appear in the asset's balance sheet alongside intangible assets. Financial accounting only records personnel salaries once work has been done. *But human capital has value, and this value, although it meets the definition of an asset, is not recognized in the balance sheet as it can not be estimated reliably.*

In the view of some authors (Andersen, 1992; Dae-Bong, 2009), the valuation of all assets, especially of immaterial ones, is a subjective process. Given the lack of objectivity inherent in such a situation, directives and standards are necessary to determine the criteria and methods of assessment as well as the qualifications of the experts responsible for the evaluation. Such directives and rules will strengthen public trust in the reliability and consistency of the valuation of intangible assets used to communicate financial information. „It follows that intangible assets represent a category of „fixed” assets as they can generate future economic benefits even if they do not have physical materialization, here are research costs, licenses, patents, software, advertising expenses, training programs defined by IAS 38 as „intangible assets”. According to this standard, intangible assets are considered to be „non-monetary identifiable assets, without material support and held for use in the production or supply of goods or the provision of services, rental or administration” (IFRS, 2015).

Economic theory has traditionally identified two main obstacles in obtaining information about human capital. One is the „immaterial” character of the knowledge held by people and the other is the „non-exploitation” of it. On a practical level, the accounting profession notes that taking into account the difficulties encountered in measuring the value of human capital as well as establishing transferable ownership, it is difficult to introduce accounting standards that would allow the treatment of human capital as a financial balance asset.

People dealing with the practical implications of information on human capital, government decision-makers, human resources executives in economic entities, or trainers often find that valuation and accounting for human capital is useful only to the extent that the generated information becomes, in fact, components of factors motivating decision-making within labor markets and capital markets.

As we have seen, it is theoretically impossible to undertake the same type of accounting treatment for human and physical capital, since the knowledge possessed by people is non-physical, unmeasurable and incompatible with the rules and institutions that establish daily transactions in accounting; and in financial analysis and reporting.

Differences in views and reservations in terms of quantification and accounting for human capital are to a certain extent derived from the definition of core assets. It is already known, as some economic analysts have said (Anthony and Reese, 1983; Cherian and Farouq, 2013), that the extent to which an asset is an economic resource must have control over it and that the costs at the time of acquisition are measurable. In view of these criteria, ***human capital would meet four conditions in order to be considered an asset in financial accounting***, namely:

- 1). as an „economic resource”, human capital must be measurable as a potential „output” of specific competences;*
- 2). as an accounting concept, control approaches the legal notion of ownership without being totally overlapping, and it is necessary to determine if the investor can assimilate the results of the investment in human capital as it accumulates them;*
- 3). the cost of the acquisition, which is a „rental price” for human capital, must be determinable;*
- 4). implicitly, in the case of physical capital, the capital and labor market would follow the estimate that is determined by the value of the productive potential of the investment in human capital.*

Faced with skepticism about the feasibility of evaluating human capital as an asset, we will express our point of view on the first two conditions underlining the theoretical motives that make it possible or impossible to measure and „control” the active value of the productive capacity of specific human skills. We will not omit the other two conditions in relation to which we will analyze the issues of accounting and recognition of human capital on the market.

## **Methodology of Research**

In order to accomplish this work, the principles and rules specific to a research methodology have been observed through which a series of methodological elements of a general nature combine to facilitate the understanding of the way of research. The implementation of this approach starts from the objective review of the literature in the economic and accounting field, as well as the specific legislation, using the quantitative, the analysis, the synthesis and the interpretation of the information methods. The main sources of information that have been the basis of our approach were books, articles and studies relevant to the field of reference, and other documents issued by various national and international bodies active in the field of accounting (IASB, IFAC). All this has helped us in our attempt to highlight aspects of the difficulties encountered in evaluating and measuring human capital.

## **Approaches and considerations regarding the assessment and control of human capital as active**

The assessment in accounting was initially more a *cost* problem than an evaluation problem. In the literature, some authors asserted that „accounting is not essentially an evaluation process, but one of the allocation of the historical cost to current and future periods” (Lungu, 2007). Obtaining a loyal, useful decision-making image, as the finality of the accounting process, outlines the objective assessment of the financial statements. Ensuring the objectivity of the assessment is supported by the feature of the financial reporting process, which is circumscribed by the presentation of both numerical and narrative information.

The capital, in terms of anticipated production capacity, can only be evaluated on the basis of a more or less reliable forecast. If we admit that there is a distinct market validation, between human capital and other elements of production potential, the two parameters will focus on the degree of predictability of production potential and the certainty of being able to assimilate the potential (Măcriș and Man, 2012). If the need for the admission of a particular human competence as a specific production potential so as to determine the costs and benefits stemming from it, the *assessment* as well as the physical capital is linked to the contingent nature of the outcome of the negotiations and of the market.

Difficulties due to the way in which human capital is measured are largely due to a market failure, maintained by an incomplete institutional legal framework that insists only on the separation between corporal and intangible capital. Technological change generates increasing skills claims, leading to skill-based wage differentials and boosting investment in human capital (Ienciu et al., 2016). It is clear from the assertions that the decisive factor is not the physical and physical nature of the productive capacity but the ability to assess with reasonable precision the capacity of the production and the subsequent benefits it brings to the market. From this point of view, there is a dual conceptual similarity between the evaluation as an asset of human and physical capital. It is therefore necessary first to assess the production potential, then to calculate the rate of return, to estimate the likelihood of adapting production on demand in order to meet the competition rules in terms of costs and prices. The above findings lead us to ***the natural question: are only the differences between human and physical capital that justify different treatment in the practice of accounting and financial analysis?***

Another author (Jacoby, 1991), regards *investment in human beings as having „all the traditional characteristics of capital formation”, namely: „it is sustainable with a limited lifetime, maintained and replaced as any other depleting resource, may become obsolete before it is exhausted and, as far as the subjective value is concerned, can be capitalized or depreciated on the basis of the supply of complementary factors and the demand for common products.”* Although its value can be quantified by the individual who has capital, „it can be appreciated by others, especially by the decision-makers of society. Such an appreciation is arbitrary and subjective and it rarely appears in the written documents of the entities concerning the stock of real or financial capital.” ***We consider the author’s views to be pertinent, arguing that the assessment is the most difficult to achieve, not the intrinsic character , intangible of human capital.*** Without a theoretical and explicit recognition of the productive potential of human capital, the introduction of market mechanisms for an undefined asset appears practically impossible.

Prior recognition of the production potential of specific human skills is therefore the starting point for creating a market. In order for a transaction process to reach the value of human capital, it must be explicitly recognized that a person may have the foreseeable ability to achieve a specific output. This is difficult since at least **two points of view: the first refers to the weight of the evaluation**, in practice effectively, the potential for human skills specific in a manner which is at the same time reliable, less costly and generally accepted; **the second of the methods for evaluation of human capital** in use, which are adapted to the requirements of an education system which bring to the front degrees, as opposed to a system where the potential for human capital production as measured from the powers required for the production, whatever be the source of knowledge acquisition.

Regarding the *first obstacle*, Burke (1989) has shown that it is possible to objectively assess the potential for the production of acquired skills. Initiatives in this regard start from an “independent” assessment of competencies, more suited to the requirements of production than to the requirements of the education system. These policies reflect efforts to adapt to distortions affecting the labor market and skills acquisition systems. In some European countries, knowledge skills are often well established, where a number of sectors share the same measurement technique and improve production potential of staff (CIPD, 2017). Thus, we find some reliability in assessing skills through ways that faithfully reflect the conditions encountered in production. These fears are, however, founded if they are judged by the relatively underdeveloped nature of many evaluation systems. The accounting literature states that estimates of human capital are not true to the extent that the evaluation methodology and the predictability of events coincide.

*The second obstacle* encountered when assessing the potential of specific human skills production is related to the institutional structure of the provision of training and measurement in terms of demand and production. We refer, here, to the convention whereby man-made knowledge is to be judged on the basis of the diplomas held. From this point of view, the measurement of the potential of human capital production is affected by the segmented character of the school and professional diplomas. These processes generally have a strict control over both acquisition of knowledge and professional certification. Very often the award of diplomas depends on the time spent in the educational establishments or the past tests. Barriers to entry into an entity are determined by the historical value of universities. There are entities that prohibit the use of competences acquired outside of diplomas, and these are economically explained by the willingness of employers to take a rent on investors in human capital. Assertion, state-sanctioned assertion of ownership for knowledge acquired when investing in human capital explains, to a large extent, the duality of knowledge that is at the same time a collective good as well as the property of the person concerned. The experience of the various OECD countries that have put in place policies that challenge the dominant role of education institutions in assessing assets related to the acquisition of human capital is a positive experience. These policy initiatives are motivated, in large part, by the competitive success of entities whose methods of using human capital and investment prove to be realistic and effective.

Currently independent assessment of competencies as a means of knowing the production potential related to the knowledge acquired by individuals varies considerably from one European country to another depending on the reactions to the technological and organizational changes that affect the training and the preparation (Dima and Man, 2013). In fact, most of the European states are studying, in a systematic manner, the application of the new methods of validating the potential of production for specific human skills.

New practices for investing in human capital can not protect employees from abuses only to the extent that the two parties are bound to behave as if they were „linked to a contract” this point of view, we note that Law 53/2003 on the Labor Code provides, in a separate chapter, for the employer to provide the necessary conditions for the professional training of his / her own employees. In conjunction with Ordinance 129/2000 on Adult Vocational Training, as amended and supplemented, which in Article 16 presents a framework model of the Vocational Training Agreement, we can *positively assess this by step in reconsidering the management of human capital in Romania.*

The difficulty, however, is to apply the provisions of the law to investing in the human capital resource. The doctrine of „freedom to contract” is equal for both the employer who has the right to recruit/dismiss and the employees to resign at any time and for whatever reason. However, this does not prevent the inclusion of long-term agreements with related sanctions in case of unilateral annulling the contract. Employers and employees associations through trade unions regularly discuss this type of contract. We reiterate, in this sense, Law 76/2002 on the unemployment insurance system and the stimulation of employment, updated in 2018, which co-finances the training of employees. In order to put into practice these mechanisms, however, the necessary forms must be found which give value to the acquisition of human capital, both from the point of view of the employee and the employer, in order to determine the costs and benefits of the investment. The condition that an investor needs in order to make a return on his investment is given by the fact that it is an asset

(condition 2), which seems easy to achieve in the case of individuals. For this, there is no ambiguity in the possession of its own ability to produce and its improvement results from investing in the acquisition of knowledge. However, the obvious nature of this property title should not obfuscate the ambiguity of the methods currently used to assess the potential of producing individual human capital, including the relationship between acquired knowledge and remuneration in the labor market. *In some countries, individual investment in knowledge acquisition, funded by personal savings or financial loans, can be deducted from current or future taxable income. This realistic approach to the importance of human capital can and should be visualized and implemented in Romania as well.*

Applying this would make *the individual control this type of asset* and the employer would obtain his formal recognition, even if it is aimed at a diploma, regardless of production requirements, but depending on the selection of the educational system. The title thus gets a sense of its own by the fact that the financial balance sheet appears in the accounting. Whatever form this recognition embraces, the guarantee for the individual lies in the degree of transparency and certainty attached to information systems and decision making on human capital that influences personal choices.

*Economic entities and public institutions can not dispose of assets created by an investment in human capital, but can regularly control the benefits of such an investment by signing contracts with individuals who have funded the acquisition of knowledge with money borrowed from public entities or authorities. Economic entities have recourse to various forms of loan for employees, explicit or implicit agreements, direct or indirect funding, such as apprenticeship, social security, individual training leave, etc. Public authorities conclude social and private „contracts” to finance individual investment in human capital, such as training grants, active labor market policies, training loans, and so on. In terms of accounting and financial analysis and according to accounting rules, contracts of this type are not registered or accepted as proof of ownership of an asset are treated as current period expenses. They are recorded based on the historical cost principle (Man et al., 2011). However, many of these costs, particularly recruitment, training and work organization, have numerous economic and financial effects on future periods the feature that justifies the inclusion of the expenditure referred to investment in human resources of the entity. In more rigorous terms, as we have pointed out, **human resources costs** should be divided as follows: 1) *cost of services consumed*, including salaries and social security contributions and return on investment in human assets; 2) *the cost of human assets*, consisting of the costs incurred in hiring, recruiting, socializing, training, improving and developing the experience. Economic entities and public institutions use employee education, but they do not have employees.*

**The systemic assessment of human capital pursues three objectives:**

- *ensure information on the cost and the economic value of the employees in their company resources;*
- *provide the necessary support for decision-making on the recruitment, selection, training and career of staff;*
- *stimulate managers to look at employees as an asset that can depreciate or appreciate according to how it is managed.*

After exposing these points of view, **we can conclude by advancing the idea, already demonstrated and applied, with certain reservations, that the production potential of human capital is susceptible of being measured.** Even if it remains the property of the individual or the team that has the competence, it is possible to define and finalize contracts where the benefits resulting from the acquisition of such skills remain with the lender. Consequently, obstacles that are not subject to parallel treatment of human and physical capital are not insurmountable, even if they are determined analytically and institutionally by the current systems of assessing contractual powers and obligations.

We must recognize that *the assessment of human resources* as a distinct discipline is currently limited to identifying investment costs and pursuing, through budgets, investments in the recruitment, training and development of human potential, while allowing the substantiation of management

decisions of human resources. *The human capital of an economic entity refers to the individual capacities of the employees, being evaluated according to the degree of professional qualification achieved. The result of the operation of human capital is usually recorded as an improvement in the entity's revenue or productivity.* In conclusion, what can not be seen, touched, smelled, evaluated, with an obvious importance to entities and balance sheet management, is the essence of the value of intangible assets, namely human capital.

### **Aspects Of Accounting And Recognition Of Human Capital As Active**

Assigning active asset status to human capital implies considering it as capital, as well as taking it into account in accounting statements and wage agreements that share the costs and benefits between participants over time.

The cost of hiring human capital should be objectively determined and not posed problems as salary levels are a clear price signal that can be integrated into accounting. This, once we no longer have a single price, but the value of a human asset, so long-term costs and benefits as they are present (Oluwatoyin, 2014). But we find real difficulties in recognizing human capital as an asset. In day-to-day transactions of labor markets, payroll entities need to take into account/recognize assets corresponding to the skills acquired and validated by employees. They can no longer be seen only in terms of the "human costs" borne by the entity, but must also be valued in terms of the returns generated by the investments in the development of the human capital of the entity. Moreover, in the financial market, banks and public institutions should register stocks and acquisitions of human capital as asset values. Employees can not be treated as mere means or attachments to the physical and financial capital of an entity. Human resources are now transforming into the main economic assets of economic entities. People are the storage of skills, creativity, qualifications, knowledge and know-how. Innovations are also the fruit of the employees' mental activity and the quality of communication between them. So it is clear that human resources are really an asset because it generates profitability.

*The accounting and financial analysis of human capital*, considered as an asset, brings into the debate *two major challenges*. The first one is that a large proportion of current methods of measuring human capital start from a diploma, which is currently considered to have no value, imprecise, exclusive to society or opaque, and therefore inadequate to the process of assessing the potential of real production. Secondly, in the absence of an adequate measure of acquired skills, they are not interested in collecting or producing real, real human capital information. The absence of an efficient and accurate system that validates productive capacity or competencies compromises real steps aimed at financially accounting for these assets and, implicitly, the balance sheet (Andrade and Sotomayor, 2011). If human capital is virtually not recognized as active, there is no willingness to develop a system for identifying and validating skills, even at a low price. To address these inconveniences, *the practical and effective accounting becomes essential* (Condition 3: cost assessment) and *market recognition* (Condition 4: validation of transactions) of human capital, as well as a precise definition of a *measurement method* (Condition 1: evaluation potential production of specific skills), together with control / ownership (Condition 2: contractual obligations recognizing long-term costs and benefits). In order to meet conditions 3 and 4, it is necessary to define institutions that allow the clarification, measurement and control of human capital. Once a fundamental infrastructure has been set up, the next steps will depend on each country's legal and operational, private and public practices.

Obstacles presented not only derive from the intrinsic characteristics of the knowledge held by individuals. The institutional and historical specificities of each state make the single policy solution applicable, but they do not state the results of a whole series of analyzes on the global feasibility of accounting and the financial balance of training and qualifications of the active population. Individuals and public authorities record risk costs (Condition 3) and validate transactions (Condition 4) in the form of a statement of income for individuals/individual levels or in national accounting, with reference to the general level or one of the many methods allow the financial statement to be recorded. The analysis of the three categories of agents (individuals, economic entities and public



institutions) highlights the close relationship of daily market transactions with the need to consider costs and validation.

The lack of accounting information present in the financial statements of economic entities can not explain the value that the stock market gives to intangible assets (Răscolean and Rakoş, 2015). *Although this asset can be especially justified, after the explosion of the internet, it makes us think about the intangible assets we own. We are concerned about the hidden effect of unvalued intangible assets, which means greater stock price volatility that could lead to an increase in the cost to large-scale intangible assets.* In the field of accounting, conventions and operational decisions by individuals, economic entities and public institutions have a major role to play when it comes to fulfilling conditions 3 and 4 to determine the long-term active human capital status as follows:

### ➤ **Individuals**

*In the previous approach, we have moved away from the idea that in order to treat human capital as a capital that generates over time returns on investment, we must create a system of measurement and ownership/control.* They are necessarily linked to individuals or a group that have invested in developing a specific capacity. Taking into account human capital as an asset implies the return as a whole of contracts signed by employees or employers to calculate the costs and benefits of the investment as well as its use. At the level of individuals, this means that the **financial value of the investment made in the human capital itself must be integrated into the rental price or the labor contract.** We have already found that validation of the financial value of human capital in the lease has many obstacles.

*Accounting for the rental of human capital exclusively in the form of a current expense causes a conflict of interest between the holder of a correspondent asset, who wants its value to be fully recognized, and the company that rents the asset not considered as current utility (Stern, D., Ritzen, 1991). That is why we consider that the recognition of human capital as an asset is linked, for the individual, to the ability of the entity to treat the employment contract in a form that does not create imbalance in the balance sheet.*

In such a context, even if we admit that we have viable measurement and control systems, individuals can modify, *unilaterally, the assessment of costs*, conventions or bargaining mechanisms. Parameters are generally fixed by public institutions as income, tax, or tuition fee. When estimating the investment validation in the human capital that is made on the market, the parameters are determined by a series of factors. If we want to fulfill conditions 3 and 4, the individual is faced with a set of legal prerogatives supported by the public authorities or the dominant system of industrial relations. At the individual level, improving measurement and creating contractual/sanctioned contractual formulas are crucial to overcome the barriers to public accounting, balance sheet integration and market validation of assets in human capital.

For individuals, it is essential, before meeting conditions 3 and 4, to ensure that conditions 1 and 2 are met. *As long as the individual can not measure his or her acquired human capital, he can not account for long-term costs and benefits, due to the absence of conventions, negotiations and calculation procedures at the level of contracts, can not be used in the field of science to integrate the labor price into the costs associated with this acquisition.* An individual wishing to be recognized as an asset must go through a series of intermediate and interdependent stages ranging from measuring production potential and contractual rights to recognition by entities and public authorities of accounting for the costs and value of the skills acquired; or improved.

### ➤ **Economic entities**

At their level, the critical point is related to the fulfillment of the third condition, which is well analyzed in the literature and not only, regarding the accounting of human resources. *Difficulties relate to the objective assessment and feasibility of human capital costs for an economic entity.* Recent trends view human resource accounting as a management tool, which states that „human resource cost measurement can provide a double-mindset - external managers and users - of the costs incurred by the organization at certain stages such as selection, development and maintenance of

resources human” (Bullen et.al., 1989; Česnyienė and Stankevičienė, 2011). Measuring the value of human resources thus enables the economic quantification/evaluation of the organization. *The absence of systematic accounting rules is responsible for the fact that the cost of human capital unreflected in the account, balance sheet and other company reports, feasible in the abstract theory of assessment, is difficult to translate into practice because the required accounting rules are not applicable.*

Economic entities are confronted with a similar practical problem when they have to recognize or validate the lease of the „estimated value of the production potential” of human capital (Condition 4) in the transaction. *In theory, the salary offered for the use of an individual’s human capital should include, among other factors, recognition of the cost of acquiring skills.* In practice, however, the company offers „current salary” that reflects the various labor market conditions. Individuals or people negotiating for employees have little chance of knowing the share of global human capital - including health and other physical capacities - imputable to acquiring knowledge (Mardiros et. al., 2016). Even if employees and employers would like to include in the rental contract the estimated cost of depreciation, depreciation and appreciation of costs / benefits, they encounter difficulties due to current realities.

*The differences found in the practical implementation of the cost assessment and in the validation of human capital contracts are in fact the lack of national regulatory norms to specify and state the factual situation, the management and the technological character of the various sectors of activity and the size of the entity.* The diversity of costs related to the methods and institutions involved in the negotiation can be a decisive element in the assessment of human capital (Stanko et. al., 2014). *An economic entity is reluctant to raise its employees’ training level because it fears they will leave it before they have recovered their training costs.* Therefore, public institutions can play an important role in reducing the overall costs of staff training and establishing human resource accounting rules, an imperative requirement to be solved especially in times of economic crisis.

### ➤ **Public institutions**

The State may regulate the accounting and market recognition of investments in human capital funded by entities and individuals. We are, however, less interested in his role as decision-maker, especially his position as an agent involved in the development and financing of human capital and the national accountant. It is well known that the state encounters obstacles in assessing the cost of human capital and transactions as well as private sector entities when assuming the role of employer, and we refer in particular to contract negotiation and the internal management of human resources. *However, there are specificities specific to the public sector, which consist in the fact that many states have not recourse to accounting for employment but for money. This practice limits the ability of public authorities, in the context of operating budgets, to hold accrual accounting over time - cumulative of commitments and assets - although they have financial cost estimates and benefits of human capital.*

Public institutions are required to make investments in human capital (subsidies) based on inappropriate national accounts. The transformation of national accounting and the methods used by public authorities in recording assets and engagements related to their operation is a difficult task. Obstacles in improving costing practices and validating public government transactions may, however, be overcome by a necessary and possible reform. In fact, many OECD countries have launched initiatives to improve domestic and national accounting practices for human capital. As illustrated by the initiatives taken over time to incorporate intangible assets into national accounts, the outcome of these new approaches is linked in a decisive manner by how the intangible asset was measured at micro level. From this point of view, the possibility of reaching a relevant policy, based on a set of analytical and realistic data, depends on the accounting methods used by entities and individuals. Changing the accounting and financial balance of human capital becomes necessary and imperative.

We can conclude that obstacles that prevent human capital from being considered as an asset may, theoretically and in time and in practice, be removed. The practical problems started by applying

financial accounting and balance sheet to human capital or, in a more restrictive manner, training and workforce qualifications can be overcome by initiatives and innovations (Ciurea and Man, 2016, 2017). Whatever the behavior of the three categories, namely: individuals, private entities and public powers in the field, all are subject to the existing rules on accounting and financial balance sheet applied to human assets. From the analysis carried out, certain mandatory **conditions** for the attribution of the human capital are as follows: the possibility of measuring the skills acquired by individuals; facilitating the establishment of contractual relations that incorporate the flow of costs and the benefits of human capital essential to ensuring the effectiveness and efficiency of accounting and financial balance of human capital.

The efficiency of human resources is expressed by a set of rates built by reporting the results obtained with the available human resources. These rates allow value judgments on the use of human capital through comparisons over time and space over some values considered normal (Ienciu, 2012; Ciurea and Rakos, 2016). *The relationship of calculation for the efficiency of the use of human resources is given by the ratio of the obtained results that can be represented by: the operating result, the turnover, the added value, the production of the exercise and the available human resources expressed in terms of number of employees, number of days worked, hours worked, salary costs.*

*The efficiency of human resources can be correlated with labor productivity. We consider that efficiency is the value expression of productivity, expressing the ratio between volume and consumption, quantitatively, correlating productivity and efficiency of work.* We can conclude by pointing out that in a transaction-based economy, these elements form the backbone of a solid system of information and decision-making on human capital.

## Conclusions

Any discussion of human capital implies that human resources are more than expenditures seen in the profit and loss account, they must also be seen as assets. This is the issue of measuring, evaluating, human capital, an aspect that can't be achieved outside some quantification models. In this context, we summarized the main conclusions drawn from the research carried out on the obstacles to assessing and accounting for human capital.

Obliquely subject to logical, economic and financial logic, accounting presents a distorted image of an entity's economic life, neglecting or ignoring for a long time appropriate methods for recognizing and reporting intangible investments as intangible assets. It follows that *practice has not evolved beyond the traditional rules of historical cost.* human capital, although it has an overwhelming importance in achieving an entity's performance, does not appear in the balance sheet asset alongside intangible assets. Although it has value, by defining an asset, it is not recognized in the balance sheet because it can't be reliably estimated.

Prior recognition of the production potential of specific human skills is the starting point for evaluation, within the framework of conventions and rules governing the internal labour market of a company, faithfully reflecting the conditions encountered in production. Taking into account the practical introduction as well as the difficulties encountered in measuring the value of human capital as well as in the determination of the transferable property right, *we propose the treatment of human capital as an asset of the financial balance, in terms of standards.*

Difficulties, due to the way in which human capital is measured, are largely due to a market failure, maintained by an incomplete institutional legal framework that insists only on the separation between corporal and intangible capital. The ability to perform value-creation operations can be integrated into physical objects or human beings, and this is not tangible, and the costs of creating, improving or maintaining such capacity are investment in both equipment and/or human capital. *Thus, the similarities between human and physical capital, considered as assets, disappear in the case of effective measurement of production capacity that will serve as the basis for calculating transaction values.*

We consider that the determining factor in the assessment is not the physical and physical nature of the productive capacity but the ability to reasonably assess the production capacity and the subsequent benefits it brings to the market. Economic entities and public institutions can't dispose of the assets created by an investment in human capital. But they can regularly control the benefits of such an investment by signing contracts with individuals who have funded the acquisition of knowledge. *In terms of accounting and financial analysis and accounting rules, such contracts are not recorded or accepted as evidence of holding an asset, being treated as current period expense.*

Accounting and financial analysis of human capital, considered as an asset, brings up two major challenges. The first is that much of the current methods of measuring human capital start from a diploma, which is currently considered as not worthless, imprecise, exclusive to society or opaque, and therefore inadequate to the process of assessing the potential of real production. Second, in the absence of an adequate measure of acquired skills, they are not interested in collecting or producing real, real human capital information. Human resource accounting, though useful and feasible, is rarely practiced and its application has not been expected to be relevant. The systematic expansion of intangible asset accounting is accompanied by consideration of human resources in terms of competence and asset value.

The added value of the products and services sold today is increasingly dependent on "non-material" causes. At their heart lies the individual, who values his creative power, imagination, inventiveness, intelligence, logic, analytical and synthesis power, discernment, all of which are found in the profit and loss account of entities. In our opinion, profit is increasingly the product of knowledge.

We conclude by appreciating that the deepening of the resource assessment, which is currently limited to the investment cost reporting, must be pursued by means of budgeting, investment in the recruitment, training and development of human potential, and also to support the management decisions of human resources. In terms of accounting and financial analysis and accounting rules, training contracts are not recorded or accepted as evidence of holding an asset, being treated as current expenses.

The assessment of human capital, supported by the four valuation bases recommended by the general accounting framework, must be based on the historical cost, current cost, realizable value and on the basis of the updated value. The relevance and reliability of accounting information require appropriate accounting treatment, and international bodies (IASB and FASB) as well as standardizers within the European Union should meditate on the issue of intangible assets that are an important resource for an entity's performance management. Intellectual assets have always mattered, but their importance has become crucial in today's economic conditions.

Also, a realistic approach to the importance of human capital can and should be visualized and implemented in Romania by deducting from the taxable, current or future income of individual investment in knowledge acquisition, funded by personal savings or financial loans. In terms of accounting and financial analysis and accounting rules, training contracts are to be and must be accepted as proof of ownership of an asset.

Without claiming an exhaustive treatment of the issues addressed, we tried to outline the idea that human resource is not a simple factor consuming the production process; in our opinion the human resource generates costs and at the same time supports them for why human capital must be treated in terms of cost.

## References

- Andrade, P. and Sotomayor, A. M. (2011), 'Human Capital Accounting – Measurement Models', *International Journal of Economics and Management Sciences*, 1(3), 78-89.
- Andersen, A. (1992), *The Valuation of Intangible Assets*, The Economist Intelligence Unit, Rapport special.

- Anthony, R.N., and Reece, J.S. (1983), *Accounting*, 7 Edition, Illinois.
- Bullen, M., Flamholtz, E. and Sackman, S. (1989), 'Human Resource Accounting: A State of the Art Review', *Journal of Accounting Literature*, vol.8, 235.
- Burke, J., *Competency Based Education and Training*, The Falmer Press, Londres, 1989.
- Česyrienė, R and Stankevičienė, A. (2011), 'The Role of Human Capital in Value Creation: Theoretical Insights', *Ekonomika*, 90(4), 49-62.
- Ciurea, M. and Man, M. (2017), 'The need to use benchmarking in performance analysis of human resources in the public sector', *Quality - Access to Success, Supplement* 1(18), 282-287.
- Ciurea, M. And Rakoş I. S. (2016), 'Considerations about the Nature of the Expenditure Cost Components of Human Capital Formation', *Proceedings of the 7th International Multidisciplinary Scientific Symposium, UNIVERSITARIA SIMPRO 2016*, ISSN 2344 – 4754, 14-15 October 2016, Petroşani, Romania, 549-554.
- Cherian, F. and Farouq, S. (2013), 'A Review of Human Resource Accounting and Organizational Performance', *International Journal of Economics and Finance*, 5(8), 74-82.
- Dae-Bong, K. (2009), *Human Capital and its Measurement*, The 3rd OECD World Forum on "Statistics, Knowledge and Policy" Charting Progress, Building Visions, Improving Life, Busan – Korea, 1-11.
- Dima, IC. and Man, M. (2013), 'Considerations on the strategy for sustainable development of companies under the conditions of current globalization', *Science Series Data Report*, 5(5), 66-75.
- Ienciu, N.M. (2012), 'Human capital research framework', *Review of Business Research*, 12(2), 124-128.
- Ienciu, N.M., Ienciu, A.I. and Mihaş, M.I. (2016), 'Creating a human capital reporting framework: useful or not?', *International Journal of Economics and Accounting*, 7(1), 150-167.
- Jacoby, S. (1991), *Legal Foundations of Human Capital Markets*, *Industrial Relations*, vol.30, 133.
- Lungu, C.I. (2007), *Teorie şi practici contabile privind întocmirea şi prezentarea situaţiilor financiare*, Editura CECAR, Bucureşti.
- Măcriş, M. and Man M., (2012), 'Development of Human Capital Through Education in Present Day Economy', *Asian Journal of Business & Management Sciences*, 2(3), 50-61.
- Man, M., Modrak, V. and Grabara, J.K. (2011), 'Marginal cost of industrial production', *Polish Journal of Management Studies*, vol. 3, 61-68.
- Man, M. and Măcriş, M. (2017), 'The current economic context to measuring performance in the Romanian public system', *Proceeding of the 29th IBIMA Conference on Education Excellence and Innovation Management through Vision 2020: from Regional Development Sustainability to Global Economic Growth*, ISBN: 978-0-9860419-7-63-4 May, Vienna, Austria, 370-379.
- Man, M. and Ciurea, M. (2016), 'Transparency of Accounting Information in Achieving Good Corporate Governance. True View and Fair Value', *Social Sciences and Education Research Review (SSERR)*, 3 (1), 41-62.
- Mardiros, D., Dicu, R. and Carp, M. (2016), 'Human capital reporting in Romania: from corporate cost to social responsibility and vocational training', *Audit financiar*, 2(134), 195-205.
- Oluwatoyin, A.S. (2014), 'Human Resources Accounting and Disclosure in Financial Statement: Literature Review', *Research Journal of Finance and Accounting*, 5 (22), 64-75.
- Răscolean, I. and Rakoş, I.S. (2015), 'Financial analysis based on the annual balance', *Annals of the University of Petroşani, Economics*, 15(2), 121-132.
- Stanko, B. B., Zeller, T. and Melena, M. F. (2014). 'Human asset accounting: moving forward', *Journal of Business and Economics Research*, 12(2), 93-104.
- Stern, D. and Ritzen, J. (1991), *Market Failure in Training*, Springer Verlag, New York.
- Standarde Internaţionale de Raportare Financiară (IFRS) 2015, vol.I şi II, CECCAR, Bucureşti.
- CIPD, *Human capital theory: assessing the evidence for the value and importance of people to organisational success*, Technical report May 2017, [https://www.cipd.co.uk/Images/human-capital-theory-assessing-the-evidence\\_tcm18-22292.pdf](https://www.cipd.co.uk/Images/human-capital-theory-assessing-the-evidence_tcm18-22292.pdf), accessed on 4.09.2018.

## **Impact of the Implementation of ICT Projects, Case Study: E-Learning Projects**

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### **Abstract**

The implementation of any ICT project involves two components: the investment and the implementation of the respective change, which can be personal, at the department/organization level, a change of behavior, etc. Both components strongly depend on the leadership of the organization. Leadership includes here the combination among the personalities of those leading the organizations, their knowledge and abilities, regulations, procedures and organizational policies as well as the organizational culture. In most cases, the implementation of a new ICT system allows the managers' access to valuable tools and information.

The analysis of the international approaches of assessing the impact of ICT investment projects clearly shows that this area is new and it is currently developing. Generally accepted ICT assessment methods and mechanisms have not been identified yet, not even for parts of the ICT use (public administration, health, e-learning, etc.).

Using ICT is just a tool for achieving specific goals. Achieving an ICT infrastructure should not be an objective in itself, but a resource the user needs to achieve certain goals (higher efficiency, better access to knowledge he would have been unable to reach otherwise, etc.). Consequently, the fact that at the end of the project implementation the ICT infrastructure is functional and does not require interventions is compulsory, yet insufficient for a successful project.

**Keywords:** Evaluation projects; Impact indicators; Results / Outcome indicators; European Structural and Cohesion Funds;

### **Evaluating the Impact of ICT Investment Projects – General Methods and Models**

#### *Reference Analysis*

For the current research we have used several world databases in order to seek relevant articles on methods and mechanisms for evaluating ICT investment projects at an international level. Thus we have identified and analyzed hundreds of articles published in – more or less famous – scientific magazines in the past five years.

As with any other field, the methods employed are either analytical or interpretive.

Analytical methods can be used when the field under research is well defined and quantifiable – quantitative or qualitative – indicators characterize the current situation. Mathematic or statistical methods are used to process collected data.

Interpretive methods apply when the area under scrutiny is not clearly defined, for example, in case of analyzing the ICT impact on the socio-economic development of a country (Prashant Palviaa, 2018). An analysis of references reveals that ICT has an impact on a multitude of socio-economic development areas. Such an analysis could never lead to unanimously accepted general results. Therefore, it is only interpretive methods that can be employed, which allows experts to decode data and information, as well as personal observations.

It is the case of Smart Cities (March, 2018) whose analysis can only be based on interpretation. In the past several years there have been vivid debates for and against smart cities. Though, at a first glance, the impact is entirely positive, a thorough, multidisciplinary analysis reveals certain negative consequences such as: IT illiterate citizens are discriminated against, infringement of privacy, certain public services are vulnerable to cyber-attacks, some public services and activities (emergency services or health services) depend on technology, yet there is no technology available, etc. Therefore, setting objectives or indicators in connection with the implementation of major ICT investment projects should only be based on a complex and thorough analysis of all risks and consequences, corroborated with backup measures.

The analysis of a public transportation project, within a presumably smart city framework (P. Tafidis, 2017) is an example of a multidisciplinary approach in evaluating the impact of an ICT investment project. The analysis aims to show how an ICT public transportation project can reduce pollution. As there is no common methodology, unanimously accepted, the authors have chosen three different regions (in Romania – Bucharest, Ilfov, Spain and Portugal) trying to see how an ICT project in public transportation could reduce pollution. Comparative methods have also been employed.

A serious and relevant analysis of an ICT investment project can only be conducted if there is a clear understanding of the project users/beneficiaries, with their characteristics and dependencies. The adoption of any technology depends on multiple factors and parameters: the users' age and level of education, their social background, their health, etc. (Mattia Cattaneo, 2016). As one may expect, beneficiaries with high level of education are more likely to adopt new technologies. If in case of young people, we take into consideration the level of the formal education, when it comes to adults, non-formal education as well as Life Long Learning are of major significance and are also considered.

As an overall conclusion, most articles are the result of scientific research conducted by one or more teams from universities in developed countries, sometimes in partnership with universities or organizations in developing or less developed countries. Such research is mostly related to projects financed by international institutions (for example, the World Bank or government development agencies), implemented in developing countries.

Another category of articles/research refers to the implementation of ICT investment projects within companies and their impact mainly on the employees' attitude and behavior (and not on production efficiency or on delivering services to the end beneficiaries). We should point out that there are numerous articles/analyses meant to assess the end clients' satisfaction following the implementation of such an investment project.

Apparently, such analyses may have little to do with the current research; however, a closer look will show the opposite. The articles we analyzed reveal a sort of approach that should be considered when looking into an ICT investment project. Moreover, taking into account the membership of the research teams, we see yet again that the specificity of the target group (local character or the type of project users/beneficiaries) is of utmost importance when monitoring or assessing such a project. All the analyses/research of the projects implemented in developing countries have been conducted by teams which included people/organizations from the respective countries.

The references also show that one cannot assess a technology investment project without analyzing first its impact on users and beneficiaries, including the extent to which they use the infrastructure created. To be relevant such an analysis should cover a long period of time.

An illustration of an efficient approach to monitoring and assessing an ICT investment is the analysis of a project carried out in Arua region, Uganda, whose aim was to facilitate communication between citizens and local authorities. (Guy Grossman, 2018). The project was implemented by a non-government organization (GAPP), which supported the implementation of a platform that allowed the citizens to send anonymous messages to the public administration. The technical component (the creation of the platform) was accompanied by campaigns meant to promote and raise the people's

awareness of the new facilities. Training sessions for the public administration and several needs analyses were also conducted. The main impact of the platform was supposed to target health, education and drinking water supply. The research indicated a good impact with regard to the use of the platform in education, but only on a short and medium term (especially in the first year), without indicating significant results in the other fields. Once again, it is obvious that a medium- and long-term analysis as well as a multidisciplinary approach, tailored to the needs of the users/beneficiaries, are required if we want to show the real success of a project.

In most cases, implementation of an ICT investment project is not the result of a need identified independently by the future beneficiaries or users. It is the result of the interaction / the involvement of experts/specialists or of the clients' requests or of other external factors (civil society, media, citizens – individually or as groups of people) or it is based on comparative analyses of similar organizations.

In most cases, adopting new technologies leads to changes and both people and organizations are resistant to change. Though one might expect that people and public institutions are more resistant to change, studies show that companies are equally resistant (Consoli, 2012). When it comes to adopting changes, the leading force in a company is determined by the business productivity, while small and medium sized enterprises (SMEs) have better abilities to adapt. Studies show that very few SMEs implement ICT investment projects based on an investment plan. In most cases it is the replacement of old equipment or managerial changes that lead to such projects.

The implementation of any ICT project involves two components: the investment and the implementation of the respective change, which can be personal, at the department/organization level, a change of behavior, etc. Both components strongly depend on the leadership of the organization. Leadership includes here the combination among the personalities of those leading the organizations, their knowledge and abilities, regulations, procedures and organizational policies as well as the organizational culture. In most cases, the implementation of a new ICT system allows the managers' access to valuable tools and information. Yet, the leadership methods and ICT tools are not always compatible. (Montgomery Van Wart, 2017). As a result, the thorough analysis of the organization management (people involved, knowledge, abilities, organizational culture, etc.) is critical in assessing the impact of an ICT investment project in order to see if the maximum achievement has been reached.

The influence of leadership in adopting new technologies is valid both for public and private enterprises. According to studies, leadership is the most important factor that influences the implementation of an ICT investment project. (Qureshi, 2013).

Communication is as influenced as leadership by the implementation of an ICT investment project (Asta Tarutëa, 2014). Both internal and external communication are facilitated and strongly influenced by the IT system/systems employed within the organizations. To be efficient and effective the ICT infrastructure in the organization has to be perfectly adapted to the organizational procedures and culture, to its mechanisms and functioning. That is why most major ICT investment projects involve projects/actions that target the organizational change, the development of such activities requires perfect internal and external communication.

ICT investment projects have major effects on the whole organization and its interaction with the external environment. Considering the purpose of the analysis and the factors involved, the area under scrutiny is limited; certainly, there are areas influenced by the project implementation that are not covered by the present analysis. For example, any ICT investment project in the public system has or may have a certain impact on the fight against corruption (Anol Bhattacharjee, 2018). The analysis, the area analyzed, and the interpretation of the results are – in most cases – subjective. Therefore, such analyses are not unanimously accepted and could be questioned.



### ***Results of the Previous Research***

As resulted from the previous research ("*Evaluating national, European and international investment projects - theories and methods*" and "*Virtual architectural solutions for organizations. Performance indicators*") there is no national/European/international unique, generally accepted approach regarding the assessment of a major ICT investment project.

Most assessment models and methods represent adaptations or versions of the assessment conducted for any investment project. If in case of a „traditional” investment project, most benefits are obvious and easy to evaluate, the impact of an ICT project is more complex. For example, a new building offers new living or production space and – if we compare the cost of the construction to the cost of renting a similar space, it is relatively easy to see if the investment is justified financially. Similarly, in case of a production investment (equipment or production line), it is relatively easy to see if the investment is profitable by adding the investment costs and the cost of maintenance and supplies/raw materials.

At an international level, we have identified ICT investment evaluation models only for major projects, multi-annual national strategies and multi-projects. Such analyses reveal a multidisciplinary approach and try to isolate the investment impact from other external factors, for example by selecting a similar country or community where such an investment has not been implemented. The approach is efficient and justified scientifically, but it is extremely expensive. Therefore, it is worth using it only in case of projects with national impact, whereas for small projects the cost of such an approach might equal the total project costs or even worse, it may exceed them.

Major international donors (European Commission, World Bank, etc.) have not developed specific evaluation methods and practices for the assessment of the ICT investments either. For example, in Europe there are significant differences among the objectives various countries have set for the funds in this field. Some countries (like the Baltic countries) have chosen to dedicate Operational Programs to ICT, with programmes indicators relevant at a national level (e.g.: following the implementation all national public services shall be available electronically), other countries (like Romania) have chosen less ambitious evaluation indicators (such as the number of companies that benefitted from funding within the program). Other countries did not allocate special funds for this area at all, considering that ICT investment projects should be treated like any other investment projects and that it is up to the applicant (especially in the case of private beneficiaries) to decide if they want to invest in ICT or would rather purchase other assets.

In Romania, particularly the EU funded projects reveal results and outcome indicators that try to quantify the impact of the ICT investment projects by means of specific indicators (for example: the number of infrastructure users, the equipment purchased, etc.). However, reaching such indicators does not mean that the investment has been efficient or profitable, that it was necessary and it may represent an example of good or bad practice. One could reach such a conclusion only based on a real comparison of the costs and benefits, if the project is implemented or not. However, for public infrastructure it is very difficult to make such comparisons; even if they are possible (for example by identifying information faster, costs are significantly reduced), there is no wish to do so.

A comparative approach that would look into the impact of two or more projects implemented under similar circumstances, for similar beneficiaries, generating measurable and quantifiable benefits, could be a method to establish the efficiency of an ICT investment project. Such situations have not been identified and analyzed yet. Projects which look similar at a first glance (for example, implementing two e-government projects with the local government in cities of equal size), with similar budgets (approximately 1,5 million euro), implemented at the same time under the same regulation framework (European funds, the same call for projects) do not lend themselves to such analysis due to scarce or no information at all. Moreover, in case of such projects, a comparison should consider other important factors such as: the citizens’ standard of living, the Internet use in the

city, the broadband availability and quality, the population age. Thus the analysis becomes complex and it is impossible to assess the impact of each parameter on the overall final result.

Moreover, even under similar funding conditions, the two local authorities may have different approaches. One may decide to allocate a larger portion of the budget for the content (considering that it will bring added value, and the platform ,hosting' is a cost they will cover), while the other may decide that it is essential to have access to strong hardware and software infrastructure. Based on this infrastructure, if need be, they will develop - with their own resources – various services for citizens. To compare the two approaches one must analyze the impact of implementing the two investments for a longer period of time, that is throughout the investment life (conventionally, 5years

### ***Case Study: ICT Investment Projects in Romania, Implemented With EU Non-Reimbursable Funds***

Here are the funding sources for the ICT investment projects implemented in Romania, from the 2007-2013 EU budget:

- *Sectoral Operational Programme – Increasing the Economic Competitiveness 2007-2013 (SOP IEC)*. The program included the Priority Axis III – Information Communication Technology (ICT) for the private and public sectors. This line funded ICT investment projects exclusively (Ministry of Communication and Information Society, 2018)
- *Sectoral Operational Programme – Increasing the Economic Competitiveness 2007-2013 (SOP IEC)*. The programme (Priority Axis I dedicated to SMEs investments) financed several investment projects developed by companies. Some projects also covered – to a larger or lesser extent – ICT investment (Ministry of Research and Innovation, 2018)
- *Sectoral Operational Programme – Increasing the Economic Competitiveness 2007-2013 (SOP IEC)*. The Priority Axis II dedicated to supporting research and innovation funded several investment projects carried out both by companies and public organizations (mainly research institutes and universities). Some projects also covered – to a larger or lesser extent – ICT investments. There have been actions dedicated to ICT related projects, such as the GRID projects (Ministry of European Funds, 2018),
- *Regional Operational Program 2007-2013 (ROP)* – included a line dedicated to investments of the small-size institutions. Some of the projects implemented represent SMES investment in ICT (Regional Operational Program, 2018).
- *Sectoral Operational Programme – Development of Human Resources 2007 – 2013 (SOP DHR)*. This funding programme funded several projects carried out by public institutions, which included the purchase or development of applications of local, regional or national interest (Ministry of European Funds, 2018)
- *Operational Programme – Development of Administrative Capacity 2007 – 2013 (OPDAC)*. The programme financed several *projects* implemented by public authorities with major components, which included the development of applications (Ministry of Regional Development and Public Administration, 2018)

Besides the funding sources above, all projects funded from non-reimbursable EU funds included the an ICT horizontal objective.

Unfortunately no information about the result or the impact of the implementation is available. Moreover, for the sources that funded not only ICT investments, there is no way to separate such projects from those which did not have such components. For example, out of all projects funded from ROP dedicated to microenterprises, we do not know the number of projects that implemented ICT related investments or purchased other type of equipment or invested in construction and buildings.

Under the circumstances, besides the analyses conducted in the previous studies, we can only conduct a quantitative analysis of the projects funded from SOP IEC Priority Axis III, dedicated to ICT.

In 2016, based on Freedom of Information Law, we asked the Ministry of European Funds to release the database of all payments made within the operational programmes as part of the 2007-2013 budget. At that time, all projects funded from 2007-2013 had been completed (deadline for completion 31 December 2005), checked by the Romanian authorities in charge while the reports had been submitted to the European Commission. Thus the database received from the Ministry of European Funds shows the final situation of the programmes financed from the respective operational programmes. Compared to the huge volume of information received, minor changes are likely to occur in future.

The actions financed from European funds and included in the database covered a long period of time (01.01.2007 – 31.12.2015). Therefore, for a clear picture, it was necessary to convert the RON data base to EUR. To secure the accuracy of the results, we have used the exchange rate of the National Bank of Romania on the day the payment was made by the recipient of funding to the supplier/service provider/the selected builder.

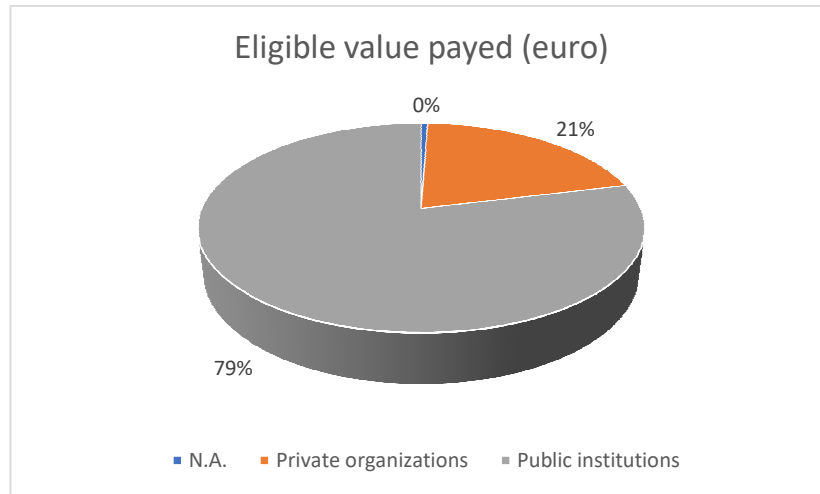
From the data base released by the Ministry of European Funds, we selected the information about the projects financed within SOP IEC Priority Axis III, during 2007-2013. We identified 1.966 such projects. Their distribution between public and private beneficiaries is shown in the next table.

**Table 1: Distribution (number) of projects financed by SOP IEC Priority Axis III between public and private organizations**

Type of organization	Number of projects
Private organizations	1.734
Public institutions	190
N.A. (information unavailable)	42
<b>Total</b>	<b>1.966</b>

As we can see, more than 90% of the ICT investment projects were implemented by private entities. Though it may look surprising, we should bear in mind that Priority Axis III had calls for projects dedicated to the private entities; yet their budget was very small (e.g.: under 100 000 RON for priority 3.1.1). There were also calls for projects for the public institutions; this time the eligible value was much higher, most of them reaching approximately 1, 500 000 euro

Obviously, it was relevant to analyze the distribution of the projects between the public and the private sectors based on the eligible value accepted by the funder at the end of the project. The result is shown in the figure below.



**Figure 1 : Distribution (in terms of the eligible values) of the projects funded by SOP IEC Priority Axis III between public and private organizations**

As expected, as far as the eligible value is concerned, the distribution between the private and public sectors is quite the opposite compared to the number of projects financed for each sector.

Almost all types of organizations registered in Romania were eligible for this priority axis. The budgets of the eligible expenses covered by each type of organizations are shown in the next table.

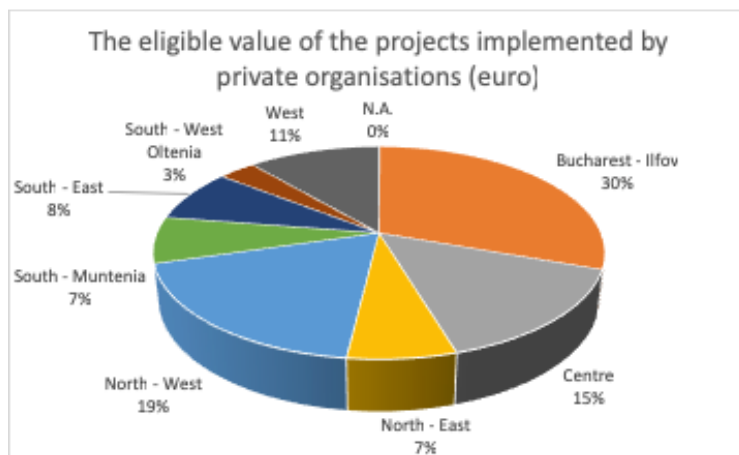
**Table 2 : Covering the budget spent within SOP IEC Priority Axis III according to the type of the beneficiary organization**

Type of organization	Number of projects	Eligible value reimbursed (euro)
Public central administration authority	30	215.986.400,41
Entity subordinated or coordinated by a public central administration	25	103.493.547,08
Administrative entity / county council	71	70.821.890,18
Small enterprise	624	43.956.967,55
Medium-sized enterprise	291	34.408.555,42
Micro enterprise	622	33.837.631,07
Public health entity	38	32.050.752,41
Research institute	1	17.307.264,91
Territorial administrative entity/ town hall/ local council	17	12.034.731,41
State University	7	6.438.478,86
Non-government, not- for- profit organization	159	5.260.996,16
N.A.	42	3.250.389,50
Private legal person of public interest	23	2.015.244,08
Large enterprise	4	306.320,82

Type of organization	Number of projects	Eligible value reimbursed (euro)
Entity subordinated or coordinated by an authority of the local public administration	1	199.753,26
Intercommunity development association	7	103.214,44
Custodian / administrator of a natural protected area	1	91.321,22
Nongovernment, non-profit entity of public utility, a legal person active in the regional development area	3	38.740,34
<b>Total</b>	<b>1.966</b>	<b>581.602.199,12</b>

The geographic distribution of the eligible values accepted by the funders for all the projects within SOP IEC Priority Axis III is also relevant. However, a global analysis of the projects implemented by both public and private beneficiaries would not be relevant, considering the huge discrepancy between the eligible values of the projects implemented by the two categories of beneficiaries.

The geographic distribution is illustrated in the next figures.



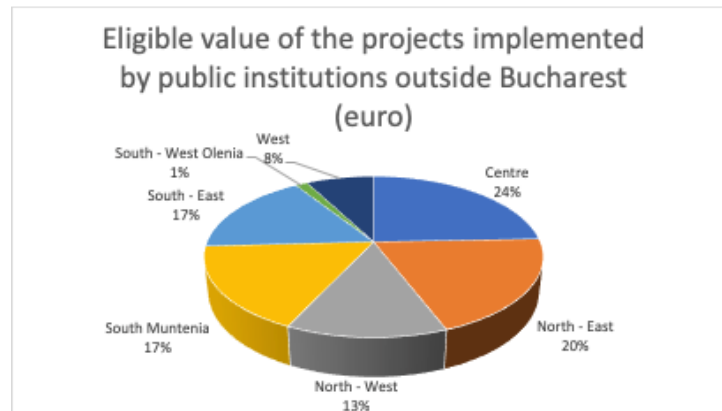
**Figure 2 : Geographic distribution of the projects implemented by private organizations**

The distribution of funds varies from region to region, with a major discrepancy between Bucharest-Ilfov Region, with 30% of the total value and South West Oltenia Region with 3% of the total value. The number of private companies active in the respective regions, as well as their dynamics, account for such a discrepancy.

To analyze the geographical distribution of the projects implemented by public institutions, we should bear in mind that we should not compare a programme implemented by a city hall to a programme implemented by a ministry. Both in terms of impact and of complexity / costs, the two types of projects are completely different.

The database released by the Ministry of European Funds includes a field referring to the type of beneficiary. Using that field to filter the data would not lead to accurate results (there are validation errors; for example, in the same category we can find both a Prefecture and the Labor Inspection Office). That is why we have chosen to filter the data according to the beneficiary's location, eliminating those based in Bucharest. Thus we have excluded the local authorities in Bucharest, which is a disadvantage. Yet it is not a major downside considering that, anyway, the local authorities in Bucharest, are – in most cases – completely different compared to those in the rest of the country.

The geographical distribution of the projects implemented by public institutions all over the country, Bucharest excluded, is shown in the next graph.



**Figure 3 : Geographic distribution of the projects implemented by public institutions outside Bucharest**

## Evaluating e-learning projects

### *Analysis of the international experience*

"An e-learning platform is a web ecosystem used to disseminate information, communicate and transfer knowledge in education and training processes" (Wilmar Audye Cidral, 2018)

As we have seen before, an ICT platform is an instrument (not an objective or a goal) to reach indicators. From this point of view, in order to assess strictly the investment project in ICT (in our case, the implementation of an e-learning platform), we should only measure to what extent the investment has helped or failed to achieve the proposed objectives (i.e. the quality of the "tool") separating this assessment from the quality of the supported processes or activities. The technical analysis of the e-learning platform is a relevant activity but is of particular interest to the technological field (Guseva, 2017)

In order to evaluate the project implementation of an e-learning platform, we should separate this assessment from the quality of the educational process, the quality of course materials, teachers / trainers, etc. However, such a separation is not possible. Clearly, the success of the e-learning platform implementation is also indicated by the satisfaction of its users (teachers / instructors and students / trained people). This satisfaction can only be evaluated accurately for the overall use of the platform and not for its components.

Once again, theoretically, the incremental method is a more appropriate assessment tool (i.e.: comparing the degree of satisfaction of the platform users with the satisfaction of users that have undergone the same educational / training process, but do not have access to the platform) or the benchmarking (comparison with the same education / training process carried out without using the e-learning platform, possibly by a similar institution). Such methods, though theoretically relevant, are actually impossible to apply because there are not two identical learning / education / training processes we could compare. Without considering other perspectives and elements, this type of processes is strongly influenced by participants. And the learners are different from one teaching process to another, making the groups impossible to compare.

A comparative method (for example, using a "control group") can be used when we want to evaluate a limited impact, a punctual or specific action of a defined target group (e.g. when analyzing the

influence of adaptive e-learning components on the efficiency of children's learning process in the primary cycle - (S. Hubalovsky, 2018)

Similarly to other complex ICT systems such as e-governing or e-health, the situation described above does not mean that there have been no credible, robust, scientific assessments of e-learning platforms. There have been attempts to verify proposed theories and methods in given situations by applying these assessment methods to one or more implementations (e.g. the analysis presented in (Salem Alkhalaf, 2012).

One of the elements used to assess the development of an e-learning platform is the interactivity of manuals available on the platform for the students. Although at first glance we might think that an interactive manual is more effective than a static pdf, in some cases it seems that this is just a student's perception, and, as far as test results are concerned, the situation is exactly the opposite (Cathy Weng, 2018)

Analyzing the quality of the training process carried out through an e-learning platform is extremely difficult. The research shows that there is no clearly defined and generally accepted methodology by the academic environment regarding the qualitative assessment of an e-learning platform. Such an assessment can be made from two points of view: technological and educational (Vlastimir Nikolić, 2018)

It seems, however, that it is almost universally accepted that the technological perspective is not relevant. As far as the educational perspective is concerned, it needs to be addressed with specific pedagogical tools, though they should be adapted to new ICT-specific tools. Such adaptation has not yet been achieved, with several global approaches and various proposals made by the scientific community.

A special category of e-learning platforms is the use of these tools in order to provide courses to employees. The evaluation of such platforms differs from that of a university e-learning platform, for example. The differences derive from the fact that the two categories of users (the employees and the students) attach different importance to the various facilities of an e-learning platform. For the employees, it is the flexibility (they have access to the courses at any time and do not have to leave the workplace), repeatability and the smooth adjustment to changes that matter. (Nima Jafari Navimipour, 2015). Therefore we could conclude that the defining elements of a "quality e-learning platform" are specific to the field of activity / use

### ***Analysis of the Main Projects Implemented In Romania***

E-learning projects are a sub-category of ICT investment projects run by public institutions. Thus, this type of projects retains all the characteristics of the "mother" class, i.e. ICT investment projects carried out by public institutions while also including specific sub-class characteristics.

One of the main features of e-learning projects in Romania in recent years is the emphasis on the amount of content available at the expense of the user's interaction complexity with the e-learning platform (e.g. interactive manuals). According to results of the analysis in the previous sub-chapter, the degree of technological complexity of digital content is not always proportionate to the efficiency and effectiveness of the knowledge transfer. However, the power and utility of complex system-user interaction systems should not be played down.

Within the SOP IEC Priority Axis III there was a financing line (Operation 3.2.3 Supporting the implementation of e-learning applications) dedicated to such projects. For private beneficiaries (companies) there was a funding line where e-learning projects were also eligible, but that line was common to other types of projects of interest to the private sector (e.g. e-commerce), therefore it is impossible to separate projects by their type. On the other hand, analyzing the list of projects

approved for funding, the title of the project shows that the number of private firms interested in acquiring e-learning applications was extremely small, making their contribution and importance to the entire market irrelevant.

For these reasons, the analysis of e-learning projects is limited to projects financed through SOP IEC 3.2.3.

The lack of interest and evaluation criteria for the complexity of the content of an e-learning platform is also reflected in the result and outcome indicators established by the applicant's guide, which are strictly quantitative indicators (such as the number of available courses or number of users) without taking into account qualitative elements (such as the type of courses available, their degree of complexity, the level of interaction between the platform and users, user satisfaction, etc.).

As with the general case of ICT investment projects carried out by public institutions, in case of e-learning projects, a relevant analysis is that of the categories of expenditures covered by the project. The situation is presented in the following table:

**Table 3 : Eligible values for types of expenditures covered by the e-learning projects**

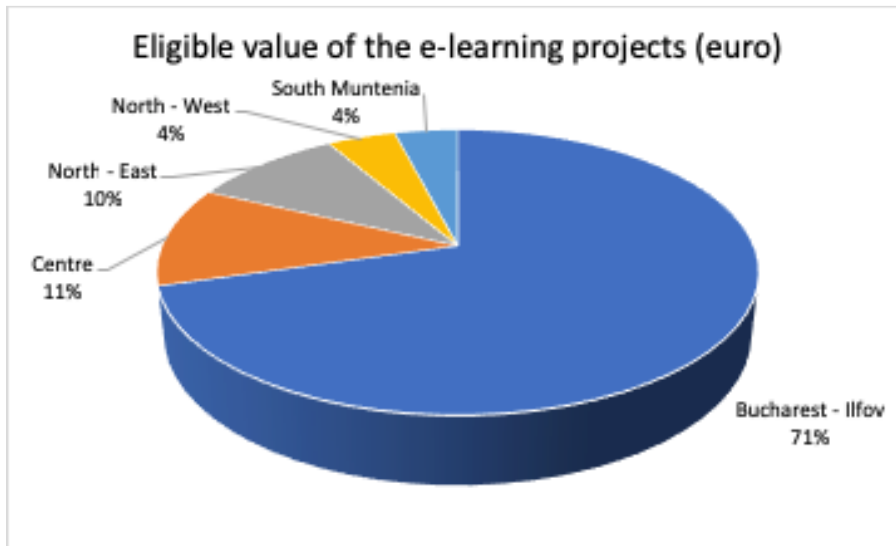
Type of expenses	Eligible value (euro)	Percentage of the total expenses
Expenses for the major investment – intangible assets	18.305.753	63,18%
Expenses for the major investment - facilities	5.992.824	20,68%
Expenses for specialized training	1.570.363	5,42%
SOP IEC project management related expenses	1.181.428	4,08%
Expense for the purchase of fixed assets	1.004.141	3,47%
Expenses for project consultancy and technical assistance	267.622	0,92%
Audit related expenses	264.101	0,91%
Expenses for project communication, dissemination and advertising as part of the beneficiary's obligations	165.262	0,57%
Connection to Internet broadband expenses	124.231	0,43%
Expenses for LAN network needed for the implementation of the project	64.026	0,22%
Expenses related to the preparation, organization and developing of the public procurement procedures	35.766	0,12%

We find that for these projects, the discrepancy between the expenditure for the acquisition of intangible assets and the expenditure for the acquisition of tangible assets is even stronger than in the general case of publicly funded ICT investment projects (63% / 21% for e-learning projects compared to 50% / 31% for all projects carried out by public institutions).

This result is not surprising given that for e-learning projects, in addition to the projects carried out by public institutions, additional modules / extra costs are expected to adapt the digital content to the new platform.

The analysis of the available information reveals a surprising result in terms of the regional distribution of e-learning projects implemented.





**Figure 4 : Regional distribution of the e-learning projects**

The very large share of projects implemented in the Bucharest - Ilfov Region is no surprise, given that Bucharest is the largest university center and it is supposed to be best informed and connected to financing sources. Surprisingly, however, there is a total lack of funding in the Western Region (as Timisoara is one of the largest university centers) as well as in the South Western Region of Oltenia (where a large university center is located in Craiova).

### **Conclusions and Recommendations**

The analysis of the international approaches of assessing the impact of ICT investment projects clearly shows that this area is new and it is currently developing. Generally accepted ICT assessment methods and mechanisms have not been identified yet, not even for parts of the ICT use (public administration, health, e-learning, etc.)

One consequence is that there is no clear definition of what a successful project means and what a failure means in this area. If extremes are clear (certainly a project that is not used at all represents a failure while an information system that is used by all potential users in all components of the system is undoubtedly a success), the scale of the success of a project is still a subjective theme, depending on who makes the assessment, his/her interests and understanding.

However, there are some conclusions that are generally valid for all approaches and situations under consideration. Here are some of the most important

- Using ICT is just a tool for achieving specific goals. Achieving an ICT infrastructure should not be an objective in itself, but a resource the user needs to achieve certain goals (higher efficiency, better access to knowledge he would have been unable to reach otherwise, etc.). Consequently, the fact that at the end of the project implementation the ICT infrastructure is functional and does not require interventions is compulsory, yet insufficient for a successful project.
- In most cases, the need of running an ICT investment project does not necessarily come first from the users or beneficiaries of that infrastructure. The need for technology can only arise when we have understood how that technology works and how / under what conditions it works. So "ICT demand" needs to be generated and developed by other stakeholders

(experts, traders, observers, etc.) who must help potential users and technology users to demand, support and use such IT systems.

- In most cases, the implementation of a major ICT investment project, as well as its monitoring and evaluation, can be conducted only by multidisciplinary teams that, above all, have the knowledge and skills required by area under scrutiny; the technical knowledge regarding the technological functioning of the investment come second.
- The impact of implementing an ICT investment project is of major importance, affecting the organization as a whole, as well as its interactions with external environment. Depending on the purpose of the preparatory analysis or evaluation, as well as on the stakeholders, the area under analysis or evaluation is only limited to certain aspects, while certain areas are not analyzed or rated.
- The analysis as such, the analyzed area, the interpretation of the results depends - in most cases - on the analyst, who is subjective. That is why, in most cases such impact analyses are questionable and not unanimously accepted

An example proving the importance of understanding the limitations of an impact analysis is given by the outcome of a e-learning research. Although at first glance we might think that, in some circumstances, an interactive manual is more efficient than a static pdf, it seems that this is just a perception of the student / user and that in terms of test results the situation is exactly the opposite. At the same time, this surprising finding proves that investment in more sophisticated technologies is not always justified, and sometimes even such choices could have adverse effects.

## References

Amit Das, H. S. (2017). A longitudinal study of e-government maturity. *Information & Management*, 415-426.

Anol Bhattacharjee, U. S. (2018). The effects of ICT use and ICT Laws on corruption: A general deterrence theory perspective. *In Press, Corrected Proof*.

Asta Taruțea, R. G. (2014). ICT impact on SMEs performance. *Procedia - Social and Behavioral Sciences*, 1218 – 1225.

Cathy Weng, S. O. (2018). Effects of interactivity in E-textbooks on 7th graders science learning and cognitive load. *Computers & Education*, 172-184.

Consoli, D. (2012). Literature analysis on determinant factors and the impact of ICT in SMEs, . *Procedia - Social and Behavioral Sciences*, 93-97.

Darko Stefanovic, U. M. (2016). Assessing the success of e-government systems: An employee perspective. *Information & Management*, 717–726.

Guseva, A. D. (2017). Modern technologies of e-learning and its evaluation of efficiency. *Procedia - Social and Behavioral Sciences*, 1032 – 1038.

Guy Grossman, M. R. (2018). Crowdsourcing accountability: ICT for service delivery. *World Development*, 74-87.

- Jeremy Rose, L. S. (2018). Stakeholder theory for the E-government context: Framing a value-oriented T normative core. *Government Information Quarterly*, 362-374.
- Leandro Coelho Serra, L. P. (2015). Accessibility Evaluation of E-Government Mobile Applications in Brazil. *Procedia Computer Science*, 348 – 357.
- March, H. (2018). The Smart City and other ICT-led techno-imaginaries: Any room for dialogue with Degrowth? *Journal of Cleaner Production*, 1694-1703.
- Mattia Cattaneo, P. M. (2016). The impact of University of the Third Age courses on ICT adoption. *Computers in Human Behavior* 63, 613e619.
- Ministerul Cercetării și Inovării. (2018, 09). *Organismul Intermediar pentru Cercetare*. Retrieved from <http://www.poc.research.gov.ro>
- Ministerul Comunicațiilor și Societății Informaționale. (2018, 09). *Organismul Intermediar pentru Promovarea Societății Informaționale*. Retrieved from <http://fonduri.mcsi.ro>
- Ministerul Dezvoltării Regionale și Administrației Publice . (2018, 09). *AM PODCA*. Retrieved from <http://www.fonduriadministratie.ro/ro/>
- Ministerul Fondurilor Europene. (2018, 09). *AM POS CCE*. Retrieved from <http://www.fonduri-ue.ro/poscce-2007>
- Ministerul Fondurilor Europene. (2018, 09). *AM POS CCE*. Retrieved from <http://old.fonduri-ue.ro/poscce/>
- Ministerul Fondurilor Europene. (2018, 09). Retrieved from <http://www.fonduri-ue.ro/posdru-2007>
- Montgomery Van Wart, A. R. (2017). Integrating ICT adoption issues into (e-)leadership theory. *Telematics and Informatics*, 527–537.
- Nam, T. (2018). Examining the anti-corruption effect of e-government and the moderating effect of national culture: A cross-country study. *Government Information Quarterly*, 273 - 282.
- Nima Jafari Navimipour, B. Z. (2015). A model for assessing the impact of e-learning systems on employees' satisfaction. *Computers in Human Behavior*, 475-485.
- P. Tafidis, E. M. (2017). Exploring the impact of ICT on urban mobility in heterogenic regions. *Transportation Research Procedia*, 309–316.
- Prashant Palviaa, N. B. (2018). ICT for socio-economic development: A citizens' perspective. *Information & Management*, 160-176.

Pratyush Nidhi Sharma, \*. F. (2018). An empirical and comparative analysis of E-government performance measurement models: Model selection via explanation, prediction, and parsimony. *Government Information Quarterly*.

Programul Operațional Regional. (2018, 09). Retrieved from <http://www.inforegio.ro/ro/por-2014-2020.html>

Qureshi, A. A. (2013). Impact of Leadership on Meaningful Use of ICT. *Procedia - Social and Behavioral Sciences*, 1744 - 1748.

Rajiv Kumar, A. S. (2017). Qualitative approach to determine user experience of e-government services. *Computers in Human Behavior*, 299-306.

Ramadiani, A. U. (2017). User Satisfaction Model for e-Learning Using Smartphone. *Procedia Computer Science*, 373–380.

Reza Khodaei Mahmoodi, S. H. (2016). Investigating the Effectiveness of E-government Establishment in Government Organizations. *Procedia - Social and Behavioral Sciences*, 136-141.

S. Hubalovsky, M. H. (2018). Assessment of the influence of adaptive E-learning on learning effectiveness of primary school pupils. *Computers in Human Behavior*.

Salem Alkhalaf, S. D. (2012). Assessing the impact of e-learning systems on learners: a survey study in the KSA. *Procedia - Social and Behavioral Sciences* , 98-104.

Sangki, J. (2017). Vision of future e-government via new e-government maturity model: Based on Korea's e-government practices. *Telecommunications Policy*, 1-12.

Vlastimir Nikolić, J. K. (2018). Survey of quality models of e-learning systems. *Physica A*, 324-330.

Wilmar Audye Cidral, T. O. (2018). E-learning success determinants: Brazilian empirical study. *Computers & Education*, 273-290.

Xian Gao\*, J. L. (2017). E-government services and social media adoption: Experience of small local governments in Nebraska state. *Government Information Quarterly*, 627-634.

Yueping Zheng, H. L. (2014). The impact of government form on e-participation: A study of New Jersey municipalities. *Government Information Quarterly*, 653–659.

## **Understanding Drivers, Barriers, and Benefits of Social Responsibility in Saudi Arabia Organizations**

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### **ABSTRACT**

Private and public organizations are receiving more and more attention from numerous stakeholders for their social performance, which includes not only issues of how they treat their workers and communities where their operations are located, but increasingly they are asked about the social profile of their suppliers and how they treat their workers and communities in which they operate. The response of businesses and public organizations to this attention is diverse, ranging from developing internal policies and putting demands on suppliers, to philanthropy projects, working directly with suppliers on aspects of labor practices or engaging in activities ensuring human rights in supply chains. The problem, however, is that these efforts are undertaken by very few large companies, while the majority of organizations still have not started addressing social issues in their daily activities. The purpose of this study is to better understand the drivers, barriers and benefits for including social aspects into Saudi company's practices. The study is based on a literature analysis and a collection and analysis of empirical data, through questionnaires, from Saudi public and private organizations regarding the drivers, barriers and benefits to incorporate social aspects into their activities and stimulate social improvements in their organization and in supply chain. This study will contribute to the body of knowledge in the area of CSR with particular interest on Saudi Arabia, as well as carry many implications for the industry and policy- makers in the government.

**Keywords:** social responsibility, drivers, barriers, benefits, Saudi Arabia

### **INTRODUCTION**

The literature review provides different opinions about the drivers, barriers and benefits, in adopting CSR practices. However, the majority of the research work has been conducted in the developed countries. This study will contribute to the body of knowledge in the area of Corporate Social Responsibility with particular interest on Saudi Arabia. Therefore, we believe that this empirical work is worthwhile, and shall shed the light on this area. The present study is significant at this time, because, of the opening of Saudi markets to foreign investments coupled with problems of the low oil price and its effects, and the 2030 Vision. One of the visions, related with corporate responsibility is that the Saudi Government aspire to have businesses not be geared solely towards generating profits but can contribute to developing of the society and country. They expect that companies observe their social responsibilities and contribute to creating a sustainable economy, including by creating the stimulating opportunities for young men and women that can help them build their professional careers. The businesses that follow through on this commitment to participate in the country and to address national challenges will be supported.

Therefore, exploring the drivers, barriers and benefits, in adopting CSR practices, shall facilitate the endeavours' towards deploying the implementation of the CSR practices. This research will draw useful lessons to practitioners from the industry and the government seeking to adopt CSR practices in their companies.

The research problem lies within corporate governance and social responsibilities companies undertake in an emerging economy. The concept of corporate social responsibility (CSR) is a blurry one with different interpretations, unclear boundaries and debatable legitimacy (Dahlsrud, 2008). Many scholars suggest various interpretations including company's engagement in social initiatives so that they can create long-term benefits for both the community and the company and positively impact their current and prospective stakeholders (Burke and Logsdon, 1996, Weber, 2008, Yin, 2017). Other scholar's advocate embedding social and environmental initiatives as part of company's strategy to ensure achievement of sustainability (Campbell, 2007). Finally, company's policy formulation needs to be strategically addressed and cross-examined if firms are to realize the benefits both to the company and to the wider society. Management of CSR activities and projects has thus become more challenging and been recognized as a fairly complex issue. This may have prompted some scholars to propose that CSR management issues should be indispensable to business strategy.

Given this background and add to the growing body of knowledge on social responsibility status in developing countries, this study aims to establish what CSR management entails in a developing country like Saudi Arabia. The aim of the project is to provide an illustrative picture of how large corporations in an emerging country such as Saudi Arabia engage in CSR practices, and discuss the drivers, challenges and benefits underlying these practices and levels of engagement. For the purposes of this research, the practice of CSR management is conceptualized from a combination of general management theories, especially motivation theories, behaviorist theories and stakeholder theory.

The objective of this study is to understand the drivers of Saudi companies of CSR, to evaluate the barriers faced in adopting the CSR practices, and identify the benefits.

Hence, the aims of the study are as follows:

- To evaluate the drivers of the Saudi organizations for adopting CSR practices differentiating them by company size and sector.
- To evaluate the barriers expressed or perceived by Saudi organizations which have adopted CSR practices
- To study whether or not the organizations obtained the expected benefits.

This study will aim to answer to the following questions:

- 1 - What motivates or drives organizations to implement CSR practices?
- 2 - Are there differences between private and public organizations drivers and barriers?
- 3 - What are the barriers to CSR practices in Saudi Companies?
- 4 - What is the perception of the benefits of the CSR practices by Saudi companies?

## **LITERATURE REVIEW**

CSR, in general, means the incorporation of issues such as human rights, environmental protection, labor rights, fighting corruption, and consumer protection and (Nijhof et al., 2005). These definitions put different degrees of emphasis on these points. For example, one renowned definition of CSR is "the continuing commitment by the business to behave ethically and contribute to economic development while improving the quality of life of the workplace and their families as well as the local community and the society at large" (World Business Council for Sustainable Development, 2005). Campbell (2007) noted that corporations act in a socially responsible manner when they do two key activities: First, they do not knowingly do anything that could harm their key stakeholders, such as their employees, investors, suppliers, customers, or the local community where they operate.

Second, if any harm occurs, they strive to rectify it whenever the harm is discovered and brought to their attention. Dahlsrud (2008) analyzed definitions of CSR reported in the literature and found that five dimensions are common in these definitions— environmental, economic, social, stakeholder, and voluntariness.

Some publications have focused on the business case for CSR. For instance, Berman et al. (1999) offered two perspectives on the motivation for implementing CSR – the instrumental and the normative approach. The instrumental approach to CSR suggests that the concern for stakeholders is motivated by a perception that the company’s financial performance can be improved through CSR. The normative perspective, on the other hand, suggests that organizations have a moral obligation to consider their stakeholder interests. The motivation for the implementation of CSR has been the subject of several studies (Zu and Song, 2009; Jamali, 2008), and Arvidsson, 2010)

However, there is a real scarcity of studies carried out in “Global South” countries. The concept of a north-south divide is well established in the CSR literature as CSR has been developed mainly in the “north” (i.e., developed countries) and has been slow to be adopted by the “south” (i.e., developing countries) (Gugler and Shi, 2009). The most of the studies on CSR have been carried out in the “north” (Blowfield and Frynas, 2005, Goyal et al., 2013). However, there is a scarcity of studies exploring the drivers for CSR implementation in the “south.” Research on the drivers of CSR is particularly lacking in Middle Eastern countries (Al-Abdin et al., 2018). Hence, this research sets out to explore the dynamics in CSR implementation.

There is significant evidence that CSR practices yield financial pay-offs and competitive advantage through differentiation from competitors (Burke and Logsdon, 1996) (cf. Makni et al. (2009). Meta-studies by Orlitzky et al. (2003) and Margolis and Walsh (2003) further confirm that there is a positive relationship between CSR implementation and firm’s financial performance. This makes a stronger business case for CSR and strengthened the notion that CSR practices are essential for successful business performance. For more details of the business case for CSR see Salzmann et al. (2005) and Weber (2008).

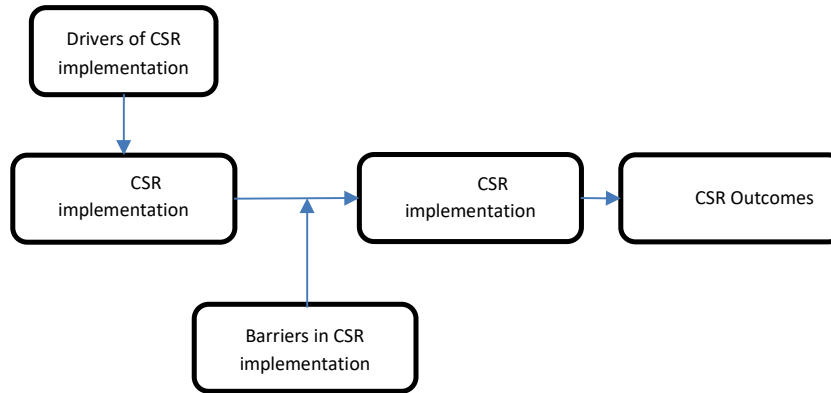
However, the implementation of CSR is not straightforward as it requires deep changes in organizational structures, routines, people behaviors’. Further organizational cultural values may either support or inhibit the adoption of CSR. Yin (2017) found that internal organizational factors, including ethical corporate culture, executives’ commitment, and external factors, such as globalization challenges, political factors, and normative social pressures, all affect the extent to which firms act in socially responsible ways. Further, research has shown that CSR drivers operate at the firm, industry, country, and national business systems levels (Orlitzky et al., 2017). Further, CSR is a contextualized concept, shaped by socio-political drivers, and contributes by bridging macro-level, socio-political facets of CSR with its meso-level, organizational implications (Maon et al., 2017). Indeed, contextual factors play a critical role in shaping the dynamics of CSR implementation (Al-Abdin et al., 2018). For example, in an organizational culture that values competitive, environment managers may tend to spend time and resources on the activities and processes that are linked to competitive advantage. Thus, it is imperative to explore the factors that motivate firms to implement CSR and barriers managers face in implementing CSR.

## **THEORETICAL FRAMEWORK**

Organizations play a critical role in the overall health and functioning of society. Corporate social responsibility (CSR) is based on the premise that organizations need to behave in a socially responsible manner. Numerous high-profile corporate scandals, including Ahold, Enron, WorldCom, Goldman Sachs and Parmalat (Campbell, 2007, Huff et al., 2009, Solomon, 2010) illustrate the necessity for CSR.

The literature on CSR has burgeoned during the last decade (Godfrey et al., 2009). CSR is widely viewed as an approach which has the potential to make corporate practices more transparent and socially responsible. Notwithstanding an increased emphasis on the need for CSR, incidents of

unethical corporate behavior continue to emerge. To this end, this paper seeks the drivers of CSR implementation in Saudi Arabia? More specifically what motivates firms to implement CSR and what obstacles are facing in the implementation of CSR. The theoretical framework for CSR implementation is shown as follows:



**Fig. 1 : The theoretical framework for CSR implementation**

## METHODS

This research is based on both primary and secondary data. The study is both descriptive and empirical in nature. The primary data is collected through the structured questionnaire consists of independent demographic variables and statements pertaining to corporate social responsibility in manufacturing and service companies. All the statements of corporate social responsibility are structured with Likert's five-point scale, which ranges from most important to not important.

The population of this study consists of private and public companies in Riyadh. The list of companies from different sectors will be selected randomly from a list of companies provide by the Riyadh Chamber of Commerce and Industry (RCCI). Since RCCI belongs to the government sector, it is considered one of the most trusted organizations to refer to.

To achieve the objective of this research, a survey based on a questionnaire designed to obtain evidence about the drivers, barriers and benefits of implementing CSR practices (cf. Annex 1). The instrument was derived from the literature review and was adjusted to add more clarity to the questions. The instrument contains both closed and open-ended questions. For the quantitative questions use a five-point Likert scale ranged from: (1) most important, to (5) not important.

The questionnaire contains two different sections and 13 (thirteen) questions. The first section will provide general information of the organization, such as, the business sector that it belonged to, the number of employees, gender, age, and job title of the person that reply to the survey and if the company is certified. This information concerning characteristics of the organization is required because a classification of the organizations by business sector and by size is needed in order to establish relationships with data about the implementation experience. Based on the responses to the first question, where the organizations will indicate their business sector, a categorization of the main sectors that the companies surveyed belonged to will be done. The second classification by size will be based on the answers to the question whether the company is a SME or a large enterprise, and also, considering the number of employees. The second section will focus on drivers, barriers, and benefits. This part intends to investigate the key drivers, and barriers that motivate the organizations to implement CSR practices. Different options will be given to the respondents, to select the appropriate ones and rank them. The objective of this part is to study the main drivers, and difficulties



that appear in the adoption of CSR practices, determining which drivers, and barriers are more restrictive, the internal or the external ones. The final question is based on the benefits that the organizations will obtain from their CSR practices in order to study if their expectations have been realized, and if they thought implementation was justified.

In the first stage the questionnaire will be validated by carrying out a pre-test in six companies of different activity sectors. The main goal of this first stage is to identify possible difficulties with the interpretation of the questionnaire and to eliminate or reformulate questions that were unanswerable. The questionnaire will be sent via e-mail or deliver personally in hand, explaining and justifying its main objectives. Based on the results of this pre-test, some questions can be remove and others rewritten, according companies' suggestions that will participate in the pre-test.

After format and wording revisions, surveys will be sent by e-mail and/or in person, to top and middle managers who are in charge of corporate social practices to a representative sample of private and public Saudi companies from different sectors located in Riyadh, along with a cover letter describing the objectives of the research and instructions on how to fill out the survey.

Once the information collect the next step consist of the analysis and interpretation of data. An excel file will be created with the data, and then exported to SPSS (Statistical Package for Social Sciences), which is powerful software to support statistics.

## CONCLUSIONS

In progress

## ACKNOWLEDGES

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## REFERENCES

Al-Abdin, A., Roy, T. & Nicholson, J. D. (2018). Researching corporate social responsibility in the Middle East: the current state and future directions. *Corporate Social Responsibility and Environmental Management*, 25, 47-65.

Arvidsson, S. (2010). Communication of corporate social responsibility: A study of the views of management teams in large companies. *Journal of Business Ethics*, 96, 339-354.

Berman, S. L., Wicks, A. C., Kotha, S. & Jones, T. M. (1999). Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management Journal*, 42, 488-506.

Blowfield, M. & Frynas, J. G. (2005). Editorial Setting new agendas: critical perspectives on Corporate Social Responsibility in the developing world. *International Affairs*, 81, 499-513.

Burke, L. & Logsdon, J. M. (1996). How corporate social responsibility pays off. *Long range planning*, 29, 495-502.

Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Journal*, 32, 946-967.

Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, 15, 01-13.

- Godfrey, P. C., Merrill, C. B. & Hansen, J. (2009). The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis. *Strategic Management Journal*, 30, 425-445.
- Goyal, P., Rahman, Z. & Kazmi, A. A. (2013). Corporate sustainability performance and firm performance research: Literature review and future research agenda. *Management Decision*, 51, 361-379.
- Gugler, P. & Shi, J. Y. (2009). Corporate social responsibility for developing country multinational corporations: lost war in pertaining global competitiveness? *Journal of Business Ethics*, 87, 3-24.
- Huff, A. S., Floyd, S. W., Sherman, H. D. & Terjesen, S. (2009). *Strategic management: logic and action*, Hoboken: NJ, John Wiley and Sons.
- Jamali, D. (2008). A Stakeholder Approach to Corporate Social Responsibility: A Fresh Perspective into Theory and Practice. *Journal of Business Ethics*, 82, 213-231.
- Maon, F., Swaen, V. & Lindgreen, A. (2017). One vision, different paths: An investigation of corporate social responsibility initiatives in Europe. *Journal of Business Ethics*, 143, 405-422.
- Margolis, J. D. & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly*, 48, 268-305.
- Nijhof, A., Bruijn, T. D., Fisscher, O. A. M., Jonker, J., Karssing, E. & Schoemaker, M. (2005). Learning to be Responsible: Developing Competencies for Organization wide CSR. In: Jonker, J. & Cramer, J. (eds.) Making a difference: Dutch national research program on corporate social responsibilities. The Hague: Ministry of Economic Affairs.
- Orlitzky, M., Louche, C., Gond, J.-P. & Chapple, W. (2017). Unpacking the drivers of corporate social performance: A multilevel, multi stakeholder, and multimethod analysis. *Journal of Business Ethics*, 144, 21-40.
- Orlitzky, M., Schmidt, F. L. & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24, 403-441.
- Salzmann, O., Ionescu-Somers, A. & Steger, U. (2005). The business case for corporate sustainability: literature review and research options. *European Management Journal*, 23, 27-36.
- Solomon, J. (2010). *Corporate Governance and Accountability*, West Sussex, Wiley.
- Weber, M. (2008). The business case for corporate social responsibility: a company-level measurement approach for CSR. *European Management Journal*, 26, 247-261.
- World Business Council For Sustainable Development. (2005). Business for development: business solutions in support of the millennium development goals [Online]. Geneva: World Business Council for Sustainable Development. [Accessed on 25<sup>th</sup> September 2018].
- Yin, J. (2017). Institutional drivers for corporate social responsibility in an emerging economy: A mixed-method study of Chinese business executives. *Business & Society*, 56, 672-704.
- Zu, L. & Song, L. (2009). Determinants of managerial values on corporate social responsibility: Evidence from China. *Journal of Business Ethics*, 88, 105-117.

# The Relationship between FDI Inflow and Unemployment: The Case of Slovakia

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## Abstract

The inflow of foreign direct investment is associated with several positive effects resulting in the growth of gross domestic product of host country. As the investments flow into the host country and more people occupy new jobs, the unemployment rate is decreasing. For this reason, many government is willing to subsidize or provide investment incentives for foreign investors. The paper deals with the relationship between the inflow of foreign direct investment and unemployment in the Slovak Republic for period 1995 – 2016. The goal of the paper is to study the length of the relationship between the investments flow into the Slovakia and the unemployment by the use of the vector autocorrelation regression and related impulse response functions. Results show that the impulse goes from the unemployment to the FDI inflow and the change in the unemployment rate has the impact on the inflow of foreign direct investment to the Slovak Republic. However, the length of this effect is very short.

**Keywords:** foreign direct investment, unemployment, impulse response function.

## Introduction

The inflow of foreign direct investment (FDI) to the Slovak Republic has a significant role for the Slovak economy. Slovakia started to receive considerable amount of FDI at the beginning of the new millennium. Until this time, the FDI inflow was relatively low, while the most investors allocated investments in neighbouring countries as Poland, Hungary and Czech Republic. The change in the inflow relates to the turn in the foreign policy of the new elected Slovak government in 1998. Government has taken new measures and Slovakia has reformed tax system, pension system, public administration and has decided to privatize state owned companies and financial institutions as banks and insurance companies. After the legal effect of measures, FDI started to flow into the Slovakia almost immediately. At the same time, the unemployment rate in the Slovak Republic began to descend and has continuously decreased until the arising of global financial crisis and its negative effect on the unemployment. The recovery period after the financial crisis has not brought FDI inflow in the amount as in pre-crisis period. However, the unemployment rate has fallen rapidly. The reason of decline was measures taken by the government for the active policy on the labour market. Also, many investors has launched the production in assembly halls or enlarge the existing capacities. Presently, the unemployment rate in the Slovak Republic is considered to be at the level of the natural rate of unemployment. Moreover, the demand for workers on the labour market is so high that companies have to employ workers coming from abroad.

The goal of the paper is to study the relationship between the FDI inflow and the unemployment rate in the Slovak Republic. Also, the length of the effect of the FDI inflow to the unemployment rate is examined. Finally, paper proposes policy recommendations based on the results of econometric analysis.

## Literature Review

The literature on the relationship between the FDI inflow, respectively FDI stock is extensive. As the investments create new jobs and thus decrease the unemployment rate in the host countries, which is

considered to be one of the positive effects of the FDI inflow, economists are curious to find evidence of this relationship and examine the strength of this relation and length of positive effect of the FDI inflow to the reducing in unemployment.

Started with the literature review, the EU countries were in the interest of Strat, Davidescu and Paul (Strat, V.A., Davidescu, A., and Paul, A.M.; 2015). They have analysed the relationship between unemployment and the FDI inflow on the sample of 13 European Union “new-members” for period from 1991 until 2013. Authors have used the VAR model and the Granger Causality. The results show that there is a causality relation running from the inflow of foreign direct investments towards the unemployment for four of thirteen studied countries (Strat, V.A., Davidescu, A., and Paul, A.M.; 2015). In three countries, the causality is opposite, running from unemployment towards the FDI inflow. This is also the case of the Slovak Republic. It means that foreign investors seek for locations or countries with the available workforce. The available workforce will further enhance and encourage the FDI inflow and subsequently cause the decrease in unemployment rate.

The region of West Balkan was in interest of Grahovac and Softić (Grahovac, D., Softić, S.; 2017). They have analysed the FDI inflow and the unemployment development in Western Balkan for period of 2000-2014. In this region is a small number of successful privatized enterprises, especially large enterprises of strategic significance, which have large number of employees (Grahovac, D., Softić, S.; 2017). With regard to the relationship between the unemployment and the FDI inflow, only Croatia shows the positive impact of the FDI on the unemployment rate. The feature of other countries is inadequacy of the FDI structure when comparing to the structure of the workforce. As a result, countries of Western Balkan have to face the high unemployment.

Continuing with the analysis of the group of countries, Mucuk and Demirsel (Mucuk, M., Demirsel, M.T.; 2013) have used the panel data analysis of the FDI and the unemployment relation for 7 developing countries. The time series consist of data for period 1981-2009. They have found that causality goes from the FDI to unemployment and FDI and unemployment move together in the long run. However, significantly, the FDI increases unemployment in two studied countries (Turkey and Argentina) and reduces unemployment only in Thailand.

The following papers focus on the study of the relationship between the FDI inflow and the unemployment in particular countries, not in a group of countries as previous papers.

Balcerzak and Zurek (Balcerzak, A.P., Zurek, M.; 2011) have used the VAR method to examine the relationship between the unemployment and the FDI in Poland. The study period is 1995-2009 with the use of quarterly data. They have found that the impulse in the form of foreign investment leads to the decreasing in the unemployment. However, this positive effect on the labour market is relatively short. For that reason, government has to take measures to prolong the duration of the FDI effect on unemployment by forming good conditions for improving quality of labour force (Balcerzak, A.P., Zurek, M.; 2011). For that reason, the priority of government should be the supporting of the high tech investment with the need of skilled and educated labour.

Irpan at all. (Irpan at all.; 2016) has studied the long run relationship between FDI and unemployment in Malaysia. Authors have used the ARDL model with the incorporating of other variables to the model. These variables are the GDP and the exchange rate. The time series use in analysis consist of data since 1982 until 2009. Authors have found that the FDI, the number of foreign workers and the GDP significantly influence the unemployment rate in Malaysia (Irpan at all.; 2016).

The study by Stamatiou and Dritsakis (Stamatiou, P., Dritsakis, N.; 2014) has focus on the Greece economy. Authors have used the time series analysis for period 1970 to 2012. The ARDL approach was used in analysis. They have tested relationship between unemployment rate, foreign direct investment and

economic growth. Results show the causality goes from the economic development (unemployment rate and economic growth) to foreign direct investment. It means, the FDI inflow reacts on the change of the macroeconomic parameters of the Greece economy or in other words, the FDI inflow depends on its performance.

Another paper dedicated to the single economy deals with the reducing unemployment in Pakistan. Paper by Zeb, Qiang and Sharif (Zeb, N., Qiang, F., Sharif M.S.; 2014) analyses the impact of the foreign direct investment on the unemployment. The multiple regression analysis was used with some other explanatory variables such as corruption, population and inflation. The time period covers years since 1995 until 2011. Results indicate that foreign direct investment in Pakistan has a significant role in the unemployment reduction.

A method of correlation and regression was used in analysis of Palát (Palát, M.; 2011) for the Japan. He has studied the relationship between the FDI inflow and the unemployment in period 1983 – 2009. The existence of correlation between these variables has been found.

The last paper by Simionescu, M. and Simionescu, M-D. (Simionescu, M., Simionescu, M-D.; 2017) deals with the US economy. Authors have used the vector error correction model to check the long run and short run relationship between the FDI inflow and the absolute variation of the unemployment rate. The quarterly data covered the period from 2000 to 2016. The findings show that only long run changes in the unemployment influences the FDI inflow. It means that the relationship goes from the unemployment to the FDI inflow and unemployment is important determinant of the FDI inflow to the USA.

## Methodology and Data

The feature of the real economy is that each macroeconomic variable depends on all other variables. The time series of the FDI inflow and the unemployment rate are evidently interrelated, however, it is not obvious if the relation comes from the FDI inflow to the unemployment or in opposite way. The increase in the FDI inflow often brings new jobs and unemployment rate is decreasing. Otherwise, decreasing unemployment rate is associated with the economic growth and the stability of the particular economy. As a result, foreign investors consider country as a potential place for allocation of their investments and the FDI inflow might raise. To solve the problem of interdependencies among different variables, the vector autoregression (VAR) is used. To understand the relations between the FDI inflow and the unemployment rate, Granger causality and impulse response analysis is also used. For the order of the VAR model, the Schwarz criterion was used. The specification of the VAR model, which will be used is as follows:

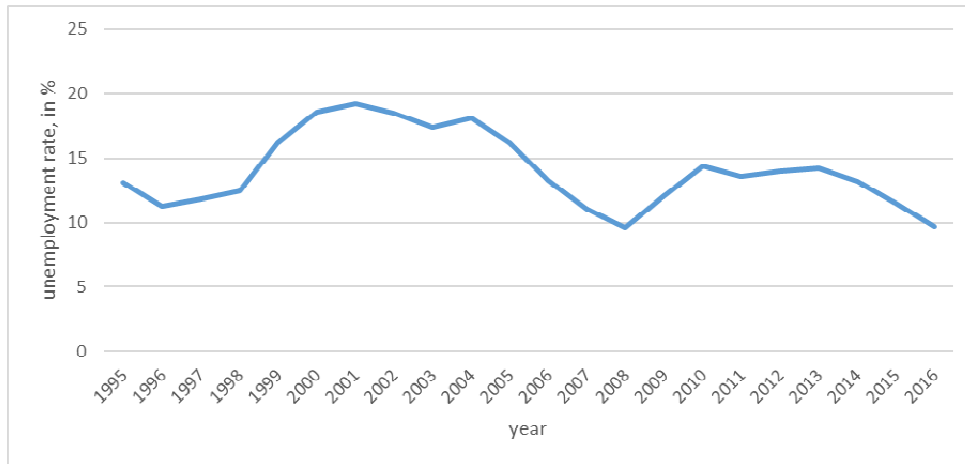
$$y_t = \alpha + \sum_{j=1}^k \beta_j y_{t-j} + \sum_{j=1}^k \gamma_j x_{t-j} + \varepsilon_t \quad [1]$$

where  $y_t$  is vector of  $n$  endogenous variables in time  $t$ ,  $\beta$  is the matrix of coefficients that will be estimated for endogenous variables,  $x_t$  is vector of  $m$  exogenous variables in time  $t$ ,  $\gamma$  is the matrix of coefficients that will be estimated for exogenous variables,  $\alpha$  is constant, and  $\varepsilon$  is the error term.

The analysis of the relationship between the FDI inflow to the Slovak Republic and the unemployment rate covers the period since 1995 until 2016. The previous data is not available as the Slovak Republic was established only in 1993 by splitting the former country of the Czechoslovakia. Despite that, data include all phases of the development of the Slovak economy, as the period of transformation process from the central planned economy to the market economy, membership in the EU and the membership in

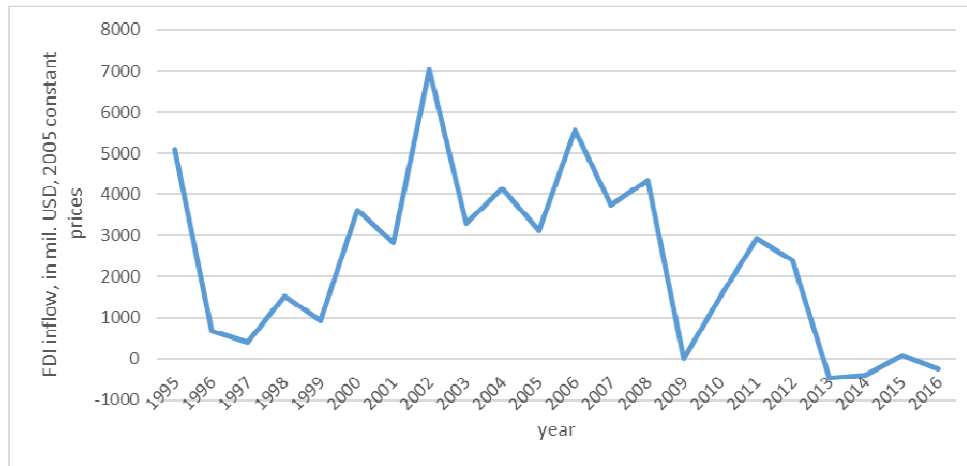
the Eurozone with the use of the common European currency, pre-crisis period of expansion, crisis and post-crisis period with the recovery of the national economy.

In the studied period, the unemployment rate in the Slovak Republic varied between 9,6% in the year 2008 and 19,2% in 2001. However, the unemployment rate in the Slovakia is continuously decreasing, nowadays attacking 6%.



**Fig. 1: Development of the unemployment rate in the Slovak Republic**

As seen on the Chart 2, the FDI inflow to the Slovak Republic was very turbulent with the peak in year 2002 and the second highest value in 2006. In both years, privatization process was taking part and state owned companies were privatized. On the other side, very low inflow was achieved before the year 2000. A feature of this period is the economic and political instability of the Slovak Republic, what has discouraged potential investors to allocate investment in the Slovakia. During the recovery period after the financial crisis, the level of the FDI inflow has not achieved volumes of the FDI flowing to the Slovakia before the crisis. Moreover, the disinvestment became common for the Slovak economy. To compare the development of the FDI inflow and the unemployment rate in last years, although was the FDI inflow very low, even negative (disinvestment), unemployment was continuously decreasing. The explanation of this fact might be in the time lag of the FDI effects. The FDI inflow to the country does not mean that new jobs are created immediately. Many of jobs are created later, when the company start to product in full capacity.



**Fig. 2: Development of the FDI inflow to the Slovak Republic**

To improve the VAR model and its explanatory properties, some other variables were taken into account and added to the VAR model. We have add the gross domestic product (GDP) to the endogenous variables. The assumption is that there is interdependency not only among the FDI inflow and the unemployment, but also among the FDI inflow and the GDP and among the unemployment rate and the GDP. The GDP represents the performance of the economy and its changes relates to the business cycle. Also, the level of the GDP is associated with the stability of the country’s economy. Similarly as in relation of the FDI inflow and the unemployment, it is not clear if the causality goes from the GDP to the unemployment or from the GDP to the FDI inflow and vice versa in both cases. Other variables added to the model are exogenous. These are final consumption representing domestic demand, average monthly salary influencing the unemployment on the one side as well as the cost of production for foreign investors, and export and import. The last two variables relates to the openness of the economy and at the same time, the import intensity and the opportunity to export produced goods in host economy is important factor for potential investors as well as important factor for job creation. The list of used variables is given in the Table 1.

**Table 1: Variables in VAR analysis**

Variable	Description	Type of variable	Unit	Source
$FDI_t$	Inflow of foreign direct investment to the Slovakia	Endogenous	mil. USD in 2005 constant prices *	UNCTADstat
$UR_t$	Unemployment rate	Endogenous	%	Statistical Office of the Slovak Republic
$GDP_t$	Gross domestic product	Endogenous	mil. USD in 2005 constant prices *	UNCTADstat
$C_t$	Final consumption (domestic demand)	Exogenous	mil. USD in 2005 constant prices *	UNCTADstat
$S_t$	Average monthly salary	Exogenous	in Euro, 2005 constant prices *	Statistical Office of the Slovak Republic
$EX_t$	Total export	Exogenous	mil. USD in 2005 constant prices *	UNCTADstat
$IM_t$	Total import	Exogenous	mil. USD in 2005 constant prices *	UNCTADstat

\* adjusted by author by the use of inflation index with the constant prices of 2005

## Results

To start with the analysis, the first step is to provide that time series used in the VAR model are stationary. To check, for the stationarity, augmented Dickey–Fuller test (ADF) test was done. The result of the ADF tests given in Table 2 shows that the FDI inflow, GDP, final consumption, average monthly salary, import and export are stationary at the first difference when the intercept is included in the equation. Unemployment rate is stationary at first difference when none (intercept or intercept and trend) is included. Due to these results, the first difference data for all variables were used in estimation of the VAR model.

**Table 2: Results of the ADF test**

Variable	T-statistics	Probability	Critical value	Include in equation
d_FDI	-7.336516	0.0000	-3.808546 *	intercept
d_UR	-2.517702	0.0148	-1.959071 **	none
d_GDP	-3.202143	0.0350	-3.020686 **	intercept
d_C	-2.895454	0.0636	-2.650413 ***	intercept
d_S	-2.862851	0.0676	-2.650413 ***	intercept
d_EX	-3.871631	0.0087	-3.808546 *	intercept
d_IM	-4.078796	0.0056	-3.808546 *	intercept

\* critical value at 1% level

\*\* critical value at 5% level

\*\*\* critical value at 10% level

Before the estimation of the VAR model, the Granger causality was tested. The values of F-Statistics and Probability of the null hypothesis are given in the Table 3. In all cases, the null hypothesis is that the change in the FDI inflow does not (Granger) cause the change in the unemployment rate and vice versa, the change in the FDI inflow does not (Granger) cause the change in the GDP and vice versa, and the change in the GDP does not (Granger) cause the change in the unemployment rate and vice versa. The lag of second order was established by the use of Schwarz criterion and is used also in specification of VAR model for endogenous variables. In the case of exogenous variables, the lag was not established. Results suggest that the change in the unemployment rate has the impact on the FDI inflow. Similarly, the change in the GDP has impact on the FDI inflow. On the basis of these results, we might conclude that the macroeconomic variables of the host country (GDP and unemployment rate) influences the FDI inflow to the country. From the investors' perspectives, the positive development of the host country' economy induces the FDI flowing into the country.

**Table 3: Granger causality, P-values of the F statistics**

Direction of the causality	Number of lags	F values	Probability	Decision
d_UR → d_FDI	2	3.66537	0.0525	reject
d_FDI → d_UR	2	1.17053	0.3388	do not reject
d_FDI → d_GDP	2	0.38975	0.6844	do not reject
d_GDP → d_FDI	2	2.99231	0.0828	reject
d_GDP → d_UR	2	0.46336	0.6385	do not reject
d_UR → d_GDP	2	1.78404	0.2041	do not reject

The VAR model to be estimated has three equations with the lag order of two for endogenous variables and without lag for the exogenous variables. The three equations makes the VAR estimation - equation 1: d\_FDI; equation 2: d\_UR; and equation 3: d\_GDP. In other words, the equation of the FDI inflow,



equation for the unemployment rate and the last equation for the GDP. Estimated model is presented in Table 4, Table 5 and Table 6.

**Table 4: Results for the equation 1: d\_FDI**

Variable	Parameter	Standard error	T-statistics
Constant	-95.06608	865.275	-0.10987
d_FDI (-1)	-0.681666	0.49384	-1.38033
d_FDI (-2)	-0.097224	0.37193	-0.26140
d_UR (-1)	-22.09814	633.392	-0.03489
d_UR (-2)	507.9692	707.191	0.71829
d_GDP (-1)	-0.017544	0.12537	-0.13994
d_GDP (-2)	-0.045555	0.13768	-0.33087
d_CONS	-0.025132	0.28703	-0.08756
d_SAL	4.436263	56.8294	0.07806
d_EX	-0.059392	0.55893	-0.10626
d_IM	0.125226	0.56456	0.22181

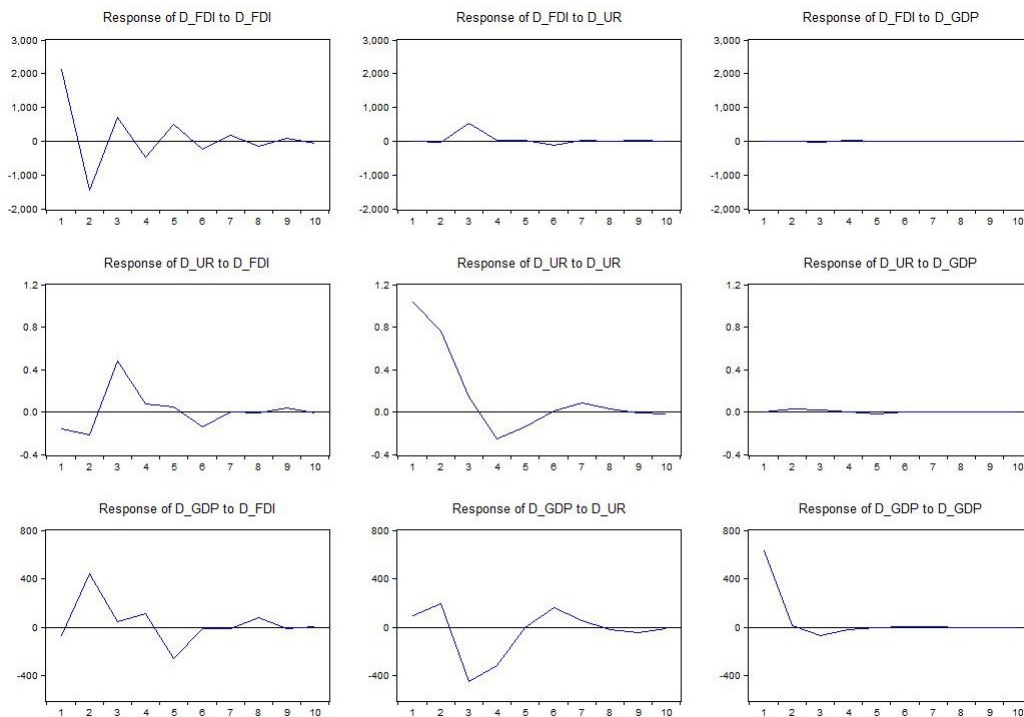
**Table 5: Results for the equation 1: d\_UR**

Variable	Parameter	Standard error	T-statistics
Constant	0.286078	0.42624	0.67117
d_FDI (-1)	-4.83E-05	0.00024	-0.19860
d_FDI (-2)	0.000229	0.00018	1.25221
d_UR (-1)	0.731516	0.31201	2.34451
d_UR (-2)	-0.407433	0.34837	-1.16956
d_GDP (-1)	3.93E-05	6.2E-05	0.63557
d_GDP (-2)	1.00E-06	6.8E-05	0.01478
d_CONS	-1.04E-05	0.00014	-0.07330
d_SAL	-0.026004	0.02799	-0.92890
d_EX	0.000310	0.00028	1.12530
d_IM	-0.000412	0.00028	-1.48253

**Table 6: Results for the equation 1: d\_GDP**

Variable	Parameter	Standard error	T-statistics
Constant	-442.2628	260.950	-1.69482
d_FDI (-1)	0.223168	0.14893	1.49844
d_FDI (-2)	0.143897	0.11217	1.28288
d_UR (-1)	190.4024	191.019	0.99677
d_UR (-2)	-559.8879	213.275	-2.62519
d_GDP (-1)	0.018584	0.03781	0.49154
d_GDP (-2)	-0.108913	0.04152	-2.62302
d_CONS	0.856928	0.08656	9.89941
d_SAL	38.15132	17.1386	2.22604
d_EX	0.375547	0.16856	2.22795
d_IM	0.008254	0.17026	0.04848

Continue with the analysis, the impulse response functions of the endogenous variables  $d\_FDI$ ,  $d\_UR$  and  $d\_GDP$  based on the VAR estimation are pictured on the Chart 3. To consider the results of the Granger causality, when only two null hypotheses were rejected, the interest is in the two impulse response charts. The impulse in the change of the unemployment rate has the impact on the change in the FDI inflow. The chart shows that the response of  $d\_FDI$  to  $d\_UR$  is lagged and the effect is very short, lasting only for two years. This result is not surprising, as investors perceive the unemployment development and the change in the unemployment rate two years ago will not assure the favourable economic environment for the current or following years. Second impulse response function, we are interested in, is the impulse of the GDP change and response in the change of the FDI inflow. However, the chart shows that there is almost no response of the change of the FDI inflow. In the case of the Slovak Republic, such result is supposable. Slovakia is very open small economy. The ratio of total export and import to the GDP is about 180. For that reason, corporations allocating investment in the Slovak Republic are mostly efficiency seeking investments using relatively cheap labour and other cost of production, and market seeking investment to find the new demand. However, as pro-export oriented economy, demand for the production is mostly in neighbouring countries or countries with relatively short distance for transport of production such as Germany. For these reasons, investors' decision making process is often not based on the level of the development or growth of the Slovak economy, but on the volume of demand in countries, where export goes.



**Fig. 3: Impulse response functions of endogenous variables**

## Conclusion

Since the economic reforms in the Slovak Republic in 1998, the FDI started to flow into the country. Greenfield investments and the privatization of the state owned companies are the main two form of the FDI in the Slovakia. Along with the FDI inflow, Slovakia has achieved high rates of economic growth and decreasing unemployment rate since the beginning of new millennium. The global financial crisis in

2008 has restricted this positive development and Slovakia has achieved negative growth, increasing unemployment and the disinvestment. The recovery period has not brought the volume of the FDI inflow to the pre-crisis period and the GDP growth was very modest as well. On the other side, unemployment has decreased rapidly. This fall was caused by the successful active labour market policy. The FDI inflow, the unemployment rate and the GDP are interrelated variables, which affects one other. To examine the causality between the variables, the VAR model, along with its tools as Granger causality and impulse response function were established. Results show that the change in the unemployment rate and the change in the GDP has the impact on the FDI inflow. Thus, the (Granger) causality goes from the unemployment and the GDP to the FDI inflow. This result represents the fact that the GDP and the unemployment rate, respectively their development in the Slovak Republic influence the process of decision making of potential foreign investors to allocate investment in the Slovak Republic. The impulse response functions of the founded causalities show the very short response in the change of the FDI inflow to the impulse in the change of the unemployment rate and almost no response in the change of the FDI inflow caused by the change in the GDP. This result implies that the potential foreign investors are not interested in the volume respectively level of the Slovak output and its development. Most of investors coming to Slovakia are efficiency seeking investments using relatively cheap labour and other cost of production, or market seeking investment to find the new demand in neighbouring countries, where the production is exported.

To conclude with the policy implications, Slovak government has to assign the favourable development of the unemployment and the continuous economic growth. By accomplishing these preconditions, the FDI inflow to the Slovak Republic might increase and country would take advantage of the positive effects coming from the FDI inflow.

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## References

- Balcerzak, AP and Zurek, M. (2011). 'Foreign Direct Investment and Unemployment: VAR Analysis for Poland in the Years 1995-2009,' *European Research Studies* 14 (1), 3-14.
- Grahovac, D and Softić, S. (2017). 'Impact of the FDI on Unemployment Rate in Countries of West Balkan', *Review of Innovation and Competitiveness* 3 (2), 65-82.
- Irpan, H. M. et al., (2016), 'Impact of Foreign Direct Investment on the Unemployment Rate in Malaysia', *Journal of Physics: Conference Series* 710. [Online], [Retrieved September 14, 2018], <http://iopscience.iop.org/article/10.1088/1742-6596/710/1/012028/meta>
- Mucuk, M and Demirsel, MT. (2013). 'The Effect of Foreign Direct Investment on Unemployment: Evidence from Panel Data for Seven Developing Countries', *Journal of Business, Economics & Finance* 2 (3), 53-66.
- Palát M. (2011), 'The Impact of Foreign Direct Investment on Unemployment in Japan', *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis* 59 (7), 261-266.
- Simionescu, M. and Simionescu, M-D. (2017), 'The Connection between Foreign Direct Investment and Unemployment Rate in the United States', *Globalization – Economic, Social and Moral Implications, Conference Proceedings*, 7-8 April 2017, Beltsville, Maryland, USA, 185-194.

Stamatiou, P. and Dritsakis, N. (2014), 'The Impact of Foreign Direct Investment on the Unemployment Rate and Economic Growth in Greece: A Time Series Analysis', *International Work-Conference on Time Series Analysis (ITISE)*, 25-27 June 2014, Granada, Spain, *Proceeding of ITISE*, Vol. 1, 97-108.

Strat, VA., Davidescu, A., and Paul, AM. (2015), 'FDI and the Unemployment – A Causality Analysis for The Latest EU Members', *Procedia Economics and Finance* 23, 2015, 2nd Global Conference on Business, Economics, Management and Tourism, 30-31 October 2014, Prague, Czech Republic, 635-643.

Zeb, N., Qiang, F., and Sharif MS. (2014), 'Foreign Direct Investment and Unemployment Reduction in Pakistan', *International Journal of Economics and Research* 5 (2), 10-17.

## **Studies on the Tourists Motivation Regarding the Selection of the Vacation Destination in Romania**

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### **Abstract**

Tourists represent the decisive factor contributing to the development of tourist areas, as is the case with Romania. Also, economic agents are filling their preferences, so a possible deviation from this pattern may lead to the disappearance of accommodation, which is why it is very important that the representatives of the accommodation establishments know the preferences and customs of the tourists in order to fold better on what they are looking for.

In this paper, we analyzed the main motivations of tourists when deciding to go on holiday.

The questionnaire was applied to a sample of 1010 tourists. It focused on issues such as how to get used to vacation, the budget allocated for a holiday, and how often holidaymakers go on holiday. As a method of research we used the method of the questionnaire and the results obtained were processed by: the association test (Chi-Square), Critical Value, Pearson's C value and Cramer's value V.

Regarding the holiday destination, most tourists say they choose to spend their holiday in the coastline at a rate of 44%, while 25% of the respondents choose to go to the mountains and 18% of the interviewees choose to spend their holidays outside the country. Those who choose to spend their holidays in the Danube Delta represent 14% of all interviewed.

**Keywords:** tourist flow, probability, questionnaire, association test (Chi-square), respondents, tourist destination

### **Introduction**

In the book by Honțuș, Adelaida (2009), the following is mentioned: in the specific conditions of the tourism activity, apart from the characteristic aspects of the spatial dispersion of the tourist flows, there is also frequent unequal distribution of the demand for services, which in different areas of touristic interest equates to a pronounced concentration of the arrival of visitors during certain periods of a calendar year and respectively the diminution - or sometimes even the cessation - of arrivals of tourists in other periods. These seasonal variations, with economic and organizational implications in the tourism activity, are also characteristic for our country. (Honțuș, Adelaida, 2009).

*Seasonal variations* are one of the main features of modern tourism; tourist activity is essentially distinguished from other economic activities by the very close correlation between the volume of supply and the demand for tourism during a calendar year. (Minciu, R., 2004). The more or less constant frequency of seasonal variations causes more specific changes in the economy of tourism than in other economic sectors, the increased seasonality influencing the increase in the cost of services and the diminishing of profitability, in many cases leading to uneven development of different areas of interest tourism. (Minciu R., 2007).

In a research study by Secăreanu, C., Firoiu D, (2011), they said that: Seasonal variations have long been considered as a special category of conjunctural fluctuations. It is necessary to distinguish between these two factors, which cause alternative changes in the volume and intensity of tourism demand, because the rhythmic changes and free changes, in fact, have a very different character. (Secăreanu, C., Firoiu D, 2011)

In the book by Crețu R. C. (2013), he said: factors favoring tourist traffic are the increase in the world population and the average life span, the increase in the gross national product, the increase in the degree of urbanization due to the rapid economic development, which has the consequence of intensifying tourist travels, which have become a vital necessity for the inhabitants of the big cities, leisure and paid holidays that influence the development of tourism, as well as the rapid growth of all means of transport with implications for increasing the mobility of the population and opening up new markets for tourism. (Crețu Romeo Cătălin, 2013).

Seasonal variations in tourist demand are recorded in all countries - tourist destinations, and these oscillations show an increasing trend in both volume and intensity. Seasonal concentration in tourism is a constant phenomenon of the tourist movement, generated by the nature and nature of the discontinuous flows of tourism demand. (Bîrsan, M., Șușu, Șt., 2013).

In the research conducted by Bălăcescu Aniela, Zaharia Marian (2012), they mentioned that: Accommodation capacity in operation, an essential element in the development process of accommodation, is an indicator with profound implications in determining the efficiency of tourism. (Bălăcescu Aniela, Zaharia Marian, 2012).

The forecasts for tourism development in our country are based both on the evolution of domestic and international factors, not least of which are the investment policy. (Neacșu, N., Băltărețu, A., 2005). It is also envisaged that the most important markets for the future development of international tourist traffic to our country will be: Germany, Great Britain, Holland, France, Italy, Scandinavian countries, United States of America, Czech Republic, Slovakia, Hungary, Poland, Yugoslavia and the former Soviet states. It is also expected that countries that can become important tourists for our country will be Austria, Switzerland, Israel, the Middle East, Japan, Australia, Canada, China.

The share of tourism in Gross Domestic Product (GDP) has increased from 1.5% in 2016 to around 2.6% in 2017, and for this year other major increases are projected, based on measures applied in 2017. O the big achievement of 2017 is the granting of holiday vouchers, worth 1,450 lei, for the employees in the budgetary sector. This program was adopted on 30.06.2017. The normative act stipulates the obligation to grant holiday vouchers to the employees in the budgetary system, a measure taken by the Government Program 2017-2020. The calculations underlying this measure were for the whole HORECA sector, so it was assumed that about 1.5 million public sector employees would be able to use these vouchers only to buy holidays in Romania, and the extra costs will remain in the HORECA sector, through specific expenses

Another achievement of the past year is the implementation of the Master Plan for Tourism, starting from the inventory and evaluation of uncompleted investments from European and governmental funds. With the Master Plan, funds have been secured to complete investments that are certain for the development of tourism in each area where the investments have been contracted.

## **The Research Method**

In order to accomplish this study, we used as a research method the questionnaire, and for the interpretation of the obtained results we used the Chi-square test, Critical Value, Pearson's C value and Cramer's V. (Merce, E., et al. a., 2010).

The questionnaire was applied to a sample of 1010 tourists. It focused on issues such as how to get used to vacation, the budget allocated for a holiday, and how often holidaymakers go on holiday. Of the total respondents surveyed, 41.58% were between the ages of 41 and 60, followed by those aged between 26 and 40, with a 37.62% share, and at the opposite those aged over 60 (11.88%) and those aged 18-25 (8.91%) (Table 1).

## Results and Discussions

As a result of the analysis of the questionnaire applied to the tourists, it is clear that a large number of the interviewed tourists prefer to spend holidays in the company of friends, accounting for 45.65% of the total respondents, followed by those who prefer to go on family holidays (%), while only 15.84% prefer vacations to spend in "two" (couple) (Table 1).

Thus, 41.58% of respondents surveyed were 41 to 60 years of age, followed by those aged between 26 and 40, with a 37.62% share, and the opposite places those over 60 (11.88%) and those aged 18-25 years (8.91%) (Table 1).

**Table 1: Structure of surveyed tourists about how they get used to holiday on the basis of their age**

<b>How do you get used to holidays?</b>				
<b>Age</b>	<b>With friends</b>	<b>In couple</b>	<b>In family</b>	<b>Total</b>
18 – 25 years	1.98%	3.96%	2.97%	8.91%
26 – 40 years	7.92%	3.96%	25.74%	37.62%
41 – 60 years	27.83%	4.95%	8.91%	41.58%
> 60 years	7.92%	2.97%	0.99%	11.88%
<b>Total</b>	<b>45.65%</b>	<b>15.84%</b>	<b>38.51%</b>	<b>100.00%</b>

(Source: Data processing from the questionnaire)

The tourists who responded to this questionnaire say 60,40% of them allocating for a budget a budget of 501 to 1500 lei (RON), 21,78% say they allocate less than 500 lei per member, while 17,82% say they allocate over 1.500 lei per member for a holiday (Table 2).

**Table 2: Structure of the surveyed tourists on the budget they allocate for a holiday according to their age**

<b>What is the budget you normally allocate for a holiday (accommodation)?</b>				
<b>Age</b>	<b>&lt; 500 lei (RON)</b>	<b>501 – 1500 lei (RON)</b>	<b>&gt; 1500 lei (RON)</b>	<b>Total</b>
18 – 25 years	4.95%	2.97%	0.99%	8.91%
26 – 40 years	6.93%	23.76%	6.93%	37.62%
41 – 60 years	6.93%	27.72%	6.93%	41.58%
> 60 years	2.97%	5.94%	2.97%	11.88%
<b>Total</b>	<b>21.78%</b>	<b>60.40%</b>	<b>17.82%</b>	<b>100.00%</b>

(Source: Data processing from the questionnaire)

Most of the interviewed tourists say that over 74% of them use to leave their place of residence in order to spend their spare time only during the vacation period, 13.86% say that every 3 months, while those who are interviewed who manage to leave their place of residence in order to spend their free time every month or every weekend represents only 7.92% and 3.96% of all respondents (Table 3).

**Table 3: Structure of the surveyed tourists on the time they spend holiday on the basis of their age**

<b>How often are you accustomed to going on holiday?</b>					
<b>Age</b>	<b>Weekend</b>	<b>Monthly</b>	<b>Once every 3 months</b>	<b>On vacation</b>	<b>Total</b>
18 – 25 years	0.99%	0.99%	1.98%	4.95%	8.91%
26 – 40 years	0.99%	4.95%	8.91%	22.77%	37.62%
41 – 60 years	0.00%	1.98%	1.98%	37.62%	41.58%
> 60 years	1.98%	0.00%	0.99%	8.91%	11.88%
<b>Total</b>	<b>3.96%</b>	<b>7.92%</b>	<b>13.86%</b>	<b>74.26%</b>	<b>100.00%</b>

(Source: Data processing from the questionnaire)

Of the tourists who prefer to go on holiday with their friends most of them use a budget of between 501 and 1500 lei (RON) per person and they account for 28.71% of the total number of respondents. For those who choose to go to the couple, most allocate a budget of less than 500 lei per person, and those who prefer to go to the family, the most numerous are those who allocate a budget of 501 to 1,500 lei (Table 4).

**Table 4: Structure of the surveyed tourists about the budget they allocate depending on how they get used to holiday**

<b>What is the budget you normally allocate for a holiday (accommodation)?</b>				
<b>Specification</b>	<b>&lt; 500 lei (RON)</b>	<b>501 – 1500 lei (RON)</b>	<b>&gt; 1500 lei (RON)</b>	<b>Total</b>
<b>With friends</b>	9.90%	28.71%	6.93%	45.54%
<b>In the couple</b>	6.93%	4.95%	3.96%	15.84%
<b>In family</b>	4.95%	26.73%	6.93%	38.61%
<b>Total</b>	<b>21.78%</b>	<b>60.40%</b>	<b>17.82%</b>	<b>100.00%</b>

(Source: Data processing from the questionnaire)

In the case of tourists who choose to spend their holidays in the company of friends, most of them said they did this during holiday leave (36.63% of the total number of respondents). Also the other two categories, namely those who prefer to spend their holidays in the couple and in the family, usually go to holiday during holiday leave, representing a weight of 9.90% and 27.72% of the total of the interviewed (Table 5).

**Table 5: Structure of tourists surveyed over time, depending on how they get used to holiday**

<b>How often do you get used to going on vacation?</b>					
<b>Specification</b>	<b>Weekend</b>	<b>Monthly</b>	<b>Once every 3 months</b>	<b>On vacation</b>	<b>Total</b>
<b>With friends</b>	1.98%	4.95%	1.98%	36.63%	45.54%
<b>In the couple</b>	0.99%	0.99%	3.96%	9.90%	15.84%
<b>In family</b>	0.99%	1.98%	7.92%	27.72%	38.61%
<b>Total</b>	<b>3.96%</b>	<b>7.92%</b>	<b>13.86%</b>	<b>74.26%</b>	<b>100.00%</b>

(Source: Data processing from the questionnaire)



Analyzing the structure of the tourists according to the budget allocated for the holiday, those who make available between 501 and 1500 lei per person are used to take holidays on holidays, representing a 50.50% share of the total number of respondents (Table 6).

**Table 6: Structure of surveyed tourists on the amount of time they spend holiday on the basis of the budget allocated to them**

How often do you get used to going on vacation?					
Allocated budget	Weekend	Monthly	Once every 3 months	On vacation	Total
< 500 lei (RON)	2.97%	3.96%	4.95%	9.90%	21.78%
501 – 1500 lei (RON)	0.00%	2.97%	6.93%	50.50%	60.40%
> 1500 lei (RON)	0.99%	0.99%	1.98%	13.86%	17.82%
<b>Total</b>	<b>3.96%</b>	<b>7.92%</b>	<b>13.86%</b>	<b>74.26%</b>	<b>100.00%</b>

(Source: Data processing from the questionnaire)

Also, the majority of those who allocate less than 500 lei and those who allocate a budget of over 1500 lei (RON) are used to leave only during holiday leave, representing 9.9% and 17.82% respectively of the total interviewed (Table 6).

Regarding the holiday destination, most tourists say they choose to spend 44% of their vacation in the seaside area, while 25% of the respondents choose to go to the mountains and 18% of the interviewees choose to - and spend holidays outside the country. Those who choose to spend their holidays in the Danube Delta represent 14% of all interviewees (Table 7).

**Table 7: Structure of the tourists' opinion regarding the destination they choose to spend the holiday according to their age**

Which destination do you choose for holidays?							
After the tourist's age							
Age	U.M.	Danube Delta	Outside the Country	Mountain	Seaside	Total	
		No.	No.	No.	No.	No.	%
18 – 25 years	No.	20	20	10	40	90	9%
26 – 40 years	No.	60	50	150	120	380	38%
41 – 60 years	No.	50	90	70	210	420	42%
> 60 years	No.	10	20	20	70	120	12%
Total	No.	140	180	250	440	1010	-
	%	14%	18%	25%	44%	-	100%
Standard Residue							
18 – 25 years	No.	0.67	0.31	-0.82	0.04		
26 – 40 years	No.	0.32	-0.68	1.82	-1.12		
41 – 60 years	No.	-0.34	0.55	-1.05	0.63		
> 60 years	No.	-0.51	-0.09	-0.56	0.78		
<b>Chi-Square Calculated =</b>	<b>9.50</b>	<b>Critical value (theoretical) =</b>			14.68	p > 0.1(*)	
					16.92	p > 0.05(**)	

Degrees of freedom (df) =	9		21.67	p > 0.01(***)
Cramer's V =	0.18	Pearson's C =	0.29	

Source: Data processing from the questionnaire

Analyzing from the point of view of the tourists' opinion of the destination they choose to spend their holidays by age, we can state that tourists aged 26 to 40 mostly opt for their holidays at mountain, while tourists aged 41 to 60 choose to spend their holiday in the seaside (Table 7).

**Table 8: Structure of tourists' opinion on the destination they choose to spend their holiday depending on how they get used to holiday**

Which destination do you choose for holidays?							
The way he likes to go on vacation							
Specification	U.M.	Danube Delta	Outside the Country	Mountain	Seaside	Total	
		No.	No.	No.	No.	No.	%
With friends	No.	70	90	100	200	460	46%
In the couple	No.	20	20	50	70	160	16%
In family	No.	50	70	100	170	390	39%
Total	No.	140	180	250	440	1010	-
	%	14%	18%	25%	44%	-	100%
Standard Residue							
With friends	No.	0.25	0.28	-0.41	-0.01		
In the couple	No.	-0.15	-0.50	0.52	0.01		
In family	No.	-0.17	0.02	0.11	0.00		
Chi-Square Calculated =	9.12	Critical value (theoretical) =			10.64	p > 0.1(*)	
Degrees of freedom (df) =	6				12.59	p > 0.05(**)	
Cramer's V =	0.05	Pearson's C =			16.81	p > 0.01(***)	
					0.09		

Source: Data processing from the questionnaire

Among the tourists who choose to spend their holidays with friends, most of them choose to spend the seaside holiday (19.80% of the total number of respondents), so the same situation is also found for the other two categories, namely who prefer to spend holidays in the couple and those who prefer to spend their holidays in the family with a slightly lower share of 6.93% and 16.83% of all respondents (Table 8).

**Table 9: Structure of the tourists' opinion regarding the destination they choose to spend the holiday according to the budget allocated for the holiday**

Which destination do you choose for holidays?							
After the budget allocated to the holiday							
Allocated budget	U.M.	Danube Delta	Outside the Country	Mountain	Seaside	Total	
		No.	No.	No.	No.	No.	%
< 500 lei	No.	0	0	90	130	220	22%

501 – 1500 lei	No.	110	90	140	270	610	60%	
> 1.500 lei	No.	30	90	20	40	180	18%	
Total	No.	140	180	250	440	1010	-	
	%	14%	18%	25%	44%	-	100%	
<b>Standard Residue</b>								
< 500 lei	No.	-1.75	-1.98	1.52	1.10			
501 – 1500 lei	No.	0.88	-0.57	-0.28	0.08			
> 1.500 lei	No.	0.32	<b>3.23</b>	-1.16	-1.37			
<b>Chi-Square Calculated =</b>	<b>25.48***</b>	<b>Critical value (theoretical) =</b>				10.64	p > 0.1(*)	
						12.59	p > 0.05(**)	
<b>Degrees of freedom (df) =</b>	<b>6</b>					<b>16.81</b>	<b>p &gt; 0.01(***)</b>	
<b>Cramer's V =</b>	<b>0.29</b>	<b>Pearson's C =</b>				<b>0.45</b>		

Source: Data processing from the questionnaire

By statistically testing the opinion of the tourists (Chi-Square = 25.48 \*\*\*, Critical Value = 16.81 at a probability of  $p > 0.01$ ), regarding the destination they choose to spend the holiday according to the budget allocated for the holiday, a very significant association between the destination they choose and the amount allocated for a vacation by the tourists on the analyzed problem, and from the analysis of R (Standardized Residue), there are very significant differences regarding the tourists who choose to spend their holidays in outside the country and which allocates an average of over 1500 lei for a holiday allowing us to conclude that the destination chosen for spending the holiday is influenced by the budget allocated for a holiday by them (Table 9).

Also, with Pearson's C and Cramer's V interpretations, in the present case it can be said that between the destination they choose to spend the holiday and the amount allocated for it (Pearson's C = 0.29, Cramer's V = 0.45), there is an association between the analyzed aspects, the destination chosen for spending the holidays is influenced by the budget allocated for a holiday by them (Table 9.).

**Table 10: Structure of the tourists' opinion regarding the destination they choose to spend the holidays according to the frequency of holidays**

<b>Which destination do you choose for holidays?</b>							
<b>After holiday frequencies</b>							
Specification	U.M.	Danube Delta	Outside the Country	Mountain	Seaside	Total	
		No.	No.	No.	No.	No.	%
At weekends	No.	0	10	20	10	40	4%
Monthly	No.	0	0	70	10	80	8%
Once every 3 months	No.	10	10	90	30	140	14%
On vacation	No.	130	160	70	390	750	74%
Total	No.	140	180	250	440	1010	-
	%	14%	18%	25%	44%	-	100%
<b>Standard Residue</b>							
At weekends	No.	-0.74	0.34	1.01	-0.56		
Monthly	No.	-1.05	-1.19	<b>3.57</b>	-1.33		

Once every 3 months	No.	-0.68	-0.95	2.97	-1.25	
On vacation	No.	0.81	0.72	-2.68	1.11	
<b>Chi-Square Calculated =</b>	<b>40.41***</b>	<b>Critical value (theoretical) =</b>			14.68	p > 0.1(*)
<b>Degrees of freedom (df) =</b>	<b>9</b>				16.92	p > 0.05(**)
					<b>21.67</b>	<b>p &gt; 0.01(***)</b>
<b>Cramer's V =</b>	<b>0.,37</b>	<b>Pearson's C =</b>			<b>0.,53</b>	

(Source: Data processing from the questionnaire)

By statistically testing the opinion of the tourists (Chi-Square = 40.41 \*\*\*, Critical Value = 21.67 at a probability of  $p > 0.01$ ), regarding the destination they choose to spend the holiday according to their frequency, it is noticed that there is an association very significant between the destination they choose and the frequency of their vacations on the analyzed problem, and from the analysis of R (Standardized Residue) there are very significant differences regarding the tourists who choose to spend their mountain holidays and those who have on average about a holiday per month, allowing us to conclude that the destination chosen for the holiday is influenced by the frequency of holidays they have (Table 10).

Also, in Pearson's C and Cramer's V interpretations, in the present case it can be said that between the destination they choose and the frequency of holidays (Pearson's C = 0.37; Cramer's V = 0.53), there is an association between the aspects analyzed, the destination chosen for the holiday is influenced by the frequency of holidays they have. (Table 10).

## Conclusions

The opinion of the 1010 tourists who responded to the applied questionnaire is divided and is based mainly on the experience each tourist has had over the accommodation spaces as well as on the experience they had in the dream -the tourist areas.

Thus, the most important conclusions that come out of the questionnaire applied to the tourists are:

- ↳ of the total respondents interviewed 41.58% were between 41 and 60 years of age, followed by those aged between 26 and 40, having a weight of 37.62%, and at the opposite pole those aged over 60 (11.88%) and those aged 18-25 (8.91%);
- ↳ based on the analyzed questionnaire applied to the tourists, it is evident that a large number of the interviewed tourists prefer to spend holidays in the company of friends, having a share of 45.65% of the total respondents, followed by those who prefer to go on family holidays (38.51%), while only 15.84% prefer holidays to spend in "two";
- ↳ the tourists who participated in this questionnaire say 60.40% of them allocate for a budget a budget of 501 to 1500 lei, 21.78% say they allocate less than 500 lei per member in time 17.82% say they allocate over 1500 lei per member for a holiday;
- ↳ most of the interviewed tourists say that over 74% of them use to leave their place of residence in order to spend their spare time only during the vacation period, 13.86% say that once every 3 months, while those who manage to leave their residence in order to spend their free time every month or every weekend represent only 7.92% and 3.96% of all those who answered the questionnaire;
- ↳ among the tourists who prefer to go on vacation with most friends, they are willing to allocate a budget of between 501 and 1500 lei per person and represent a share of 28.71% of the total number of respondents. For those who choose to go to the couple, most allocate a budget of less than 500 lei per person, and those who prefer to go to the family, the most numerous are those who allocate a budget of 501 to 1500 lei ;

↳ in the case of tourists who choose to spend the holiday with the Pyrenees company, most of them said they did so during holiday leave (36.63% of the total number of respondents). Also, the other two categories, namely those who prefer to spend their holidays in the couple and in the family, get used to vacation during holiday leave, accounting for 9.90% and 27.72% of the total of the interviewed ;

↳ by analyzing the tourists according to the budget allocated for the holiday, those who make available between 501 and 1500 lei per person are used to leave on vacation during holiday leave, accounting for 50.50% of the total number of respondents. Also, the majority of those who allocate less than 500 lei and those who allocate a budget of over 1500 lei are used to leave only during holiday leave, representing 9.9% and 17.82% of the total interviewed;

↳ concerning the holiday destination, most tourists say they choose to spend 44% of their vacation in the seaside area, while 25% of respondents choose to go to the mountains and 18% of those interviewed choose to spend their holidays outside the country. Those who choose to spend their holidays in the Danube Delta represent 14% of all interviewed.

Regarding the motivation of the tourists, regarding the choice of the holiday destination, we can mention some of the most important motivations of the tourists, such as: the price-quality ratio of the accommodation; the good impression, preserved by some tourists, from previous experience; the attractiveness of the landscape; friends' recommendations regarding an accommodation unit; the variety of attractions and activities the hotel offers; friendliness and hospitality of staff. These aspects are just some of the motivations that tourists take into account in choosing the holiday destination.

## References

- Bălăcescu, Aniela, Zaharia, Marian (2012), "Statistical analysis of tourist traffic and accommodation capacity in operation during 2000-2009 in Braşov County", *Annals of "Constantin Brâncuşi" University, Târgu Jiu*, Nr.3 / 2012
- Bîrsan, Mihaela, Şuşu, Şt. (2013), *Economic and Financial Analysis in Trade and Tourism*, Didactic and Pedagogical Publishing House, Bucharest
- Creţu Romeo Cătălin (2013), *Agrotourist Resources Management*, University Publishing House, Bucharest
- Honţuş, Adelaida (2009), *Tourism and Agrotourism Geography of Romania*. Ed. II Rev., CERES Publishing House, Bucharest
- Merce, E., et al. a. (2010), *Statistical Data Processing*, Academic Press Publishing House, Cluj-Napoca
- Minciu R. (2004), *Economy of Tourism*, Second Edition, Uranus Publishing House, Bucharest
- Minciu R., coordinator, (2007), *Tourism Economy. Applications*, Uranus Publishing House, Bucharest
- Neacşu N., Balatrefu A. (2005), *Tourism Economy - Practical Work. Statistics. Regulations*, Uranus Publishing House, Bucharest
- Secăreanu, C., Firoiu D. (2011), "Statistical methods used in the analysis and forecast of tourism activity affected by seasonality", *Romanian Economic and Business Review*, Vol. 6, No. 4, ISSN 1842-2497, pp 150-157

## **Study on the Tourist Evolution in Gorj County for the Tourist Planning of the Territory in That Area**

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### **Abstract**

Tourism can be an important component of a land development planning strategy as well as the economic development of an area or regions. If an area has important natural attractions, historical or cultural vestiges, sports facilities, event organizing facilities and other similar assets, then the tourist promotion of an area can attract more visitors, potential tourists, to that community, which will spend time and spend money to take advantage of these benefits.

Seasonality is the dominant feature of tourist activity and must be taken into account in the formulation of land development planning strategies. The seasonality of the tourist demand is an objective reality that deeply marks the entire activity of the agents involved in tourism. Thus, in this paper we analyzed the evolution of the tourist traffic in Gorj County, during the period 2012-2017, based on the data provided by the National Institute of Statistics, using as a research method the calculation, analysis and interpretation of the results of the specific indicators and tourism indices, for the purpose of planning the territory.

**Keywords:** tourists, analysis, tourist traffic, accommodation units, tourists' arrivals, tourism indexes and indices, tourist density

### **Introduction**

In a study by Popescu Agatha (2016), she said that the development of tourism in an area or region is determined, among other factors, by the accommodation capacity and quality of existing tourism services. Creating accommodation units in different regions is a way to make better use of local human and material resources, create jobs and diversify services, increase the income and living standards of the local population and communities. (Popescu, Agatha, 2016, Vol. 16/4).

The connection between the accommodation capacity and the number of tourists is very important, given the arrivals and the number of overnight stays. This link could be used successfully in tourism planning and tourism development programs in an area or region, in order to increase the turnover of the tourism and tourism industry itself. (Popescu, Agatha, 2016, Vol. 16/4).

Popescu Agatha (2016) mentions in one of the articles the following: Romania could be considered one of the most beautiful countries in Europe because of its nice landscapes, rich traditions and culture, but its touristic potential is not enough utilized. (Popescu, Agatha, 2016, Vol. 16 /1).

The development of the tourism is considered as a priority economic option, having in mind the high potential for a large variety of tourism types. The planning of the destinations and the availability of

resources are destined to support the strategies of sustainable tourism development in Romania (Popescu, Agatha, 2016, Vol. 16 /1).

Grigoras, Mircea Adrian; Popescu, Agatha; Grigoras, Brîndușa Antonia, (2018), stated that: in the structure of accommodation units in Romania, tourist and agro-tourist guesthouses are more and more attractive for Romanian tourists due to a diversified offer and a more convenient tariff per night compared to other types of accommodation units (Grigoras, Mircea Adrian; Popescu, Agatha; Grigoras, Brîndușa Antonia, 2018).

An important factor for the development of tourism and the economy of an area is rural tourism, which could become an objective of tourism planning strategies for the territory. (Grigoras, Mircea Adrian; Popescu, Agatha; Grigoras, Brîndușa Antonia, 2018).

In the book of Candea, Melinda, Simion, Tamara (2006), they said that Gorj County's tourism potential is closely linked to relief, climate, hydrography, flora and fauna. The relief of Gorj County is made up of mountain massifs, submontane hills and a hilly area extended in the southern half of the county. The mountain massifs present in the county are part of the Meridional Carpathians group. The existence of very resistant rocks, granite, limestone, limestone in the mountain area have created numerous spectacular valleys and culverts that have become objectives of tourist interest. (Candea, Melinda, Simion, Tamara, 2006).

In his book, Hontuș, Adelaida (2009), he claims that the archaeological area with touristic value is represented by the few Roman castles and old, more distinct settlements, located in different localities, in the county. The numerous wooden churches in the cultural heritage are impressive, and most are located in the countryside. It is remarkable that in the urban and rural settlements a large number of old houses, valuable for the era and the style in which they were built, have been preserved. In Gorj County there are some objects of great artistic and historical value, a large number of museums, as well as the folklore holidays and folk manifestations. (Hontuș, Adelaida, 2009).

In a study conducted by Popescu Agatha (2017), it stated that tourism flows have a strong impact on tourism and tourism offer stimulate the development of tourism flows among other factors. Obviously, between the supply and demand of tourism is and must be a close relationship. (Popescu Agatha (2017). Also, Popescu Agatha (2017), in the same study, concluded that the number of people traveling for different purposes in a location different from their place of residence and the use of tourist facilities and services defines the concept of tourism demand. (Popescu Agatha (2017).

In their study Plesoianu, Daniela-Mirela; Moise, Andreea; Popescu, Agatha (2017), states that the most important in defining the tourist purpose remains the motivation, depending on which tourist chooses their destination and leisure type. (Plesoianu, Daniela-Mirela, Moise, Andreea, Popescu, Agatha (2017).

## **The Research Method**

This paper is based on an analysis of the evolution of tourism demand and supply in Gorj County, so that specific strategies specific to the area regarding the touristic development of the county can be adopted. The research study carried out consists of studying, analyzing and interpreting the statistical data on the tourist circulation in this county, the tourist density in relation to the number of inhabitants and the area of the county.

The objective of this study is to be able to make the best decisions on the county's tourism development so that we can determine whether the promotion and services offered to tourists can be improved. To carry out this research we used a series of statistical data on the tourist traffic in the area, made available by the National Institute of Statistics.

Thus, for the analysis of the tourist traffic we have calculated, analyzed and interpreted the results obtained at the following indicators of tourism demand and supply at the county level, as follows: *Index of global tourist demand change*, *Index of global tourist demand distribution*, *Index of (domestic and foreign) demand variation in time*, *Average stay*, *The coefficient of the monthly tourist concentration (2017)*, *The share of the accommodation capacity of each type of accommodation unit in the total accommodation capacity in the county*, *Index of overnight stay evolution*, *Pension occupancy indicator*, *Tourist density indicator in relation to population density*, *Tourist density indicator in relation to area*. (Honțuș, Adelaida (2015). Evolution of each tourist traffic indicator helps us to see the degree of development of tourism in Gorj County and which strategies for development and tourist planning of the territory can be implemented in this area.

## Results and Discussions

### Indicators of tourism demand and supply in Gorj County, South-West Macroregion Oltenia

**Table 1: Establishments of tourist reception in Gorj County**

Type of establishment of tourist reception	County	Years					
		2012	2013	2014	2015	2016	2017
		MU: Number					
Hotels	Gorj	15	15	17	16	16	17
Touristic boarding houses	Gorj	18	18	20	22	20	23

Source: 1998 - 2018 NATIONAL INSTITUTE OF STATISTICS [www.insse.ro](http://www.insse.ro)

**Table 2: Existing tourist accommodation capacity in Gorj County**

Type of establishment of tourist reception	County	Years					
		2012	2013	2014	2015	2016	2017
		MU: Places					
Hotels	Gorj	1128	1140	1206	1142	1044	1108
Touristic boarding houses	Gorj	445	447	485	534	515	555

Source: 1998 - 2018 NATIONAL INSTITUTE OF STATISTICS [www.insse.ro](http://www.insse.ro)

The tourist accommodation structures and the number of accommodation places registered an upward trend for the analyzed period in the county of Gorj.

**Table 3: Arrivals of tourists accommodated in the structure of tourists reception in Gorj County**

Type of establishment of tourist reception	Type of tourists	County	Years					
			2012	2013	2014	2015	2016	2017
			MU: Number of Persons					
Hotels	Total	Gorj	41921	40520	41147	36285	37103	35086
-	Romanian	Gorj	39217	37679	38871	34095	35029	33112
-	Foreign	Gorj	2704	2841	2276	2190	2074	1974
Touristic boarding houses	Total	Gorj	12842	12879	12928	14780	15645	23356
-	Romanian	Gorj	12209	12129	12316	14175	15090	22382
-	Foreign	Gorj	633	750	612	605	555	974

© Source: 1998 - 2018 NATIONAL INSTITUTE OF STATISTICS [www.insse.ro](http://www.insse.ro)



In Gorj County, the number of tourists, both Romanians and foreigners, had an upward trend over the analyzed period, except for hotels where the number of foreign tourists decreased annually.

**Table 4: Permanent Resident Population in Gorj County**

Type of establishment of touristic reception	Type of tourists	County	Years					
			2012	2013	2014	2015	2016	2017
			MU: Number					
Hotels	Total	Gorj	115260	110615	102034	75569	70253	56267
-	Romanian	Gorj	106296	102174	97103	70630	65282	52313
-	Foreign	Gorj	8964	8441	4931	4939	4971	3954
Touristic boarding houses	Total	Gorj	21458	22405	21023	23357	27068	38431
-	Romanian	Gorj	19717	20183	19702	22228	26232	37035
-	Foreign	Gorj	1741	2222	1321	1129	836	1396

© Source: 1998 - 2018 NATIONAL INSTITUTE OF STATISTICS [www.insse.ro](http://www.insse.ro)

In the analyzed county, Gorj, there was an upward trend in the number of overnight stays for all types of tourist reception facilities, except for the overnight stays of foreign tourists in hotels where the trend was decadent.

**Table 5: Population By House In Gorj County**

Age group and ages	Sex	County	Years					
			2012	2013	2014	2015	2016	2017
			MU: Number of Persons					
Total	Total	Gorj	375439	373441	371345	369004	366429	364145

Source: 1998 - 2018 NATIONAL INSTITUTE OF STATISTICS [www.insse.ro](http://www.insse.ro)

**Table 6: Arrivals of tourists accommodated in the structure of tourists reception by in Gorj County**

Type of establishment of touristic reception	Type of tourists	Months											
		Jan. 2017	Feb. 2017	March 2017	Apr. 2017	May 2017	June 2017	July 2017	Aug. 2017	Sept. 2017	Oct. 2017	Nov. 2017	Dec. 2017
		MU: No. of Persons											
Hotels	Total	2558	2549	1909	2472	2396	3030	3965	5129	3625	2760	2187	2506
-	Romanian	2502	2452	1851	2277	2285	2838	3619	4742	3384	2656	2119	2387
-	Foreign	56	97	58	195	111	192	346	387	241	104	68	119
Touristic boarding houses	Total	1867	1720	1040	1261	1273	2152	2993	4382	1863	1573	1428	1804
-	Romanian	1854	1709	1030	1215	1201	2032	2839	4021	1765	1529	1404	1783
-	Foreign	13	11	10	46	72	120	154	361	98	44	24	21

Source: 1998 - 2018 NATIONAL INSTITUTE OF STATISTICS [www.insse.ro](http://www.insse.ro)

On the basis of the statistical data, regarding the tourist traffic in Gorj County, we will analyze the Tourist Indicators of Tourist Demand and Tourist Offer in this area.

### 1. Index of global tourist demand change

$\Delta CG_{0-i} = [(No. \text{ Romanian tourists} + No. \text{ Foreign tourists}) \text{ per current year} / (No. \text{ Romanian tourists} + No. \text{ Foreign tourists}) \text{ per previous year}] * 100$  (Honțuș, Adelaida (2015))

**For hotels**
**Table 7: Evolution of the Index of global tourist demand change in Gorj**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	Number of tourists (Romanians + foreigners) in hotels	41921	40520	41147	36285	37103	35086
	$\Delta$ CG for hotels (%)		96.66%	101.55%	88.18%	102.25%	94.56%

 Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The index of global tourism demand change for the total number of tourists (Romanians + foreigners) at hotels* during the analyzed period had a oscillating evolution. From a fall of 3% over the period 2013-2014, it reached a maximum increase of 2% between 2015-2016, after which in the last calculation period it had a decrease of 6%.

**For Touristic boarding houses**
**Table 7: Evolution of the Index of global tourist demand change in Gorj**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	Number of tourists (Romanians + foreigners) in Touristic boarding houses	12842	12879	12928	14780	15645	23048
	$\Delta$ CG for Touristic boarding houses (%)		100.29%	100.38%	114.33%	105.85%	147.32%

 Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The index of global tourism demand change for the total number of tourists (Romanians + foreigners) at touristic boarding houses*, in the analyzed period had an increasing trend. From an insignificant increase in the first period, it reached a maximum increase of 47% in the last calculation period, 2016-2017.

**2. Index of global tourist demand distribution**

$$\Delta CI = [No. \text{ Romanian tourists per current year} / (No. \text{ Romanian tourists} + No. \text{ Foreign tourists}) \text{ current year}] * 100$$

$$\Delta CE = [No. \text{ Foreign tourists per current year} / (No. \text{ Romanian tourists} + No. \text{ Foreign tourists}) \text{ current year}] * 100$$

(Honțuș, Adelaida (2015))

**For hotels**
**Table 8: Evolution of the Index of global tourist demand distribution in Gorj**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. total tourists (Romanian + foreign) to hotels	41921	40520	41147	36285	37103	35086
	No. Romanian tourists to hotels	39217	37679	38871	34095	35029	33112
	No. foreign tourists to hotels	2704	2841	2276	2190	2074	1974
	$\Delta$ CI in hotels (%)	93.55%	92.99%	94.47%	93.96%	94.41%	94.37%
	$\Delta$ CE in hotels (%)	6.45%	7.01%	5.53%	6.04%	5.59%	5.63%

 Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**The index of the global tourism domestic demand distribution for hotels** during the analyzed period had an oscillating evolution. From 93.55% in 2012, reaching in the last year of calculation, 2017, at 94.37%.

**The index of the global external demand distribution for hotels** during the analyzed period had a oscillating evolution. From 6.45% in the first year, external demand declined slightly by about 1% in 2014, reaching 20% in the last year, at 5.63%.

**For Touristic boarding houses**

**Table 9: Evolution of the Index of global tourist demand distribution in Gorj**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. total tourists (Romanian + foreign) to Touristic boarding houses	12842	12879	12928	14780	15645	23048
	No. Romanian tourists to Touristic boarding houses	12209	12129	12316	14175	15090	22074
	No. foreign tourists to Touristic boarding houses	633	750	612	605	555	974
	ΔCI in Touristic boarding houses (%)	95.07%	94.18%	95.27%	95.91%	96.45%	95.77%
	ΔCE in Touristic boarding houses (%)	4.93%	5.82%	4.73%	4.09%	3.55%	4.23%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**The index of the distribution of the total domestic tourism demand for touristic boarding houses** during the analyzed period had an almost constant evolution, having small variations and oscillating around 95.00%.

**The index of the distribution of global tourist external demand for touristic boarding houses** during the analyzed period had an oscillating evolution, with slight oscillations. The lowest value was in the year 2016 with a 3.55% and the highest value being recorded in 2014, with a percentage of 4.73%.

**3. Index of (domestic and foreign) tourist demand variation in time (internal and external)**

$ICI = (No. \text{ Romanian tourists per current year} / No. \text{ Romanian tourists per previous year}) * 100$

$ICE = (No. \text{ Foreign tourists per current year} / No. \text{ Foreign tourists per previous year}) * 100$

(Hontuş, Adelaida (2015))

**For hotels**

**Table 10: Evolution of the Index of (domestic and foreign) tourist demand variation in time (internal and external) in Gorj**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. Romanian tourists to hotels	39217	37679	38871	34095	35029	33112
	No. foreign tourists to hotels	2704	2841	2276	2190	2074	1974
	ICI in hotels (%)		96.08%	103.16%	87.71%	102.74%	94.53%
	ICE in hotels (%)		105.07%	80.11%	96.22%	94.70%	95.18%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**Index of domestic tourism demand variation in time at hotels** had an oscillating evolution. The highest percentage was between 2014 and 2015, about 88%, and the maximum increase was in the period 2013-2014, with a percentage of 103%.

**Index of external tourism demand variation in time at hotels** had a downward trend. From a 5% increase over the 2012-2013 period to a 5% drop in the final year of the study, 2017. But the highest decrease was recorded over the period 2013-2014, with a decrease of 20%.

**For Touristic boarding houses**

**Table 11: Index of (domestic and foreign) tourist demand variation in time (internal and external) in Gorj**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. Romanian tourists to Touristic boarding houses	12209	12129	12316	14175	15090	22074
	No. foreign tourists to Touristic boarding houses	633	750	612	605	555	974
	ICI in Touristic boarding houses (%)		99.34%	101.54%	115.09%	106.46%	146.28%
	ICE in Touristic boarding houses (%)		118.48%	81.60%	98.86%	91.74%	175.50%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**Index of domestic tourism demand variation in time at touristic boarding houses** had an increasing evolution, except for the period 2015-2016, when it decreased slightly. From a decrease of 1% in the 2012-2013 period, it has reached a 46% increase in the last study period.

**Index of external tourism demand variation in time at touristic boarding houses**, had an oscillating evolution. From an increase of 18% over the period 2012- 2013, it has dropped by about 8% between 2015-2016 and in the last period under review it has grown by 75%.

**4. The average length of stay for each accommodation facility**

**Total Average Stay = No. Total overnight stays (Romanian + foreign)/No. Total Tourists (Romanians + foreigners)**

**Total Average Stay for Romanian tourists = No. Romanian overnight stays/No Romanian tourists**

**Total Average Stay for foreign tourists = No. Overnight stays foreign tourist/No foreign tourists**

(Honțuș, Adelaida (2015))

**For hotels**

**Total Average Stay = No. Total overnight stays (Romanian + foreign) / No. Total Tourists (Romanians + foreigners)**

**Table 12: Total Average Stay**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. Total overnights (Romanians + foreigners)	115260	110615	102034	75569	70253	56267
	No. Total Romanian + foreign tourists	41921	40520	41147	36285	37103	35086
	Stay average total	2.7	2.7	2.5	2.1	1.9	1.6

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**Total Average Stay for Romanian tourists = No. Romanian overnight stays / No Romanian tourists**

**Table 13: Total Average Stay for Romanian tourists**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. Romanian overnight stays	106296	102174	97103	70630	65282	52313
	No. Romanian tourists	39217	37679	38871	34095	35029	33112
	Stay average for Romanian tourists	2.7	2.7	2.5	2.1	1.9	1.6

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**Total Average Stay for foreign tourists = No. Overnight stays foreign tourist / No foreign tourists**

**Table 14: Total Average Stay for foreign tourists**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. Foreign tourist overnight stays	8964	8441	4931	4939	4971	3954
	No. foreign tourists	2704	2841	2276	2190	2074	1974
	Stay average for foreign tourists	3.3	3.0	2.2	2.3	2.4	2.0

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The average stay for total tourists and for Romanian tourists in hotels* during the analyzed period oscillated about 2-3 days.

*The average stay for foreign tourists at hotels* recorded an oscillating evolution during the analyzed period. Oscillating between 2 and 3 days.

**For Touristic boarding houses**

**Total Average Stay = No. Total overnight stays (Romanian + foreign) / No. Total Tourists (Romanians + foreigners)**

**Table 15: Total Average Stay**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. Total overnights (Romanians + foreigners)	21458	22405	21023	23357	27068	37889
	No. Total Romanian + foreign tourists	12842	12879	12928	14780	15645	23048
	Stay average total	1.7	1.7	1.6	1.6	1.7	1.6

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**Total Average Stay for Romanian tourists = No. Romanian overnight stays / No Romanian tourists**

**Table 16: Total Average Stay for Romanian tourists**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. Total overnights (Romanians + foreigners)	19717	20183	19702	22228	26232	36493
	No. Total Romanian + foreign tourists	12209	12129	12316	14175	15090	22074
	Stay average for Romanian tourists	1.6	1.7	1.6	1.6	1.7	1.7

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**Total Average Stay for foreign tourists = No. Overnight stays foreign tourist / No foreign tourists**

**Table 17: Total Average Stay for foreign tourists**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. Foreign tourist overnight stays	1741	2222	1321	1129	836	1396
	No. foreign tourists	633	750	612	605	555	974
	Stay average for foreign tourists	2.8	3.0	2.2	1.9	1.5	1.4

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The average stay for total tourists and for Romanian tourists at touristic boarding houses*, during the analyzed period, fluctuated around 2 days.

*The average stay for foreign tourists, in touristic boarding houses*, recorded during the analyzed period an average of 2-3 days, except for the year 2017, when 1 day was recorded.

**5. The coefficient of the monthly tourist concentration** is calculated by reporting the number of tourists in the month with the most arrivals to the total number of tourists in a year  $A_t$ .

$Cc = [No. \text{ Tourists per each month} / (No. \text{ Romanian tourists} + No. \text{ Foreign tourists}) \text{ per year of calculation}] * 100$  (Honțuș, Adelaida (2015)  
(Year of calculation = 2017)

*For hotels*

**Table 18: Evolution of the The coefficient of the monthly tourist concentration**

Indicators	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
No total tourists / month	2558	2549	1909	2472	2396	3030	3965	5129	3625	2760	2187	2506
Total number of tourists (Romanians + foreigners) 2017	109067											
Cc	0.023	0.023	0.018	0.023	0.022	0.028	0.036	0.047	0.033	0.025	0.020	0.023

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The coefficient of the monthly tourist concentration for hotels* recorded an oscillating evolution during the analyzed period. From a minimum traffic of 0.018 registered in March, it reached a maximum tourist traffic of 0.47 in July.

*For Touristic boarding houses*

**Table 19: Evolution of the The coefficient of the monthly tourist concentration**

Indicators	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
No total tourists / month	1559	1720	1040	1261	1273	2152	2993	4382	1863	1573	1428	1804
Total number of tourists (Romanians + foreigners) 2017	109067											
Cc	0.014	0.016	0.010	0.012	0.012	0.020	0.027	0.040	0.017	0.014	0.013	0.017

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**The coefficient of the monthly concentration at tourist boarding houses**, during the analyzed period, was oscillating. From a minimum traffic of 0.010 registered in March, it reached a maximum tourist traffic of 0.40 in August.

**6. The share of the accommodation capacity of each type of accommodation unit in the total accommodation capacity in the county**

$$Icc = \frac{LC}{LH} \cdot 100 (\%) \text{ (Honțuș, Adelaida (2015))}$$

where: *LH* - the total accommodation capacity of all types of accommodation units in the county; *LC* - total accommodation capacity for tourist boarding houses / hotels.

*For hotels*

**Table 20: Evolution of the The share of the accommodation capacity of hotels of accommodation unit in the total accommodation capacity in the county**

Indicators	2012	2013	2014	2015	2016	2017
Accommodation capacity of hotels / county (LC)	1128	1140	1206	1142	1044	1108
Total accommodation capacity / county (LH)	2509	2521	2810	2755	2834	3182
Icc (%)	44.96%	45.22%	42.92%	41.45%	36.84%	34.82%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The share of accommodation capacity of hotels in the total accommodation capacity in the county* had a decreasing evolution, except in 2013, when the largest share of 45% was registered. In the last year of study, the share of accommodation capacity of hotels in the total number of accommodation units in the county registered about 35%.

#### For Touristic boarding houses

**Table 21: Evolution of the The share of the accommodation capacity of touristic boarding houses of accommodation unit in the total accommodation capacity in the county**

Indicators	2012	2013	2014	2015	2016	2017
Accommodation capacity in Touristic boarding houses/county (LC)	445	447	485	534	515	555
Total accommodation capacity / county (LH)	2509	2521	2810	2755	2834	3182
Icc (%)	17.74%	17.73%	17.26%	19.38%	18.17%	17.44%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The share of accommodation capacity of touristic boarding houses in total accommodation capacity in the county* had a decreasing evolution, except for 2015 and 2016 respectively, when the largest share was 19% and 18%, respectively. In the last year of study, the share of accommodation capacity of tourist pensions in the total number of accommodation units in the county was around 17%.

#### 7. Index of overnight stay evolution (Honțuș, Adelaida (2015)

$I_{Nt} = [\text{No. total overnight stay (Romanians + foreigners) per current year} / \text{No. overnight stay stay (Romanians + foreigners) per previous year}] * 100$

$I_{Nr} = (\text{No. Romanians overnight stay per current year} / \text{No. Romanians overnight stay per previous year}) * 100$

$I_{Ns} = (\text{No. foreigners overnight stay per current year} / \text{No. foreigners overnight stay per previous year}) * 100$

#### For hotels

**Table 22: Evolution of the Index of overnight stay evolution**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. overnight stays (Romanians + foreigners) at hotels	115260	110615	102034	75569	70253	56267
	No. overnight Romanian travelers at hotels	106296	102174	97103	70630	65282	52313
	No. overnight foreign tourists to hotels	8964	8441	4931	4939	4971	3954
	$\Delta N$ for total tourists (Romanian + foreign) at hotels (%)		95.97%	92.24%	74.06%	92.97%	80.09%
	$\Delta N$ for Romanian tourists at hotels (%)		96.12%	95.04%	72.74%	92.43%	80.13%
	$\Delta N$ for foreign tourists at hotels (%)		94.17%	58.42%	100.16%	100.65%	79.54%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**The index of the total overnight stays in hotels** recorded a oscillating evolution during the analyzed period. From a fall of about 4% in the first period, it has dropped by 25% in the near future. Between 2015 and 2016, the overnight index fell by around 8%, falling further over the last period, down 20%.

**The index of the overnight stays calculated for Romanian tourists at hotels** registered an oscillating evolution during the analyzed period. From a decrease of about 1% in the first period, it has dropped by 25% in the near future. Between 2015 and 2016, the overnight index fell by around 8%, falling further over the last period, down 20%.

**The index of overnight stays calculated for foreign tourists at hotels** registered an oscillating evolution during the analyzed period. From a decrease of about 6% in the first period, it has dropped by 45% in the near future. Between 2015 and 2016, the overnight trend index rose by about 0.65%, falling further over the last period under review, down 20%.

#### **For Touristic boarding houses**

**Table 23: Evolution of the Index of overnight stay evolution**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. overnight stays (Romanians + foreigners) at Touristic boarding houses	21458	22405	21023	23357	27068	37889
	No. overnight Romanian travelers at Touristic boarding houses	19717	20183	19702	22228	26232	36493
	No. overnight foreign tourists to Touristic boarding houses	1741	2222	1321	1129	836	1396
	$\Delta N$ for total tourists (Romanian + foreign) at Touristic boarding houses (%)		104.41%	93.83%	111.10%	115.89%	139.98%
	$\Delta N$ for Romanian tourists at Touristic boarding houses (%)		102.36%	97.62%	112.82%	118.01%	139.12%
	$\Delta N$ for foreign tourists at Touristic boarding houses (%)		127.63%	59.45%	85.47%	74.05%	166.99%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

**The index of total overnight accommodation at touristic boarding houses** registered a oscillating evolution during the analyzed period. From an increase of about 4% in the first period, it has dropped by 7% in the near future. Between 2014 and 2015, the overnight trend index increased by about 11%, rising by about 15% between 2015-2016, and over the last period under review the overnight trend index increased by about 39%.



*The index of the calculated overnight stays of the Romanian tourists at tourist boarding houses* registered an oscillating evolution during the analyzed period. From an increase of about 2% in the first period, it has fallen to 3% in the near future. Over the 2014-2015 period, the overnight growth index increased by about 13%, rising by about 18% between 2015-2016, and in the last period under review, the overnight index increased by about 39%.

*The index of the overnight stays calculated for foreign tourists at tourist boarding houses* registered an oscillating evolution during the analyzed period. From an increase of about 27% in the first period, it has fallen to about 40% in the near future. In the period 2014-2015, the index of overnight stays decreased by 15%, decreasing by about 10% in the period 2015-2016 compared to the previous period, and in the last analyzed period, the index of overnight stays registered a maximum increase of 166 %.

#### 8. Occupancy of accommodation type

$Go = [no. \text{ Total of overnight stay (Romanians + foreigners) (number of tourist days) } / (\text{number of accommodation} * \text{Number of supply days})] * 100 (\%)$  (Honțuș, Adelaida (2015))

*For hotels*

**Table 24: Evolution of the Occupancy of accommodation type**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. overnight stays total tourists (Romanian + foreign) at hotels	115260	110615	102034	75569	70253	56267
	No. accommodation units in hotels	1128	1140	1206	1142	1044	1108
	G <sub>0</sub> in hotels (%)	27.99%	26.58%	23.18%	18.13%	18.44%	13.91%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The occupancy of accommodation of hotels* registered a decreasing trend during the analyzed period. From an occupancy of about 28% in 2012, it reached an occupancy rate of about 14% in the last year studied, 2017.

*For Touristic boarding houses*

**Table 25: Evolution of the Occupancy of accommodation type**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. overnight stays total tourists (Romanian + foreign) at Touristic boarding houses	21458	22405	21023	23357	27068	37889
	No. accommodation units in Touristic boarding houses	445	447	485	534	515	555
	G <sub>0</sub> in Touristic boarding houses (%)	13.21%	13.73%	11.88%	11.98%	14.40%	18.70%

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The occupancy of accommodation of touristic boarding houses*, recorded an oscillating evolution during the analyzed period. From an occupancy rate of about 13% in 2012, it dropped by 2015, when it reached an occupancy rate of about 12%, while in the last year of study, 2017 would have a degree of employment of about 19%.

**Tourist density indicator in relation to population density**

$$D_{ii} = (T_i/Pop.) \quad (\text{tourists/number of inhabitants}) \quad (\text{Honțuș, Adelaida (2015)})$$

where:

$T_i$ - total Romanian+foreign tourists;  $Pop$  - county population

**For hotels**

**Table 26: Evolution of the Tourist density indicator in relation to population density**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. total tourists (Romanian + foreign) to hotels	41921	40520	41147	36285	37103	35086
	Population in Gorj county	375439	373441	371345	369004	366429	364145
	Dt for hotels (tourists / number of inhabitants)	0.112	0.109	0.111	0.098	0.101	0.096

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The tourist density indicator in relation to the population calculated for hotels*, had an oscillating evolution in 2012-2017. From a tourist density of 0.112 tourists/no. of inhabitants, in 2012, decreased to a tourist density of 0.098 tourists/no. of inhabitants registered in 2015, after which, in the last year of calculation, there was a tourist density in relation to the population, of 0.096 tourists/no. of inhabitants.

**For Touristic boarding houses**

**Table 27: Evolution of the Tourist density indicator in relation to population density**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. total tourists (Romanian + foreign) to Touristic boarding houses	12842	12879	12928	14780	15645	23048
	Population in Gorj county	375439	373441	371345	369004	366429	364145
	Dt for Touristic boarding houses (tourists / number of inhabitants)	0.034	0.034	0.035	0.040	0.043	0.063

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The tourist density indicator in relation to the population calculated for tourist boarding houses*, had an increasing evolution in 2012-2017. From a tourist density of 0.034 tourists/no. of inhabitants in 2012 increased to a tourist density of 0.063 tourists/no. of inhabitants in the last year of calculation, 2017.

**10. Tourist density indicator in relation to area**

$$D_{ii} = (T_i/S) \quad (\text{tourists/km}^2) \quad (\text{Honțuș, Adelaida (2015)})$$

where:

$T_i$  - total Romanian+foregin tourists;  $S$  - county area

**For hotels**

**Table 28: Evolution of the Tourist density indicator in relation to area**

Tourist unit		2012	2013	2014	2015	2016	2017
Hotels	No. total tourists (Romanian + foreign) to hotels	41921	40520	41147	36285	37103	35086
	County surface Gorj	5602	5602	5602	5602	5602	5602
	Dt for hotels (tourists / km <sup>2</sup> )	7.48	7.23	7.35	6.48	6.62	6.26

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The tourist density indicator in relation to the area calculated for the hotels* had a decreasing trend in 2012-2017. From a touristic density of 7.48 tourists/km<sup>2</sup> in 2012, it decreased to a tourist density of 6.26 tourists/km<sup>2</sup> in the last year of study, 2017.

**For Touristic boarding houses**

**Table 29: Evolution of the Tourist density indicator in relation to area**

Tourist unit		2012	2013	2014	2015	2016	2017
Touristic boarding houses	No. total tourists (Romanian + foreign) to Touristic boarding houses	12842	12879	12928	14780	15645	23048
	County surface Gorj	5602	5602	5602	5602	5602	5602
	Dt for Touristic boarding houses (tourists / km <sup>2</sup> )	2.29	2.30	2.31	2.64	2.79	4.11

Source: Own calculation based on NIS Database, 2018, [www.statistici.insse.ro](http://www.statistici.insse.ro)

*The tourist density indicator in relation to the area calculated for tourist boarding houses* has been increasing in the period 2012-2017. From a tourist density of 2.29 tourists/km<sup>2</sup> in 2012, it has grown to a tourist density of 4.11 tourists/km<sup>2</sup>, in the last year of study, 2017.

**Conclusions**

Through the presented study, we analyzed the evolution of the tourist traffic in Gorj County, for a period of 5 years, 2012-2017, for two types of accommodation units, hotels and touristic hostels, by calculating, interpreting and analyzing the 10 indexes and tourist indicators specific to the demand and tourist offer, both for domestic tourism and for foreign tourism demand.

The analysis of the tourist traffic indicators was based on the statistical data regarding: the number of tourists, the number of overnight stays and the accommodation capacity, by types of accommodation units and types of tourists. The statistical data in the analyzed period, 2012-2017, were provided by the National Institute of Statistics ([www.insse.ro](http://www.insse.ro)).

So, I can list some of the conclusions I came from following this study:

*The change in global tourism demand* for hotels had an oscillating evolution during the analyzed period, but for tourist boarding houses, it had an increasing evolution;

*The distribution of global domestic and external tourism demand* for both hotels and tourist boarding houses had an oscillating evolution over the period 2012-2017;

*The average stay for Romanian and foreign tourists*, both in hotels and tourist boarding houses, fluctuated around 2-3 days during the analyzed period;

*The monthly tourist concentration* for hotels and tourist boarding houses registered an oscillating evolution during the analyzed period. Minimum tourist traffic is recorded in March, and maximum tourist traffic is recorded in July – August;

*The occupancy rate of the hotels* registered a decreasing evolution, and for the tourist boarding houses, there was an oscillating evolution during the calculation period;

*Both the tourist density in relation to the population and the tourist density in relation to area* the calculated for the tourist boarding houses have been increasing in the period under study.

For the development of tourism in this area, a number of strategies are needed to bring incomes, both for the population of the studied area and for the economy as a whole. These strategies are also necessary for tourists who want to spend as much leisure time as possible.

The main problems encountered in Gorj County are the significant number of accommodation units, which are not classified according to the Ministry of Tourism; the training of staff, specific to the tourism industry, and the fact that the tourist resources specific to the area are not exploited and promoted as it should, so as to bring considerable income to the area economy.

As a final conclusion, we can say that the increased interest of both foreign and Romanian tourists has a significant impact on the accommodation capacity of Romanian tourism. For this reason, tourism managers need to increase the number of accommodation units, the number of accommodation places and the quality of tourist services.

## References

- Cândea, Melinda, Simion, Tamara (2006), *Potențialul Turistic Al României*, Editura Universitară, București
- Grigoras, Mircea Adrian; Popescu, Agatha; Grigoras, Brindu, Antonia A. (2018), "The Importance Of The Guesthouses In The Tourism Of The Brasov County, Romania", *Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development"*, Volume: 18 Issue: 2, 201-212
- Honțuș, Adelaida C. (2015), *Land Planning for tourism and agrotouristic - the Second edition revised and enlarged*, Ceres Publishing House, Bucharest
- Honțuș, Adelaida (2009), *Tourism and Agrotourism Geography of Romania*. Ed. a-II-a Rev., CERES Publishing House, Bucharest
- Plesoianu, Daniela-Mirela; Moise, Andreea; Popescu, Agatha (2017), "Aspects Regarding Tourism Potential Of Mures County", *Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development"*, Volume: 17, Issue: 3, 295-300
- Popescu, A. (2016), "The Correlation Between Tourism Accommodation Capacity And Tourist Inflow By Micro Region Of Development in Romania", *Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development"*, Vol. 16 ISSUE 4, PRINT ISSN 2284-7995, 289-298.
- Popescu, A. (2016), "The Position Of Tourist And Agrotourist Guesthouses in Romania's Accommodation Structures", *Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development"*, Vol. 16 ISSUE 1, PRINT ISSN 2284-8004, 417-424.
- Popescu, A. (2016), "Research On The Concentration Of Tourist Arrivals in Romania", *Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development"*, Vol. 16 ISSUE 1, PRINT ISSN 2284-8005, 425-430.
- Popescu, Agatha (2017), "Analysis Of Tourism Offer And Demand Synergy In Bucharest-Ilfov, Romania, In The Period 2008-2015", *Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development"*, Volume: 17, Issue: 4, 255-266
- \*\*\* National Institute of Statistics Database, 2018, <https://statistici.insse.ro>

## **R&D intensity, Growth and Financial Performance in Indian Drug & Pharmaceuticals firms**

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### **Abstract**

This paper studies the various factors that influence the R&D intensity in firms and the influence of each of these factors. It analyses if the financial slack, leverage and other financial factors impact the R&D outlay and the associated R&D intensity of these firms. Also, studied are the impacts of R&D intensity on the future performance of the firms in terms of sales, employment generated, profit margin etc. For this study, we have focused on the Drug and Pharmaceutical industry where R&D is a major competitive factor and firms specifically focus on R&D to create differentiation. We found that financial slack enabled higher R&D intensities which led to better revenue growth and employment in the following year but this effect progressively decreased over time.

**Keywords:** R&D Intensity, Drug & Pharmaceuticals, export intensity, Indian firms

### **Introduction**

Innovation is considered as one of the most powerful driving forces for economic development. Schumpeter (1934) famously put forth the theory of creative destruction and its impact on innovation and development. Firms engage in innovative activities through their investments in research and development and compete with each other by differentiating themselves through value, rareness, imitability and substitutability (Barney, 1991). These unique resources are internal to a firm and help it gain a competitive edge over other firms. However, the competitive edge doesn't easily lead to better financial performance. Financial performance can be characterized as improved profit margins or increased exports in the following year. The knowledge assets, knowledge flows and knowledge stocks of a firm form a complex structure making the translation to financial performance unique to each firm (Lin et.al, 2006?). How well a firm invests in and manages these resources determines its success or failure (Yeoh and Roth, 1991).

The Indian economy experienced noticeable globalization and liberalization in 1991 which led to multitude of reforms initiated by the Indian government to open the economy and make it more market-driven. Restrictions on exports and export duties were removed to increase the competitive position of Indian goods in international markets. Market-friendly, export-oriented policies are continuing even today which have enabled Indian firms to compete on a global scale. Although they are a bit late to enter the international scene, Indian firms have started seeing growth spurts in export earnings in recent years (Nagaraj, 2008)

Many past studies attempted to draw relationship between R&D Intensity and different influencing factors, viz. size, age, profit, export etc. in a firm level. Some studies could arrive a significant positive and negative relation while others drew inconclusive. The data studied in these firm studies are from various countries such as USA, Europe, Germany, Brazil, China, Taiwan, Spain, and India. Very few studies have been conducted in India so far in a firm level. . But none of them analysed various factors influencing R&D intensity in Indian firm level. Ghosh, S., (2012) analysed corporate leverage and R&D Intensity. He observed that firms with more debt have lesser levels of R&D Intensity. This study analyses Indian Drug and Pharmaceuticals firms from Prowess database over a

three year period to understand the factors that affect R&D intensity. This study includes review of the firm's financial gains, its growth in terms of sales and employment anticipated from prior investments in R&D activities.

## **Literature Survey**

Many studies have tried to find output of R&D activities in the form of sales, employment, profit, and export or market share. An industrial pioneer, Morbey G (1989) could not explain any relationship between R&D per employee as independent variable and Sales per employee as dependent variable. However in 1990, Morbey found strong association between R&D intensity and sales growth. Brenner M (1989) analysed 54 companies in chemical Industry over 15 years and his results showed positive relationship between R&D Intensity and Sales growth. He could not find relationship between Current R&D and prior Sales, whereas he indicated consistent positive relationship between Current sales growth and prior R&D intensity. In Austrian firms, using Quantile regression analysis, Falk M (2010) found significant influence of R&D on both employment and sales growth over the subsequent two years. From his studies on output in terms of profit margin, Andras T (2003) revealed that R&D intensity was positively related to a firm's profit margin, while Zhu Z (2012) could not find any relationship between R&D intensity and financial performance in the same year. He suggested that firms with intensive investment strategy in R&D will have notably larger financial performance in the following year..

Ettlie (1998) evaluated R&D intensity and manufacturing Performance in 600 durable goods firms in 20 countries using a path analytical model and concluded that R&D intensity was significantly associated with improvements in market share.

Slack is defined as actual or potential resources that an organization has at its disposal to successfully adapt to both internal and external environments (Bourgeois, 1981). Swift (2013) found that higher level of organizational slack increases the positive relationship between R&D expenditure volatility and firm performance. O'Brien, Damanpour and Majumdar reported positive correlation between organizational slack and innovation. Cyert & March, 1963 stated that the organization slack helps the firms to innovate. Zaho, 1997, concluded that firms which undertake R&D activities are more prone to export. Ito and Pucik (1993) showed positive relationship between R&D intensity and Export intensity in Japanese manufacturing firms. Hovakimian (2001) stated that that firms with higher R&D and Sales expense should have lower target leverage ratios and they quoted that this result was in agreement with Titman and Wessels (1988)

Number of studies have concluded significant positive correlation between R&D intensity and subsequent employment growth in US industries. Research conducted in Japanese manufacturing industries by Yasuda 2005 shows that R&D expenditure per employee has significant positive impact on a firm's growth. Brouwer, et al. (1993) through their research highlighted negative correlation between R&D intensity and employment growth in Dutch manufacturing firms.

## **Hypotheses Formation**

### ***Financial factors that impact R&D intensity***

Many studies that attempted to understand the association between R&D intensity and business performance measures have concluded that the linkage varies from sector to sector. For industries like Drug and Pharmaceuticals, R&D is a major competitive factor. This is not so with traditional low tech industries like wood, food, clothing, etc.. Though R&D is a competitive factor the decision to carry on R&D activities depends on several financial factors like profit margin, leverage, current total assets and effect of previous R&D intensity.

Financial slack as measured by profit margin refers to excess financial resources that have not been assimilated by the firm and, available for deployment (Moses, 1992). Financial slack provides firms the ability to allocate these resources to various activities (George, 2005). The financial resources can be easily redeployed to R&D investments as compared to other alternate uses (Nohria and Gulati

1996). Relationship between R&D intensity and profit margin varies depending on industry type. Since drug and pharmaceuticals industry is highly research- intensive, we hypothesize that profit will have perceptible influence on R&D intensity. A study conducted in Indian manufacturing firms by Ghosh (2012) revealed that optimal leverage ratio declines with R&D intensity. Firms with low debts possess high potential slack [Bourgeois (1981). Having low leverage is also considered to be a form of potential slack thereby increasing R&D intensity. Since research and development is a continuous activity one can assume that current R&D intensity depends on previous R&D intensity. (Tubbs (2007), Chambers (2002), Zhu (2012) )

Hence, R&D intensity depends on current leverage, total assets and profit margin which lead to the first hypothesis.

**Hypothesis 1: Current R&D intensity depends on current total assets, leverage, profit margin and previous year's R&D intensity**

***Effect on Growth***

Many empirical studies have sought to find out how R&D impacts a firm growth either through employment or sales. Monte.,A.,Papagni, E.,(2003) have tabulated outcomes of all investigations that had studied R&D and sales growth as well as R&D and employment growth based on the industrial sector and country of origin. Their findings state that a significant relation between research intensity and firm growth has not always been found and, R&D/sales ratio has positive bearing on growth rate in four out of seven research outcomes. These positive outcomes are from various sectors including UK pharmaceuticals, US and Indian manufacturing and small firms in Canada. Tubbs (2007) stated that R&D investments save the company from recession. This is possible only if R&D outcome contributes to output as sales growth. This finding prompts us to assume that higher R&D intensity in Indian Drug and Pharmaceuticals will lead to higher sales and employment growth. Research work also needs significant manpower to conduct the research as well as capitalize on its outcomes. If it is a manufacturing industry, research outcome will be in the form a product, for software industry it will be in the form of service. Studies in the past (Nunes (2012),Falk (2010), Montea (2003) ),have pointed out correlation between R&D intensity and employment growth. Based on the above considerations, we formulate the following hypothesis:

**Hypothesis 2: R&D intensity leads to growth in employment and sales.**

***Effect on Financial Performance***

Investment in research and development is considered a critical component of a firm's strategy for improving its financial performance as measured by profit margin and export intensity (Zaho,1997; Ito&Pucik,1993). Relationship between R&D intensity and firm's financial performance has been widely studied (Kotabe et.al, 2002, Deeds, 2001, Lin et.al, 2006). Studies have shown mixed results with several showing positive (Deeds, 2001, Connolly and Hirschey, 1984), while others have shown negative or inconclusive results (Morbey, 1989, Lin et. al). As R&D investments typically take some time to take effect in terms of improved financial performance (Kotabe et.al, 2002), at-least a one-year time-lag between R&D investments and financial performance should be considered reasonable. The effects of R&D investment will generally be different between knowledge-intensive industries (also termed as high-tech) and other low-tech industries (Nunes et. al). Furthermore, R&D investments in younger high-tech firms lead to better financial performance as they are more agile and can easily adapt to changing market conditions (Scherer 1965, Link 1980).

With the relaxation of export restrictions and removal of export duties by the Indian government, Indian firms are more inclined to internationalize their products. As firms utilize their resources (Barney, 1991), they start with those resources that lead to differential advantage of multinational entities (Kotabe et.all, 2002). Specifically, firms will capitalize on the export capability of their R&D investments. Based on numerous studies, the upshot of R&D Intensity as input and profit margins or exports as output, can be hypothesized as follows:

**Hypothesis 3: Higher R&D intensity yields better financial performance.**

### **Research Methodology**

The data used in our study was sourced from Prowess database maintained by the Center for Monitoring the Indian Economy (CMIE). The study was restricted to companies that fell under the industry group 'Drug and pharmaceuticals'. Multiple regression analysis was run individually for these companies covering the years 2011, 2012 and 2013. The data that was used for these hypotheses range from year 2010 to 2015. The financial performance of 2015 was compared with R&D intensity of 2013 to appraise the effect of R&D activities after two years.

Factors affecting R&D intensity were evaluated using the following model:

$$\mathbf{R\&D\ Intensity}_t = \beta_0 + \beta_1 \mathbf{Total\ assets}_t + \beta_2 \mathbf{Leverage}_t + \beta_3 \mathbf{Profit\ after\ tax}_t + \beta_4 \mathbf{R\&D\ Expense}_{t-1}$$

Test of hypothesis 2 was conducted by a slightly modified formula from Falk M(2010).

$$\mathbf{Growth}_{it} = a_0 + a_1 \ln(\mathbf{Emp}_{it-2}) + a_2 \mathbf{RD\ Intensity}_{it-\tau} + \mathbf{error\ term}$$

where,  $\mathbf{Growth}_{it}$  is the average sales growth rate and,  $\ln$  is the natural logarithm .

$$\mathbf{Growth}_{it} = (\mathbf{Emp}_{it}/\mathbf{Emp}_{it-2})^{1/(t-(t-2))} - 1$$

$\mathbf{Growth}_{it}$  is defined as the average employment growth rate for firm  $i$  in the year  $t$  [ $t = 2, 3$  or  $4$ ].

R&D intensity is the ratio of R&D expense to sales.

The following regression models were used to test hypothesis 3

$$\mathbf{Next\ Year\ Export\ Earnings} = \ln(\mathbf{prev\_year\_total\_assets}) + \mathbf{Prev\_year\_R\&D\_Intensity} + \mathbf{error\ term}$$

$$\mathbf{Next\ year\ Profit\ Margin\ Ratio} = \ln(\mathbf{prev\_year\_total\_assets}) + \mathbf{Prev\_year\_R\&D\ intensity} + \mathbf{error\ term}$$

This model was run with one year and two years lag period separately. Two financial measures were used to gauge firm performance viz export performance and Profit margin ratio.

Profit margin ratio is defined as the ratio of profit after tax to sales.

When independent variables are highly correlated with each other the problem of multi-collinearity arises. The presence of multi-collinearity among variables render the result unreliable. Variance inflation factor (VIF) was used to test multicollinearity. VIF measures variance of regression coefficient increased by collinearity. VIF values for Hypotheses 2 and 3 were below 2 and for hypothesis 1 it was below 5 which is well under commonly accepted threshold.

Durbin Watson Statistics was run to detect the presence of auto-correlations in the residuals from the regression analysis. For all the tests Durbin Watson statistics value was 2 and confirmed that there was no auto correlation in our sample.

Standard error of the regression (s value) was in the range of 0.02 mostly for all models indicating that the models correctly fit the hypothesis.

### **Discussion and Analysis**

#### ***Analysis of Hypothesis 1:***

Table below shows Pearson coefficient correlation for all variables.  $R^2$  values and S values are listed for each year. Durbin Statistics was 2 for all three years confirming no auto- correlation in the



sample. R&D intensity is significantly correlated with current total assets and current profit after tax for all three years. Relationship between R&D intensity and previous year R&D expenses shows significant correlation for two years. R&D intensity is highly and significantly correlated to current total assets. There is mild but significant relationship between current profit after tax and R&D intensity. However there is no relationship between leverage and R&D intensity. Except leverage all the other variables in the equation have influence over R&D intensity.

		Current R&D Intensity	Current Leverage	Current Profit after tax	Previous Year R&D expenses
<b>Year 2011-2012</b> <b>R-Sq = 30.1%</b> <b>S = 0.0327564</b> <b>Durbin-Watson statistic = 2.14677</b>	Current total assets	0.545			
		0.000			
	Current Leverage	-0.086	-0.099		
		0.427	0.361		
	Current Profit after tax	0.325	0.624	-0.297	
		0.002	0.000	0.005	
Previous Year R&D expenses	0.050	0.167	-0.007	-0.006	
	0.645	0.122	0.952	0.959	
<b>Year 2012-2013</b> <b>R-Sq = 49.1%</b> <b>S = 0.0280721</b> <b>Durbin-Watson statistic = 2.28599</b>	Current total assets	0.615			
		0.000			
	Current Leverage	0.034	-0.049		
		0.758	0.654		
	Current Profit after tax	0.269	0.549	-0.034	
		0.013	0.000	0.757	
Previous Year R&D expenses	0.601	0.734	-0.001	0.724	
	0.000	0.000	0.993	0.000	
<b>Year 2013-2014</b> <b>R-Sq = 53.8%</b> <b>S = 0.0325547</b> <b>Durbin-Watson statistic = 2.03408</b>	Current total assets	0.682			
		0.000			
	Current Leverage	0.033	0.062		
		0.832	0.684		
	Current Profit after tax	0.302	0.535	-0.108	
		0.044	0.000	0.479	
Previous Year R&D expenses	0.656	0.743	0.364	0.09	
	0.000	0.000	0.014	0.557	

Cell contents

Pearson Coefficient  
P value

**Analysis of Hypothesis 2:**

To prove that R&D intensity leads to employment growth, Employment growth of year 2015 was compared against R&D Intensity values for the years 2013, 2012 and 2011 and, . Similarly, R&D Intensity for the years 2013, 2012 and 2011 and Sales growth of year 2015 were compared.

Employment and Sales growth after 2 years, 3 years and 4 years were analysed to see how long R&D progresses to effect the growth in Drug industries.

***R&D Intensity vs. Employment growth***

***Case 1: When  $\tau=2$ ; Does R&D intensity influence the employee growth 2 years later?***

Table below shows that R&D intensity in 2013 is highly correlated to Employee growth in 2015. R&D intensity does have an effect after 2 years. The regression model yielded  $R^2$  value of 45.8%. This finding is in agreement with previous studies conducted by Hall, Yasuda, Falk M and Yang and Huang.

	<b>Employee growth 2015</b>	<b>Ln_Employee 2013</b>
<b>Ln_Employee 2013</b>	<b>0.267</b> <b>0.256</b>	
<b>R&amp;D Intensity 2013</b>	<b>0.672</b> <b>0.001</b>	<b>0.498</b> <b>0.026</b>

Cell contents = Pearson Coefficient  
P value

$R^2 = 45.8 \%$

S= 0.125958

Durbin-Watson Statistic = 2.12256

Above table shows that R&D intensity leads to employee growth in two years.

Descriptive statistics: Employee growth 2015, Ln\_employee\_2013, R&D intensity\_2013

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
GR 2015	20	0	-0.4569	0.0362	0.1618	-0.7609	-0.5039	-0.4676
Ln emp 2013	20	0	7.237	0.421	1.882	0.693	6.472	7.333
RD int 2013	20	0	0.01767	0.00594	0.02658	0.00000	0.00088	0.00722

Variable	Q3	Maximum
GR 2015	-0.4044	0.0714
Ln emp 2013	8.450	9.547
RD int 2013	0.03062	0.11112

***Case 2: When  $\tau=3$ ; Does R&D intensity influence the employee growth 3 years later?***

Employee growth in 2015 is significantly correlated to R&D intensity in 2012. In other words, R&D intensity has positive effect on employee growth even after 3 years.

	<b>Employee Growth 2015</b>	<b>Ln_Employee 2013</b>
<b>Ln_Employee 2013</b>	<b>0.267</b> <b>0.256</b>	
<b>R&amp;D Intensity 2012</b>	<b>0.444</b> <b>0.050</b>	<b>0.513</b> <b>0.021</b>

Cell contents                      Pearson Coefficient  
P value

$R^2 = 19.9 \%$   
 $S = 0.153083$   
 Durbin-Watson Statistic = 2.30480

Descriptive statistics :Employee growth 2015, Ln\_employee\_2013, R&D intensity\_2012

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
GR 2015	20	0	-0.4569	0.0362	0.1618	-0.7609	-0.5039	-0.4676
Ln emp 2013	20	0	7.237	0.421	1.882	0.693	6.472	7.333
RD Int 2012	20	0	0.01920	0.00544	0.02432	0.00000	0.00100	0.00612

Variable	Q3	Maximum
GR 2015	-0.4044	0.0714
Ln emp 2013	8.450	9.547
RD Int 2012	0.02705	0.07362

**Case 3: When  $\tau = 4$ ; Does R&D intensity influence the employee growth 4 years later?**

Low  $R^2$  value and insignificant correlation shows that R&D intensity does not have effect on employee growth 4 years later. R&D activities has positive impact on employee growth only for 3 years.

	Employee growth 2015	Ln_Employee 2013
Ln_Employee 2013	<b>0.085</b> <b>0.764</b>	
R&D Intensity 2011	<b>0.224</b> <b>0.422</b>	<b>0.351</b> <b>0.199</b>

Cell contents                      Pearson Coefficient  
    P value

$R^2 = 5.0 \%$   
 $S = 0.117603$   
 Durbin-Watson Statistic = 2.11152

Descriptive statistics: Employee growth 2015, Ln\_employee\_2013, R&D intensity\_2011

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
GR 2015	15	0	-0.4830	0.0288	0.1117	-0.7609	-0.5052	-0.4751
Ln emp 2013	15	0	6.874	0.507	1.963	0.693	6.310	7.152
RD Int 2011	15	0	0.01071	0.00470	0.01819	0.00000	0.00110	0.00314

Variable	Q3	Maximum
GR 2015	-0.4068	-0.2769
Ln emp 2013	8.060	9.297
RD Int 2011	0.00837	0.06642

**R&D Intensity vs Sales growth**

**Case 1: When  $\tau = 2$ ; Does R&D intensity influence the sales growth 2 years later?**

Result shows that R&D intensity has moderate but significant positive effect on sales growth with 2 years gap. Similar to previous studies by Brenner and Morbey, this study concludes positive sales growth in R&D intensive firms.

	Sales growth 2015	Ln_Sales 2013
Ln_Sales 2013	0.179 0.115	
R&D Intensity 2013	0.293 0.009	0.396 0.000

Cell contents Pearson Coefficient  
P value

R<sup>2</sup> = 9.1 %

S= 0.246403

Durbin-Watson Statistic = 1.44600

Descriptive statistics: Sales growth 2015, Ln\_Sales\_2013, R&D intensity\_2013

Variable N N\* Mean SE Mean StDev Minimum Q1 Median  
Gr 2015 79 0 -0.3853 0.0287 0.2551 -0.9912 -0.5107 -0.3837  
RD Int 2013 79 0 0.02580 0.00444 0.03945 0.00000 0.00000 0.00772  
Ln of sales-13 79 0 8.397 0.172 1.525 4.096 7.441 8.497

Variable Q3 Maximum  
Gr 2015 -0.3104 0.6855  
RD Int 2013 0.03720 0.17785

Ln of sales-13 9.498 11.338

### Case 2: When $\tau =3$ ; Does R&D intensity influence the sales growth 3 years later?

R&D intensity has very mild effect on Sales growth after 3 years since the relationship is not significant.

	Sales growth 2015	Ln_Sales 2013
Ln_Sales 2013	0.179 0.115	
R&D Intensity 2012	0.202 0.075	0.318 0.004

Cell contents Pearson Coefficient  
P value

R<sup>2</sup> = 5.5 %

S= 0.251153

Durbin-Watson Statistic = 1.48171

Descriptive statistics: Sales growth 2015, Log\_Sales\_2013, R&D intensity\_2012

Variable N N\* Mean SE Mean StDev Minimum Q1 Median  
Gr 2015 79 0 -0.3853 0.0287 0.2551 -0.9912 -0.5107 -0.3837  
RD int 2012 79 0 0.02651 0.00446 0.03966 0.00000 0.00032 0.00671  
Ln of sales-13 79 0 8.397 0.172 1.525 4.096 7.441 8.497

Variable Q3 Maximum  
Gr 2015 -0.3104 0.6855  
RD int 2012 0.03488 0.16149  
Ln of sales-13 9.498 11.338

### Case 3: When $\tau =4$ ; Does R&D intensity influence the sales growth 4 years later?

R&D intensity effect on sales growth is very mild after 4 years.

	Sales growth 2015	Ln_Sales 2013
Ln_Sales 2013	<b>0.392</b> <b>0.053</b>	
R&D Intensity 2011	<b>0.365</b> <b>0.073</b>	<b>0.346</b> <b>0.091</b>

Cell contents = Pearson Coefficient  
P value

$R^2 = 21.3\%$

S= 0.179737

Durbin-Watson Statistic = 2.15146

Descriptive statistics: Sales growth 2015, Ln\_Sales\_2013, R&D intensity\_2011

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RD int 2011	25	0	0.01089	0.00281	0.01403	0.00015	0.00136	0.00532
Gr 2015	25	0	-0.4075	0.0388	0.1940	-0.9912	-0.5042	-0.3655
Ln of sales-13	25	0	8.623	0.263	1.317	5.591	7.378	8.898

Variable	Q3	Maximum
RD int 2011	0.01422	0.05381
Gr 2015	-0.3095	-0.1067
Ln of sales-13	9.670	10.928

### ***Analysis of Hypothesis 3:***

#### ***Higher R&D intensity yields better financial performance.***

There was no significant relationship between R&D intensity in a prior and profit margin in the following year. On the contrary, export intensity in the following year had significant positive relation with prior year's R&D intensity.

#### ***Case 1: R&D intensity effect on financial performance after 1 year.***

The regression model gave  $R^2$  value of 22.4% when Export Earnings 2015 was tested against R&D intensity 2014. Relationship is significant which means prior R&D intensity does have effect on a subsequent year's export earnings.

	Export Earnings 2015	Ln_total assets 2014
Ln_total assets 2014	<b>0.040</b> <b>0.740</b>	
R&D intensity 2014	<b>0.472</b> <b>0.000</b>	<b>0.001</b> <b>0.996</b>

Cell contents = Pearson Coefficient  
P value

$R^2 = 22.4\%$

Descriptive statistics: Export Earnings 2015, Ln of total assets 2014, R&D intensity\_2014

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
Next_yr_Exp_Earn	71	0	8044	1859	15666	2	307	2202
Prv_yr_RD_Int	71	0	0.02970	0.00480	0.04046	0.00000	0.00070	0.01087
Prv_yr_Ln_tot_as	71	0	0.0900	0.0512	0.4317	-0.9441	0.0089	0.0793

Variable	Q3	Maximum
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Next\_yr\_Exp\_Earn 7091 74536  
 Prv\_yr\_RD\_Int 0.04331 0.19280  
 Prv\_yr\_Ln\_tot\_as 0.1682 3.2839

**Case 2: R&D intensity effect on financial performance after 2 years.**

Even after two years, R&D intensity has effect on Export earnings.

	<b>Export Earnings 2015</b>	<b>Ln_total assets 2014</b>
<b>Ln_total assets 2014</b>	<b>0.606</b> <b>0.000</b>	
<b>R&amp;D intensity 2013</b>	<b>0.440</b> <b>0.000</b>	<b>0.524</b> <b>0.000</b>

Cell contents Pearson Coefficient  
 P value

R<sup>2</sup> = 38.8 %

Descriptive statistics: Export Earnings 2015, Ln\_total assets 2014, R&D intensity\_2013

Variable N N\* Mean SE Mean StDev Minimum Q1 Median  
 Next\_yr\_Exp\_earn 71 0 8044 1859 15666 2 307 2202  
 Pre\_yr\_tot\_ass 71 0 8.991 0.177 1.494 4.973 7.814 9.147  
 Prv\_yr\_RD\_int 71 0 0.02740 0.00484 0.04076 0.00000 0.00079 0.00939

Variable Q3 Maximum  
 Next\_yr\_Exp\_earn 7091 74536  
 Pre\_yr\_tot\_ass 10.035 12.227  
 Prv\_yr\_RD\_int 0.03744 0.17785

Export Earnings, as an indicator of financial performance showed better relationship with prior R&D intensity. This strongly indicates that R&D intensity and export earnings are correlated.

**Conclusion**

This study examined various factors influencing R&D intensity within the Drug and Pharmaceuticals industry in India, focused on the latter’s growth and financial performance.

The main factors influencing R&D intensity in drug firms are the current total assets, current profit after tax and previous year R&D expenses. R&D intensity in a given year was shown to have significant effect on the following year’s employment and sales growth. However this effect was found to decrease, over time in the third and fourth years. Similar to previous studies, this study has validated the premise that export performance in drug industry is highly dependent on R&D intensity.

One can conclude the factors affecting R&D intensity, growth effect of R&D intensive firms and financial performance through numerous ways. The research findings on Drug and Pharmaceuticals in India is not applicable to other countries or other industries.

Future research can classify drug industries into high R&D intensive firms and low R&D intensive firms to learn how various factors play different roles in these two categories.

We propose this study be extended in an another dimension to compare high R&D intensity Indian Drug and Pharmaceuticals companies with their counterparts in the United States.. This would reveal potential obstacles or influencing factors of one country over the other, which in turn can motivate the respective government to reformulate their policies.

## References

- Andras, T., Srinivasan, S., 2003 Advertising Intensity and R&D Intensity: Differences across Industries and Their Impact on Firm's Performance
- Barney, J., 1991. Firm resources and sustained competitive advantage. *Journal of management*, 17(1), pp.99-120.
- Bourgeois, L.J., 1981. On the measurement of organizational slack. *Academy of Management review*, 6(1), pp.29-39.
- Brenner, M., 1989 Sales Growth and R&D in the chemical Industry
- Chambers, D., Jennings, R. (2002) Excess Returns to R&D-Intensive Firms
- Cyert, R. M., & March, J. G. 1963. *A behavioural theory of the firm* (Vol. 1). Englewood Cliffs, NJ: Prentice Hall.
- Damanpour, F., 1991 Organizational Innovation: A Meta analysis of effects of determinants and moderators
- Ettlie, J., 1998 R&D and Global manufacturing Performance
- Falk, M., 2010 Quantile estimates of the impact of R&D intensity on firm performance
- George, G., 2005. Slack resources and the performance of privately held firms. *Academy of Management Journal*, 48(4), pp.661-676.
- Ghosh, S., 2012. Does R&D Intensity Influence leverage? Evidence from Indian firm-level data
- Hovakimian, A., Opler, T., Titman, S., 2001 The Debt-Equity Choice
- Ito, K., Pucik, V., 1993 R&D spending, Domestic Competition and Export performance of Japanese Manufacturing firms
- Lin, B.W., Lee, Y. and Hung, S.C., 2006. R&D intensity and commercialization orientation effects on financial performance. *Journal of Business Research*, 59(6), pp.679-685.
- Link, A.N., 1980. Firm size and efficient entrepreneurial activity: A reformulation of the Schumpeter hypothesis. *The Journal of Political Economy*, pp.771-782.
- Majumdar, S., 1992 New technology adoption in US telecommunications: The role of competitive pressures and firm-level inducements
- Monttea, A., Papagni, E. 2003 R&D and the growth of firms: empirical analysis of a panel of Italian firms
- Morbey, G., Reithner R., 1990 How R&D affects sales growth, Productivity and profitability
- Moses, O.D., 1992. Organizational slack and risk-taking behaviour: tests of product pricing strategy. *Journal of Organizational Change Management*, 5(3), pp.38-54.
- Nagaraj, R., 2008. India's Recent Economic Growth: A Closer Look. *Economic and Political Weekly*, pp.55-61.
- Nunes, P.M., Serrasqueiro, Z. and Leitão, J., 2012. Is there a linear relationship between R&D intensity and growth? Empirical evidence of non-high-tech vs. high-tech SMEs. *Research Policy*, 41(1), pp.36-53.

- O' Brien J.,2003 The capital structure implications of pursuing a strategy of innovation.
- Scherer, F.M., 1965. Firm size, market structure, opportunity, and the output of patented inventions. *The American Economic Review*, 55(5), pp.1097-1125.
- Shin, N., Kraemer, K., Dedrick, J., 2009 R&D, Value Chain Location and Firm Performance in the Global Electronics Industry , *Industry and Innovation*,Vol. 16, No. 3, 315–330, June 2009
- Swift, T., 2013 R&D Expenditure Volatility and Firm Performance: Organizational and Environmental Contexts. *International Journal of Innovation and Technology Management* Vol. 10, No. 4 (2013) 1350013 (21 pages)
- Tubbs.,M.,2007 Relationship between R&D and company performance
- Yasuda., T., 2005 Firm Growth, Size, Age and Behavior in Japanese Manufacturing
- Yeoh, P.L. and Roth, K., 1999. An empirical analysis of sustained advantage in the US pharmaceutical industry: Impact of firm resources and capabilities. *Strategic Management Journal*, 20(7), pp.637-653.
- Zaho, H.,1997 R&D and Export: An Empirical analysis of Chinese manufacturing firms
- Zhu,Z.,Huang, F., 2012 The Effect of R&D Investment on Firms' Financial Performance: Evidence from the Chinese Listed IT Firms



## **Entrepreneurship and GDP Growth, Factors Impacting Entrepreneurship- Does it Depend on Stage of Economy?**

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### **Abstract**

Each and every country in the world aspires to increase their economic and employment growth. In doing so, they heavily invest in policies that they assume will lead to achieve this. But the output of policies differs depending on the country's economic development stage. This research paper analyses the various aspects of entrepreneurship and their influence on economic growth. Schemes and policies that have yielded good result in innovation-driven economies such as the United States will not produce the same result in factor-driven and efficiency driven economies. The first finding of this paper suggests that high entrepreneurship rate will not lead to corresponding GDP growth in factor and efficiency driven economies. Second and third findings reveal that total entrepreneurship rate will increase if procedures and days to start business are less and Influence of various factors impacting entrepreneurship differ in different stages of economies.

**Keywords:** Entrepreneurship, Economy, Innovation, GDP growth, GEM, GCI

### **Introduction**

Three stages of development include factor driven, efficiency driven and innovation driven economies. Countries that compete for the usage of natural resources and unskilled labour are said to be in first stage of the economic development called Factor Driven Economy. In efficiency driven phase, further development is accompanied by industrialization with large capital - intensive large organizations. In innovation driven phase businesses are more knowledge intensive. As countries get richer they change where economic value is created. First from agriculture to manufacturing and then from manufacturing to services.(Shane 2009)

The output of an entrepreneur could vary based on the stage of economic development of the country. Also expectation of entrepreneurship, what one has to get out of his entrepreneurial journey, differ for a person who has seen poverty versus a person coming from rich country. There are many researches done in the last couple of decades linking entrepreneurship with GDP growth (Acs and Szerb (2008) Audresch 2004, Wennekers et. al). But the researcher's background, the country he is from and where the study is conducted, to a certain extent seemed to have directed the conclusion towards entrepreneurship producing positive GDP growth. Most of the entrepreneurship studies are focused on United States and European countries (quote). Findings pertaining to these countries are not equally applicable for emerging economies. These research outcomes have made worldwide impact that in order to see economic growth, entrepreneurship is necessary. Several countries are investing into entrepreneurship schemes not knowing whether it would yield the same result irrespective of the stage of economic development they are in.

Many factors such as culture, political laws, corruption, rent economies play a vital role on entrepreneurship (Naude 2010)

Prominent economist Schumpeter (1934) argued that the productivity aspect is crucial for the transformation of ordinary activities into innovative activities. This fuelled multiple follow-on

research that explored this area and inspected its impact on economic growth. Most of these researches have focussed on developed economies and very few research has focussed on developing economies.(Bruton 2008). Bruton (2008) says three theories are mostly used in international business studies. They are institutional theory, resource-based theory, and transaction cost theory. He further states that in almost all cases the authors researched established theory from developed economies without any focus into the respective emerging economy context. Wennekers et. al(2005) while analysing entrepreneurship and economic development suggested that developing nations should exploit scale of economies, foster foreign direct investment and promote management education for economic growth. However he formulated different set of policies for developed nations, he stated that developed nations should promote commercial exploitation of scientific findings.

Relative contribution to entrepreneurship vary across countries. While focusing on the entrepreneurial activities in developed countries, Sternberg (2005) narrated the studies that focused on developed countries and the policy implications of each one of them. Acs and Szerb (2008) researched entrepreneurship in developing countries. Orientation of entrepreneurial activities differ across countries. (Autio 2007).

Audretsch (2014) empirically proved that infrastructure has varying influences in different sectors. However the study did not focus the effect on each stage of economy. Better control of corruption would increase the level of innovation (Anokhin 2008). This is an important factor in countries like India where corruption is rampant. Better corruption control make the entrepreneurs trust the business environment more. In the less analysed topic, how economic policy and institutional design affect entrepreneurship, Bjørnskov, 2008 found that size of money is negatively correlated with entrepreneurial activity whereas sound money is positively correlated. In the context of Entrepreneurship capital affecting economic output, entrepreneurship capital is significant for shaping productivity (Audresch 2004). Entrepreneurs in developed countries enjoy greater ease and incentives according to Acs(2008).

In this paper, we try to find whether entrepreneurship leads to GDP growth in all economies. What increases that rate of total entrepreneurship. Also we explore whether all factors influence entrepreneurship equally in all stages of economic development. The finding of this research will help policy makers tailor the entrepreneurship policies according to the need of the country.

## **Hypothesis Formation**

It is a known fact that entrepreneurship generates output in the form of ideas but does it generate output in the form of GDP growth is the question many researchers try to answer. Quality of entrepreneurship is important for GDP growth .This quality depends on various other factors that are inherent in the countries. Market conditions are not same in all countries throughout the world. Corruption practices are different. Risk taking mentality differ among entrepreneurs to a great extent depending on the country's business environment. Entrepreneurs face different set of business conditions in different economies. Capital requirements to start a business in poor countries is very modest and insurance to entrepreneurs to effectively manage the risk is absent whereas quality of business environment is very good in countries from innovation driven economy.

Elite entrepreneurs are crucial contributors to innovation driven economy. Studies are based on existing theories from the mature western economies such as institutional theory and the resource-based view. But there is a need to focus more on the context of emerging economies and develop new theories that will help to shift the management research paradigm.(Burton,2008)

In factor driven economy stage, countries have high rates of agricultural self employment. Most businesses are sole proprietorships. Only 5% of economic activity comes from innovation in this stage as per Global Competitiveness Index report. Entrepreneurial attitude is not the major concern of the government. Individuals are pushed into entrepreneurship because of fear of unemployment. This reduces the opportunity cost whereas in innovation driven economy opportunities are abundant which increases the opportunity cost. Individuals in innovation driven economy have quit the alternate

option to jump into entrepreneurship because they see higher opportunity than pursuing the alternate option.(Shane 2009).

Under developed institutional environments inherent in factor driven economy make the venture capitalists think differently. In other words, venture capitalists do not want to deal with people risk by investing in numerous firms .As per Ahlstrom (2006) the venture capital survey done in emerging economies revealed that out of seventy transactions done over the years only thirty entrepreneurs are involved in it, many being repeat deals. Magnitude of venture investments done in entrepreneurial ventures will be small in factor driven economies which leads us to first hypothesis which is based on the belief that output of entrepreneurship varies based on the stage of economy it is actually carried out from.

**Hypothesis 1:** Entrepreneurship influences the GDP growth of a country positively only if they are carried out in Innovation driven economy.

Previous researches have pointed out that cultural, social, financial and political conditions of a region determine entrepreneurship rate (Naude 2010). Unless entrepreneurs are well equipped with technical and business skills they may not be able to overcome problems related to starting a business. Entrepreneurial opportunities tend to be higher in economies that are deregulated, where market mechanisms operate freely, and where entrepreneurs have to face very few barriers to entry (El-Namaki, 1988). Forces limiting access to identified business opportunities and capitalization on these opportunities are called entry barriers.

Oosterbeek et. al (2008) tried to find the impact of entrepreneurial education on entrepreneurial intentions and concluded that impact was not as expected and was negative while Falck (2010) proved that competition from private schools seems to create a climate in the overall school system that is supportive of entrepreneurial intentions and that entrepreneurial education improves the entrepreneurship intention. The link between procedures related to starting a business and entrepreneurship rate still remains a conjecture. Castano (2016) stated that administrative complexity reduces chances of starting a new business. Bowen found no significant relationship between regulatory complexities and entrepreneurial effort though he found negative correlation.

We hypothesize that the regulatory complexities related to starting a new business should be minimum to encourage and attract more entrepreneurs which leads to next hypothesis.

**Hypothesis 2:** Total Entrepreneurial activity will improve in an environment where procedures and days to start businesses are easy.

Several factors influence entrepreneurial activities some give positive impact some are negative. But the intensity of the factors having impact is not the same for all countries. It varies largely depending on stage of economy that the country is in. This is due to differences in the structural characteristics among countries. Earlier research have pointed out that policies should address country specific challenges. Busenitz et. al (2000) showed how country-level institutional differences contribute differently to levels and types of entrepreneurship. Access to research and educational institutions, access to sources of financing, and availability of pools of educated labor, determine how innovation emerges within a country.( Bartholomew,1997).Information about founding a new business is known to all entrepreneurs in certain countries but still remains a mystery in other countries. Institutional profile provides the opportunity to evaluate the source of each country's strengths and weaknesses more precisely. Some country may have natural supporting environment for small businesses but technology firms will find it difficult to survive. Challenges faced by the entrepreneurs are different in different countries. This leads to the assumption that impact of influencing factors is not the same for all countries.

**Hypothesis 3:** Impact of factors affecting total entrepreneurial activities (TEA) differ with stages of economic development.

## **Methodology**

### ***Data Sources***

This research uses latest dataset to see the latest trends. It will take some time for entrepreneurship to bear fruit in the form of employment or economic activity, the output will not be in the same year (Li Li, 2009). It is necessary to introduce time lag between the input year and output year. Since 4 years gap is necessary for entrepreneurship action to reflect in economy based on previous studies we used 2010 GEM dataset and compared that with 2014 GDP per capita. GEM dataset for 2011 is not available though it is the most latest dataset for this model.

Multiple sources of data were used for this research. Each data set provided a set of variables that were used to measure the entrepreneurship and the influencing factors across three stages of economies. For assessing the intensity of entrepreneurial activities, data from the Global Entrepreneurship Monitor (GEM) was used. The dataset provides the rate of entrepreneurship in each participating country across the various stages of development. Data from the Global Competitiveness Index (GCI) Report by World Economic forum was used for parameters such as Number of procedures to start a business, Number of days to start a business, Intensity of Local competition, Quality of management schools and Firm level technology absorption. World Bank National accounts data was used to obtain the Gross Domestic Product (GDP) per capita for countries involved in this study.

Simple correlation analysis followed by multiple linear regression analysis is done to evaluate the strength and extent of relationship among variables and also to determine which factor has the highest influence.

Coduras and Autio (2013) have detailed the structure of the Global Competitiveness Index (GCI) report. According to them, GCI has 12 pillars associated with each stage of development. First 4 pillars come under 'Basic requirements' sub index which includes critical pillars for factor driven economies viz. well-functioning of public and private institutions, well developed infrastructure, a stable macroeconomic environment and a healthy workforce that has received at least basic education. (Coduras, 2013).

GCI has calculated the weight factor for each sub index by applying maximum likelihood regression on GDP per capita for past years.

Basic requirements has received 60% weightage in factor driven economy. This is because regression resulted in higher coefficient values when GCI regressed these 'Basic requirements' sub index pillars against GDP for the past years. In India, and in other factor driven economic countries these basic requirements pillars are the main GDP growth influencing parameters. Only 5% weight is given to Innovation and sophistication factors. This indirectly tells us that without solving issues associated with basic requirements country cannot flourish in innovation related efforts.

### ***Data Analysis***

Opportunity cost of running into entrepreneurship determines the motive of an entrepreneur. Motivation of an entrepreneur is an important factor in assessing what his entrepreneurial activities will transform into. It tells whether his entrepreneurship pursuit will yield more employment or more financial growth. The Motivation Index [i.e. the TEA (Total Entrepreneurial Activity) Opportunity to TEA Necessity ratio] is an important indicator of the entrepreneurial capacity, indirectly indicating the level of optimism and long-term expectations of entrepreneurs (Singer, 2007). To see how companies have performed 4 years later, data is gathered from year 2014 also.

### ***Hypothesis 1***

Entrepreneurship influences the GDP growth of a country positively only if they are carried out in Innovation driven economy.

Total Entrepreneurial rate in the year 2010 is compared with GDP per capita of 2014 using regression analysis.

Also the impact of improvement driven entrepreneurial activity in 2010 on GDP per capita of subsequent years were analysed using Pearson correlation. To carry out this analysis, countries were divided into the stage of economies they belong to.

Many studies conducted before have pointed out that the impact of entrepreneurship, in terms of employment or GDP ,will not be immediately visible , it may take 2 to 8 years. Pearson correlation was maximum with four year lagged GDP which corresponds to medium term economic growth. Therefore, entrepreneurship rates from the year 2010 was compared with GDP per capita of 2014.

This approach is backed by the following list of researches. Audretsch concludes that effect of entrepreneurship emerges over time and that indirect effect of new firm takes up to 7 years to be fully exploited.

LI Li (2009) researched impact of Chinese private Entrepreneurship activity on Chinese Regional GDP using time series analysis from 2002 to 2007 data. Their research showed that correlation increased when GDP was lagged. Correlation increased to a great extent with two year lagged GDP against Entrepreneurial activities whereas GDP and entrepreneurial activities of same year showed low correlation. Many studies performed on entrepreneurial impact on unemployment have reported that impact increases after 5 years. Dujowich (2012) looked at the dynamic relationship between entrepreneurship, unemployment and growth for 2000-2009. He had narrated all past researches concerning the growth impact as follows .Acs and Mueller (2008) find a 6-year lag in the impact of new business formation on employment change in 320 U.S. Metropolitan Statistical Areas (MSA) during 1989 -2003. Arauzo-Carod et al. (2008) find a 7-year lag, S-shaped pattern in Spanish manufacturing sectors during 1978-1996. Baptista et al. (2008) find a 10-year lag, U-shaped pattern in 30 Portuguese regions during 1982-2002. Fritsch and Mueller (2008) find a 10-year lag, S-shaped pattern in 74 planning regions of West Germany during 1983-2002 that differs across regions according to population density and GDP per worker.

Mueller et al. (2008) find an 8-year lag, S-shaped pattern in 60 U.K. regions during 1980-2003 with a positive (negative) effect in high -enterprise (low-enterprise, respectively) counties. Van Stel and Suddle (2008) find an 8-year lag across 40 regions and 5 sectors in the Netherlands during 1988-2002 with a pattern whose shape varies depending on the time period and sector. In a 1972-2002 study of 21 OECD countries, Carree and Thurik (2008) find a 14-year lag, S-shaped pattern

### ***Hypothesis 2***

Total Entrepreneurial activity (TEA) will improve in an environment where procedures and days to start business are easy. Total entrepreneurial activity is a function of:

1. Number of procedures to start a business (Num\_procdr): 6th pillar: Goods market efficiency
2. Number of days to start a business (Num\_days): 6th pillar: Goods market efficiency
3. Quality of management schools (Qlty\_mgmtsch): 5th pillar: Higher education and training
4. Firm level Technology Absorption (Firm\_techab) 9th pillar: Technological readiness

**TEA= f { Num\_Procdr , Num\_days, Qlty\_mgmtsch , Firm\_tech\_ab }**

GCI has identified 12 pillars of the economic competitiveness. The 12 pillars are: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labor markets efficiency, financial market development, technological readiness, market size, business sophistication and innovation as per Global innovation index 2016.

To prove this hypothesis:

1. Total Entrepreneurial rate (TEA) of the year 2010 was regressed with 2010 GCI pillar # 5, 6 and 9.
  2. Total Entrepreneurial rate (TEA) of the year 2014 was regressed with 2014 GCI pillar # 5, 6 and 9.
- This is done so such that even if there was any impact of extraneous factors in a particular year, result will not be affected, second analysis is done in different timeline.

TEA was correlated with other parameters such as venture capital availability, Availability of financial services and affordability of financial services. But they do not show relationship with GEM parameters such as Total, Nascent, Necessity driven or improvement driven entrepreneurial rates.

### ***Hypothesis 3***

Impact of factors affecting total entrepreneurial activities(TEA) differ with stages of economic development. Factors influencing Total Entrepreneurial activity differ in different economies.

Policy factors that has influence over TEA are:

1. Number of procedures to start a business (Num\_procd): 6th pillar: Goods market efficiency
2. Number of days to start a business (Num\_days): 6th pillar: Goods market efficiency
3. Quality of management schools (Qlty\_mgmtd): 5th pillar: Higher education and training
4. Firm level Technology Absorption (Firm\_techab) 9th pillar: Technological readiness
5. Intensity of local competition (Loc\_comptn) 6th pillar: Goods market efficiency

The effect of the above variables on TEA differs with different stages of economic development.

Several research have focused on the effect of micro and macro policies on entrepreneurship. The effect of taxes, regulation, the rule of law and social security entitlement plays differently in different stage of economy.

Studies conducted by Aidis et al. (2009) found the positive effect of rule of law in developing and middle income economies. However the same effect did not persist in highly developed economies. The variation of rule of law has less impact in developed countries.

Uhlaner et.al (2006) stated that post materialism is negatively and strongly related to new business formulation and positively associated with per capita income. Thurik (2008) described effect of policies in two different economies- viz entrepreneurial economy and policy economy. He stated that turbulence, diversity, and heterogeneity are central to the model of the entrepreneurial economy whereas stability, specialization and homogeneity are the cornerstones of the model of the managed economy. Under the model of the managed economy the relevant policy question is: How can the government withhold firms from abusing their market power? The entrepreneurial economy model is characterized by a different policy question: How can governments create an environment fostering the success and viability of firms? The concerns of these two economies are also different. The managed economy model concerns with issues of excess profits and abuses of market dominance whereas the latter deals with international competitiveness, growth, and employment .

Also Thurik (2008) had quoted that an economy based upon managing production requires totally different conditions than one where entrepreneurship capital needs to be stimulated . It can even be that policies and institutions which made the managed economy successful are contra productive in the entrepreneurial economy

Okamuro et.al (2010) found out that factors such as Institutional Environment and culture have effect on entrepreneurship differently in Netherlands and Japan. Also they added that the effect of economic crisis in 2008 was opposite in these two countries.

## Discussion and Results

### Hypothesis 1:

Entrepreneurship influences the GDP growth of a country positively only if they are carried out in Innovation driven economy.

The regression equation is

$$TEA = 21.61 - 0.000771 \text{ GDP\_PC} + 0.000000 \text{ GDP**2\_PC}$$

This equation becomes zero when GDP per capita =28030.

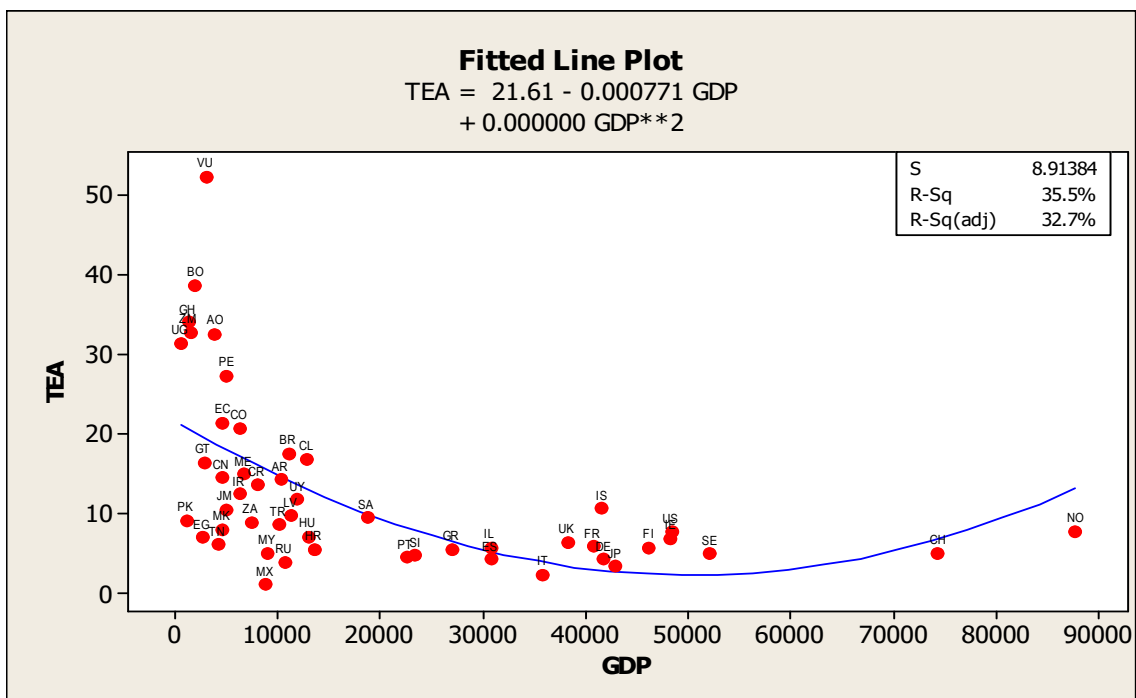


Fig 1: U shaped curve between Entrepreneurship rate and Level of Economic development

After this economic development level at 28030 GDP Per capita, entrepreneurial activity will have positive impact on GDP growth.

The U shaped curve (Fig. 1) between level of economic development and the rate of Entrepreneurship shows the presence of low potential firms in the negative slope and high potential firms in the positive slope of the curve. In other words, high amount of necessity entrepreneurs from emerging countries in the negative side of the U-slope and high amount of improvement driven entrepreneurs in the positive side of the U-slope. These improvement driven entrepreneurs from

innovation driven economy are the influential candidates for GDP growth. The significant impact on economy comes from the self employment generated by high potential firms when their development level is high.

This result aligns with previous studies, it suggests that TEA has negative impact on GDP per capita in poor countries and positive impact in rich countries. This explains presence of all countries from "Innovation Driven Economy" in positive slope and all other countries from "Factor and efficiency driven economy" in negative slope. Developing countries have higher shares of necessity entrepreneurs. Necessity entrepreneurship occurs in the early stage of an economy. Even the countries with highest motivation index, if they don't belong to innovation driven economy, will be in the negative slope of U-shape which implies that some other challenges inherent to these economies play a negative role preventing the GDP gain.

From our result it is evident that the contribution of entrepreneurs to an economy varies according to its phase of economic development.

***Impact of 2010 Improvement driven Entrepreneurship in Innovation Economy over subsequent years:***

The correlation of 2010 Improvement driven entrepreneurial activity in innovation economy and GDP per capita income in four subsequent years viz. 2011 ,2012,2013,2014 is positive and significant. The correlation is more significant after 2 years gap with GDP per capita. Year 2013 GDP Per capita shows highest significant positive correlation with 2010 Innovation driven entrepreneurial activities.

	Improv 2010
2014 GDP	0.472 0.056
2013 GDP	0.520 0.032
2012 GDP	0.478 0.052
2011 GDP	0.455 0.066
2010 GDP	0.458 0.064

**Cell Contents: Pearson correlation  
P-Value**

***Impact of 2010 Improvement driven Entrepreneurial activity in Efficiency and factor driven Economy***

Pearson Correlation shows negative impact on GDP per capita. This negative effect persists for the same year GDP as well as GDP after 4 years. Improvement driven activities in these economies, does not depend on GDP per capita nor do these activities contribute to GDP growth after 4 year gap. This suggests that entrepreneurship plays a different role in countries in different stages of economic development as stated by Van stel (2005)

	Impro rate 2010
2014 GDP Per	-0.263 0.161



2010 GDP Per                    -0.326  
     0.079

**Cell Contents: Pearson correlation**  
**P-Value**

The above result proves the fact that generating many entrepreneurs in factor and efficiency driven economy will not be the source of economic vitality nor does it create employment growth.

**Hypothesis: 2**

Total Entrepreneurial activity (TEA) will improve in an environment where procedures and days to start business are easy.

For 2010 data, Adjusted R2 value was 35%

For 2014 data Adjusted R2 value was 25.7%

Multicollinearity among predictor variables was checked. Variance inflation factor was around 2 and well under the limit.

TEA is positively related to number of procedures to start a business and number of days to start a business.

But the relationship is negative for quality of management schools and firm level technology absorption.

Regression Result, Pearson Correlation, Descriptive statistics of year 2010 is given below:

$$\text{TEA}_{2010} = 32.7 + 0.383 \text{ Num\_Procdr} + 0.0970 \text{ Num\_days} - 1.59 \text{ Qlty\_mgmtsch} - 3.75 \text{ Firm\_tech\_ab}$$

Predictor	Coef	SE Coef	T	P	VIF
Constant	32.654	9.535	3.42	0.001	
Num_Procdr	0.3835	0.3905	0.98	0.332	1.8
Num_days	0.09701	0.06253	1.55	0.128	1.6
Qlty_mgmsch	-1.592	1.925	-0.83	0.413	2.1
Firm_tech_ab	-3.754	2.197	-1.71	0.095	2.3

S = 7.46524    R-Sq = 40.6%    R-Sq(adj) = 35.0%

**Correlations:**

	TEA_2010	Num_Procdr	Num_days	Qlty_mgmsch
Num_Procdr	0.462 0.001			
Num_days	0.446 0.002	0.602 0.000		
Qlty_mgmsch	-0.457 0.001	-0.245 0.096	-0.257 0.081	
Firm_tech_ab	-0.534 0.000	-0.417 0.004	-0.260 0.078	0.704 0.000

**Cell Contents: Pearson correlation**  
**P-Value**

*Descriptive Statistics:*

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
TEA_2010	47	0	11.99	1.35	9.26	2.30	5.50	8.60	14.90
Num_Procdr	47	0	8.170	0.554	3.801	3.000	5.000	7.000	10.000
Num_days	47	0	24.15	3.27	22.42	4.00	8.00	18.00	30.00
Qlty_mgmtsch	47	0	4.521	0.120	0.821	1.765	3.991	4.552	5.227
Firm_tech_ab	47	0	5.046	0.111	0.759	3.679	4.438	4.987	5.590

Variable	Maximum
TEA_2010	38.60
Num_Procdr	18.000
Num_days	120.00
Qlty_mgmtsch	6.073

-----*Regression Result for the year 2014*

$$\text{TEA}_{2014} = 26.4 + 0.346 \text{ Num\_procdr} + 0.122 \text{ Num\_days} - 0.18 \text{ Qlty\_mgmtsch} - 3.33 \text{ Firm\_tech\_ab}$$

Predictor	Coef	SE Coef	T	P	VIF
Constant	26.437	8.382	3.15	0.003	
Num_Procdr	0.3463	0.3697	0.94	0.353	2.1
Num_days	0.12196	0.08285	1.47	0.146	2.2
Qlty_mgmtsch	-0.179	1.902	-0.09	0.925	2.7
Firm_tech_ab	-3.329	2.136	-1.56	0.125	2.6

S = 7.03663 R-Sq = 30.5% R-Sq(adj) = 25.7%

*Correlations:*

	TEA_2014	Num_Procdr	Num_days	Qlty_mgmtsch
Num_Procdr	0.439 0.000			
Num_days	0.462 0.000	0.709 0.000		
Qlty_mgmtsch	-0.401 0.001	-0.390 0.002	-0.474 0.000	
Firm_tech_ab	-0.442 0.000	-0.408 0.001	-0.390 0.002	0.771 0.000

Cell Contents: Pearson correlation  
P-Value

*Descriptive Statistics:*

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
TEA_2014	63	0	13.27	1.03	8.16	3.83	6.97	10.96
Num_procdr	63	0	6.427	0.443	3.516	1.000	4.000	6.000
Num_days	63	0	16.88	2.03	16.14	2.00	5.50	11.50
Qlty_mgmtsch	63	0	4.6540	0.0976	0.7749	3.0851	3.9525	4.5319
Firm_tech_ab	63	0	4.9904	0.0846	0.6711	3.7310	4.4175	4.9430

Variable	Q3	Maximum
TEA 2014	17.06	37.37
No_of_proced_to	8.000	16.000
No_of_days_to_s	24.00	83.60
Quality_of_man	5.2919	6.2566
Firm-level techn	5.6166	6.0824

*Hypothesis: 3*

Impact of factors affecting total entrepreneurial activities (TEA) differ with stages of economic development

Pearson correlation for the above variables with TEA in innovation driven economy, factor driven economy and efficiency driven economy were calculated.

TEA in innovation Economy does not have any significant correlation with any of the above variables for both years -2010 and 2014.

In efficiency and factor driven economies, Number of procedures to start a business and Number of days to start a business is significantly and positively correlated with TEA for both years (2010 and 2014)

For 2014, though correlation is positive, relationship is not significant.

***TEA Correlation in Innovation Economy for the year 2010***

	TEA_innovaon	Num_Procdr	Num_days	Loc_comptn
Num_Procdr	-0.220 0.397			
Num_days	-0.356 0.160	0.425 0.089		
Loc_comptn	-0.091 0.729	-0.087 0.741	0.232 0.371	
Qlty_mgmtsch	0.356 0.160	-0.467 0.059	-0.086 0.744	0.298 0.245
Firm_tech_ab	0.451 0.069	-0.406 0.106	-0.033 0.900	0.577 0.015

**Cell Contents:      Pearson correlation  
P-Value**

***TEA Correlation in Innovation Economy for the year 2014***

	TEA_innovaon	Num_procdr	Num_days	Qlty_mgmtsch
Num_procdr	0.047 0.813			
Num_days	-0.187 0.341	0.520 0.005		
Qlty_mgmtsch	0.107 0.589	-0.193 0.325	-0.348 0.070	
Loc_comptn	0.151 0.443	0.304 0.116	-0.119 0.545	0.177 0.369
Firm_tech_ab	-0.024 0.903	0.010 0.960	0.034 0.865	0.453 0.016

**Cell Contents:            Pearson correlation  
                                 P-Value**

***TEA Correlation in Efficiency and Factor Driven Economy for the year 2010***

	TEA_FAC+EFF	Num_procdr	Num_days	Loc_comptn
Num_procdr	0.398 0.030			
Num_days	0.397 0.030	0.593 0.001		
Loc_comptn	-0.275 0.142	-0.143 0.452	-0.203 0.283	
Qlty_mgmtsch	-0.321 0.084	0.119 0.531	-0.134 0.479	0.448 0.013
Firm_tech_ab	-0.475 0.008	-0.136 0.475	-0.127 0.504	0.830 0.000

**Cell Contents:            Pearson correlation  
                                 P-Value**

***TEA Correlation in Efficiency and Factor Driven Economy for the year 2014***

	TEA_FAC+EFF	Num_procdr	Num_days_Bus	Qltyof mgmt
Num_procdr	0.331 0.052			
Num_days	0.331 0.052	0.672 0.000		
Qlty_mgmtsch	-0.120 0.491	-0.174 0.318	-0.268 0.119	
Loc_comptn	0.051 0.771	-0.252 0.144	-0.050 0.776	0.436 0.009
Firm_tech_ab	-0.176 0.311	-0.305 0.075	-0.168 0.334	0.666 0.000

**Cell Contents:**                    **Pearson correlation**  
   **P-Value**

## **Conclusion**

Using multiple linear regression and correlation analysis three hypotheses were proved. U- shaped relationship between Total entrepreneurial activity and GDP per capita tells that GDP growth is possible from entrepreneurship only in innovation driven economy. Total Entrepreneurial activity (TEA) will improve in an environment where procedures and days to start business are easy is proved with positive correlation between TEA and Number of procedures and days to start business. Negative effect of quality of management schools and firm level technology absorption on total entrepreneurial activity were found.

TEA in innovation Economy does not have any significant correlation with any of the business regulatory variables for both years -2010 and 2014. In efficiency and factor driven economies, business regulatory variables are significantly and positively correlated with TEA for both years (2010 and 2014) thus proving Hypothesis 3.

## **References**

- Acs, Z., Desai, S., Klapper, L., (2008) What does “entrepreneurship” data really show?
- Acs, Z. J., & Szerb, L. (2008). A complex global entrepreneurship context index (CEC). Faculty of business and economics, University of Pecs, Mimeo
- Ahlstrom, D (2006) Venture Capital in Emerging Economies: Networks and Institutional Change
- Aidis, R., Estrin, S., Mickiewicz, T. (2009) Entrepreneurial Entry: Which Institutions Matter?
- Anokhin, S., Schulze, W., (2008) Entrepreneurship, innovation, and corruption
- Audretsch, D.B., 2007 Entrepreneurship capital and economic growth
- Audretsch, D., Belitski, M., Desai, S. (2015). Entrepreneurship and economic development in cities
- Audretsch, D., Heger, D., Veith, T., (2014) Infrastructure and entrepreneurship
- Audretsch, D., Keilbach, M., (2004) Entrepreneurship Capital and Economic Performance
- Autio, E. (2007). Global entrepreneurship monitor: 2007 Global report on high growth entrepreneurship. Wellesley, MA/London: Babson College and London Business School.
- Bjørnskov, C., Foss, N., (2008) Economic freedom and entrepreneurial activity: Some cross-country evidence
- Bowen, H., De Clercq, D. (2005) Institutional context and the allocation of entrepreneurial effort
- Bruton, G., Ahlstrom, D., Obloj, K. (2008) Entrepreneurship in Emerging Economies: Where Are We Today and Where Should the Research Go in the Future
- Busenitz, L., Gomez, C., Spencer, J. (2000) Country Institutional profiles: Unlocking entrepreneurial phenomena
- Castaño, M., Méndez, B., Galindo, M. (2016) The effect of public policies on entrepreneurial activity and economic growth
- Coduras, A., Autio, E. (2013) Comparing subjective and objective indicators to describe the national entrepreneurial context: the Global Entrepreneurship Monitor and the Global Competitiveness Index contributions
- Dujowich, J. (2012). The Dynamic Relationship between Entrepreneurship, Unemployment, and Growth: Evidence from U.S. Industries
- El-Namaki (2008) Encouraging Entrepreneurs in Developing Countries
- Falck, O (2010) School Competition and Students’ Entrepreneurial Intentions: International Evidence Using Historical Catholic Roots of Private Schooling
- Li Li (2009) The effect of entrepreneurial activity on Chinese economic growth
- Naude, W (2010) Entrepreneurship, developing countries, and development economics: new approaches and insights
- Okamuro, H., Van der Stel, A., Verheul, I., (2010) Understanding the Drivers of an ‘Entrepreneurial’ Economy: Lessons from Japan and the Netherlands

Oosterbeek, H. (2008) The Impact of Entrepreneurship Education on Entrepreneurship Competencies and Intentions: An Evaluation of the Junior Achievement Student Mini-Company Program

Shane, S. (2009) Why encouraging more people to become entrepreneurs is bad public policy

Singer, S. (2007). Policy environment for promoting entrepreneurship in Croatia. Strengthening entrepreneurship innovation & economic development at the local level in Croatia – An Active Review. Zagreb, OECD, USAID, LEED program, 11–41.

Sternberg, R., & Wennkers, S. (2005). The determinants and effects of new business creation using global entrepreneurship monitor data.

The Global Innovation Index 2016

Thurik, A.R., (2008) The 'managed' and the 'entrepreneurial' economy

Uhlaner, L., Thurik, R., (2006) Postmaterialism Influencing Total Entrepreneurial Activity across Nations

Van Stel, A., Carree, M., Thurik, A. (2005) THE EFFECT OF ENTREPRENEURIAL ACTIVITY ON NATIONAL ECONOMIC GROWTH

Wennkers, S., Van Stel, A., Thurik, R., Reynolds, P., (2005) Nascent Entrepreneurship and the Level of Economic Development

## **The Creative and Cultural Industries in Romania Measuring the IT Industry**

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### **Abstract**

Today's economy faces the need of a more and more qualified and specialized human resource, proving multiple and transferable abilities; this need regards workforce capable to adapt continuously to the market changes, dynamics and challenges brought by the technological evolution. In this context, knowledge becomes a very valuable asset, literally an exchangeable currency, an investment as a guarantee for survival and development of the organization, in a competitive system both nationally and internationally, once with the globalization of the workforce market. Creative and cultural industries became increasingly more important as contributors to nowadays' economy development and the countries' competitiveness and foreign trade positions. Moreover, the creative and cultural industries have a "strong impact both domestically and internationally, due to the idea of conceptualizing the point where creativity, culture, business and technology meet altogether, in order to 'unravel' growth and development" (ARCUB, 2015). Considering nowadays needs of technologies and the omnipresence of gadgets, without a fine analysis we would say, at the first glance, that from all the creative and cultural industries, the IT is the most dynamic and continuously fast growing sector. Other comparative studies conducted on Romania's creative and cultural industries proved this idea to be true, and this paper will present the dimensions and performances of this sector comparing it to the whole Romanian creative economy.

**Keywords:** creative sectors; creative industries; IT; evolution; dimensions; performances.

### **The Creative Economy and Its Building Blocks**

Everything started with the recognition of the creative and cultural industries as catalysts of economic and social development, and then several frameworks, methodologies and studies were conducted in order to define, identify and measure the creative economy with all its causes and effects.

The various definitions given to the creative economy paint an interconnection between long life learning, economic development and higher standards of living, enhanced by the creative economy; in the description of the creative and cultural industries, there are encountered "two dimensions: the material one, [which] comprises aspects regarding the production, information technologies and communication, industrial property, and the second one, the immaterial, referring to the intellectual resources, culture, knowledge, creativity, innovation, copyright and human capital" (Croitoru & Becuț, 2016).

The emergence of the so – called "creative economy" denotes a structural change in the global economy, in line with globalization (Badulescu, 2007), as well as structural changes in the tertiary economy,

culture, leisure, tourism and services. The creative economy values the human resource, its talent, its intellect and its creativity. The creative economy makes possible the capitalization of the creation resulted from innovation, talent, intellect or creativity, separately.

Over the time, several studies have shown that the creative and cultural industries lead to economic development and, “potentially they have the characteristics of a leading sector that can provide spillover effects for the economy; and they can attract a high-quality workforce, business and investment, and spur creativity and innovation across all sectors of the economy” (UNESCO, 2009).

The academic literature recognizes as building blocks of the creative economy (Barringer et al., 2004), having a great impact on its growth and development, the followings:

- **The creative persons** – who produce content for the creative economy being engaged in activities as entrepreneurs, arts-related non-profit organizations’ managers, academics, scientists, volunteers, or employees of the creative sector;
- **Centres of education** – these contribute to the creative economy as suppliers of work force training. Universities provide a great part of the research and development needed in this sector, and also attract the creative persons;
- **Cultural and natural amenities** – the cultural ones include historic buildings and centres, the local art, festivals, performances, cultural institutions, local heritage; on the other hand, the natural amenities regard parks, outdoor facilities for practicing sport or other activities, bike paths, rural areas, etc.;
- **Business engagement** – these are the supporters of the creative economy regardless of their involvement in the creative sector. The urban areas are favorable for clusters blooming, where specific creative activities can develop, and furthermore these boost economic development;
- **Infrastructure** – represents a basic service needed for an easy access of business, suppliers and tourists. Also included in this category are communications systems, accommodations, public safety services, etc.;
- **Networks** – both formal and informal, and of public or private interest;
- **Strategies** – these are plans and schemes of the local communities aiming the greatest results in economic development with the fewest resources involved; these can appear as tax and workforce policies or programs, etc.;
- **Leadership** – denotes initiative as vision and engagement;
- **Financial resources (money)** – any form of governmental or private funding, grants, etc. are taken into account;
- **Time** – the process of developing a powerful local, regional or national creative economy is time-consuming and influenced by the presence or absence of other elements.

These elements are essential for the creative economy, and are being organized and classified according to various models, one of them being the Assets Connectors Enhancers (ACE) developmental model, which divides the ten elements listed above into three categories, more exactly in: assets, connectors and catalysts.





**Figure 1: The ACE (Assets Connectors Enhancers) developmental model**

Source: own elaboration based on data retrieved from Barringer Richard, Colgan Charles, DeNatale Douglas, Hutchins Jennifer, Smith Deborah, Wassall Gregory, *The creative economy in Maine. Measurement and analysis*, Center for Business & Economic Research University of Southern Maine, 2004, p. 44 [Online] available: <http://efc.muskie.usm.maine.edu/docs/CEreport.pdf> accessed on 28.08.2018

Treating and analyzing the subject of the creative economy, we faced some conceptual issues; despite the fact that the academic literature and several world-wide organizations provides a wide range of definitions and frameworks regarding the creative and cultural industries and of the activities involved, there is still work to be done in matter of harmonization and elimination of discrepancies.

### **The IT sector – part of the creative industries**

The creative economy regards “the individual creativity organized in a structured frame and defined by an economic logic” (ARCUB, 2015). More precisely, the economic activities framing the creative and cultural industries are based on utilizing talent, intellect or culture, and produce different original contents protected by intellectual property rights. These activities regard arts, fashion, music, IT and communications, research, heritage, crafts etc. and are classified in cultural or creative industries. Cultural industries are part of the creative industries, but cultural industries are focused mainly on heritage, traditions and talent, their products and services bearing a greater value given by symbolism and expressiveness than the products resulted from the pure creative industries. The goods and services of the creative industries (IT, R&D, etc.) are, on the other hand, functional, rather than symbolic.

Thus, IT is one of the creative industries of the creative economy, and relying on the utilization of human intellectual capital.

Due to its amplitude in the creative economy as a whole, and its importance in economic and technological development, we consider the need to approach this field separately.

We decided to analyze in greater detail and to pay more attention to the economic contributions of the IT. Also, another reason for analyzing the IT industry was the statement that “Romania is the leader in the European Union in terms of number of technology employees per capita, and is ranked sixth in the world” (ADRC, online).

As part of the creative economy, we are interested to see how much of the creative economy is produced by the IT industries; meanwhile we are concerned about the evolution of the IT industries correlated with the evolution of the creative sector during 2010-2016.

Table 1 presents 2016 data regarding the number of employees, number of enterprises, turnover and net profit of the IT industry, and on the other hand, the same indicators, this time for the whole creative and cultural industries. This records show that for most indicators the IT industry counts for approximately quarter of the whole Romanian creative economy of 2016.

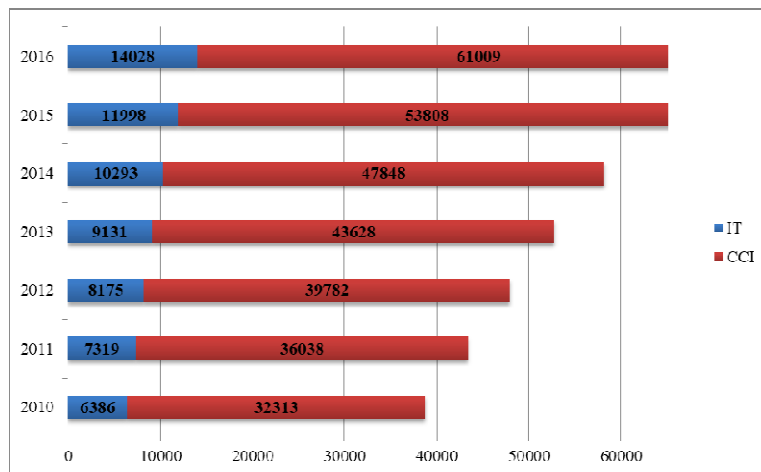
**Table 1: Share of the IT sector in the total creative and cultural industries (CCI) of Romania – main indicators**

No.	Indicators	IT (2016)	Creative and cultural industries (CCI) in Romania (2016)	%IT of CCI
1.	Enterprises number	14,028	61,009	22.99%
2.	Employees number	90,993	361,770	25.15%
3.	Turnover (lei)	18,959,653,281	67,342,672,475	28.15%
4.	Net profit (lei)	2,303,609,054	6,692,498,616	34.42%

Source: own elaboration based on data retrieved from: <https://membri.listafirme.ro/statistici-economice.asp#selectie>, accessed on 10.09.2018

***Dimensions and evolution of the creative industry of IT***

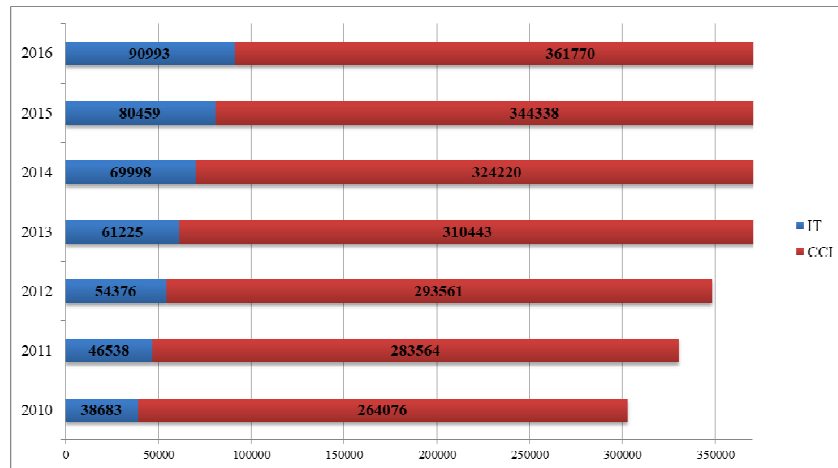
Some of the most important economic contributions of a sector to economic development can be measured by the number of enterprises and number of employees. Even though these indicators represent quantitative measurements, they present a great interest due to the jobs created and the generated incomes.



**Figure 2: Evolution of the enterprises number in the IT industry vs. the evolution of the enterprises number in the creative and cultural industries (2010-2016)**

Source: own elaboration based on data retrieved from: <https://membri.listafirme.ro/statistici-economice.asp#selectie>, accessed on 10.09.2018

Figure 2 presents the data regarding the number of enterprises; during the analyzed period, the number of both IT and creative economy enterprises increased steadily, a faster growth being recorded after 2015. On the other hand, these established enterprises created new jobs, as Figure 3 presents below. We can see the same favorable situation in the number of persons engaged in IT related activities and creative activities. The number of employees in the overall field of creative & cultural industries increased steadily during the six years of analysis, but the growth was more pronounced for the IT sector; analyzing the data, we conclude that the creative class grew during the time primarily due to the increase in the number of IT employees.



**Figure 3: Evolution of the employees' numbers in the IT industry vs. the evolution of the employees' number in the creative and cultural industries (2010-2016)**

Source: own elaboration based on data retrieved from: <https://membri.listafirme.ro/statistici-economice.asp#selectie>, accessed on 10.09.2018

The IT&C market is characterized by a low concentration (the Herfindahl-Hirschman index, for the year 2016 is around 100), being considered a competitive market, contrasting with the "Telecommunications" sector where, due to big mobile-phone players, the market concentration is considered to be moderate (Competition Council (Romania), 2017; National Bank of Romania (NBR), 2017). The vast majority of IT & C are small (and very small) companies, with an average of 5-10 employees, and a reduced market share (Grigoraş, et al., 2017, p. 12).

### ***Performances and evolution of the creative industry of IT***

The IT industry records revenue from hardware, software, maintenance and technical support, IT consulting and IT services.

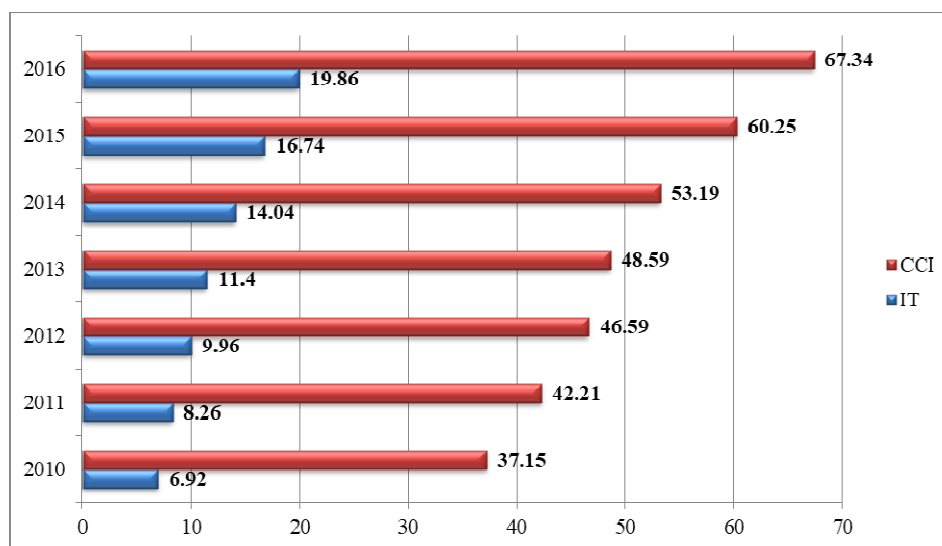
Besides the number of enterprises and employees, we considered financial information to be of significant interest as well. We analyzed the record regarding the turnover and the net profit of the IT industry and of the creative and cultural industry as a whole.

The recorded turnover is presented exactly in Table 2, and its evolution in Figure 4. Both representations highlight a continuous and significant increase from 2010 to 2016. At the end of the period, the creative and cultural industries almost doubled the values of the turnover recorded at the beginning; meanwhile, the IT industries increased its revenues more than three times.

**Table 2: The turnover recorded by the IT industry vs. the turnover recorded by the creative economy (2010-2016)**

	2010	2011	2012	2013	2014	2015	2016
<b>IT</b>	6,923,237,041	8,264,628,614	9,962,831,944	11,401,307,295	14,041,629,974	16,738,754,686	19,859,653,281
<b>CCI</b>	37,148,259,668	42,219,036,218	46,590,632,304	48,590,632,304	53,190,190,248	60,253,606,091	67,342,672,475

Source: own elaboration based on data retrieved from: <https://membri.listafirme.ro/statistici-economice.asp#selectie>, accessed on 15.09.2018



**Figure 4: Evolution of the turnover of the IT industry vs. the turnover of the creative and cultural industries during 2010-2016 (million lei)**

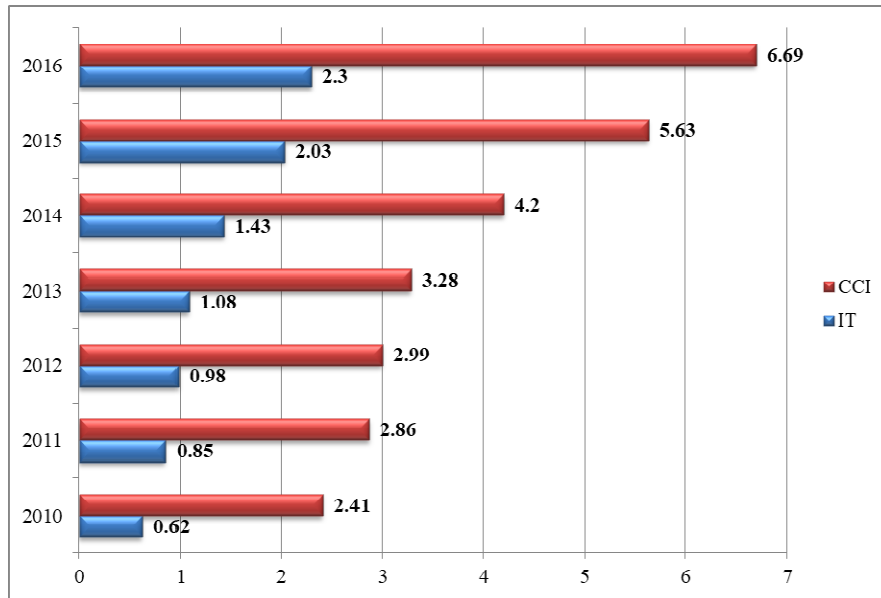
Source: own elaboration based on data retrieved from: <https://membri.listafirme.ro/statistici-economice.asp#selectie>, accessed on 15.09.2018

The revenues were high and following a positive trend during 2010 and 2016. Of considerable relevance are also net profits: similarly, Table 3 present the exact net profits recorded by the IT industry on one hand, and the creative and cultural industries as a whole, on the other hand; the evolution of these indicators is described in Figure 5.

**Table 3: The net profit recorded by the IT industry vs. the net profit recorded by the creative economy (2010-2016)**

	2010	2011	2012	2013	2014	2015	2016
<b>IT</b>	625,503,557	847,015,945	975,993,495	1,078,639,908	1,427,608,030	2,028,544,187	2,303,609,054
<b>CCI</b>	2,410,375,554	2,869,497,314	2,988,971,779	3,284,638,356	4,204,866,875	5,629,907,183	6,692,498,616

Source: own elaboration based on data retrieved from: <https://membri.listafirme.ro/statistici-economice.asp#selectie>, accessed on 15.09.2018



**Figure 5: Evolution of the IT industry’s net profit vs. the creative and cultural industries’ net profit during 2010-2016 (million lei)**

Source: own elaboration based on data retrieved from: <https://membri.listafirme.ro/statistici-economice.asp#selectie>, accessed on 15.09.2018

The fiscal facilities (the legislation of the last 7 years constantly included in the category of creative activities - therefore, exempted or with lower taxation - the activities and qualifications / occupations of IT&C), and the relatively abundant and well-qualified workforce, stirred the foreign direct investment in this sector. Although fluctuating (EUR 3.2 billion in 2017, EUR 2.8 billion in 2012, EUR 4.2 billion in 2013 and more than EUR 3.7 billion in 2016), the trend is on the rise (National Bank of Romania (NBR), 2017). The performances of the IT industry prove that Romania is able to develop and even stand out on a global level. Education and training of the work force, as well as its low costs, have led to the country being perceived as attractive by world-class investors such as Bosch, Oracle, Emerson, Computer Generated Solutions and others, establishing subsidiaries in the most important cities of Romania (Bucharest, Cluj-Napoca, Timișoara etc.). However, most of the foreign companies coming to Romania target mainly outsourcing activities, i.e. the implementation of technical solutions with relatively less creative content and targeting external customers, meanwhile, the more complex activities are maintained in the western Europe, based on the confluence between business and technology (Grigoraș, et al., 2017, p. 5). Moreover, the skilled labor crisis and mismatch occupations phenomenon, the reduced capacity of the education and training system to compensate the migration of specialists and people with creative capacities, rise doubts about the sustainability of these positive developments in the future (Cedefop, 2018).

## Conclusions

The new development paradigm, where the main factors of economic and social growth are knowledge, creativity, originality and skills, has changed the economic structure, and concepts of growth and development, as well (UNESCO, 2009). The creative economy stands out as an answer for job creation, income generation, social inclusions and sustainable development. The creative and cultural industries comprise a large range of activities based on human intellect, talent or culture and rewarded through intellectual property rights, but the most powerful and fastest-developing of the creative industries is IT. In these pages several information regarding number of enterprises, number of employees, turnover and

net profit have shown that during the six years of analysis, the IT industry grew constantly, as well as the creative economy, as a whole.

The IT industry represents a quarter of the creative economy of Romania, so it can be considered its creative engine. Besides the actual interest and importance of high-tech industries, IT activities imply high revenues and low production costs. Moreover, the most important expense implied by the industry, i.e. the salaries and rewards of IT employees, is partly offset by Romania's labor market, which is considered to be cheap but rich in qualified persons.

The creative economy represents a reliable source of economic and social development for Romania, mostly through the IT industry, which flourished in the years following the crisis and supports the entire creative economy, so even greater progress can be expected.

## References

1. Agenția pentru Dezvoltare Regională Centru (ADRC), "Sectorul IT și industriile creative – domenii de excelență ale Regiunii Centru/ IT Sector and Creative Industries - Areas of Excellence of the Center Region", p.1 [Retrieved August 27, 2018]. Available at: [http://www.adrc centru.ro/Document\\_Files/Analiza%20sectorului%20IT%20si%20industriile%20creative\\_j9ubha.pdf](http://www.adrc centru.ro/Document_Files/Analiza%20sectorului%20IT%20si%20industriile%20creative_j9ubha.pdf)
2. ARCUB (2015), "Strategia Culturală și creativă a Bucureștiului 2015-2025/ Bucharest Cultural and Creative Strategy 2015-2025", [Online]. ARCUB, p.6 [Retrieved August 27, 2018]. Available at: <http://files.finantare.ro/2016/Strategia-culturala-si-creativa-a-Bucurestiului-2015.pdf>
3. Badulescu, D. (2007), "Globalizarea și băncile", Editura Economică, București, p.35
4. Barringer, R., Colgan, C., DeNatale, D., Hutchins, J., Smith, D., Wassall, G. (2004), "The creative economy in Maine. Measurement and analysis", *Center for Business & Economic Research University of Southern Maine*, p. 42-44, [Retrieved August 25, 2018]. Available at: <http://efc.muskie.usm.maine.edu/docs/CEreport.pdf>
5. Borg design [Online], [Retrieved September 15, 2018]. Available at: <https://membri.listafirme.ro/statistici-economice.asp#selectie>
6. Cedefop (2018), Skills Panorama. Romania: Mismatch priority occupations. [Online]. [Retrieved September 08, 2018]. Available at: [https://skillspanorama.cedefop.europa.eu/en/analytical\\_highlights/romania-mismatch-priority-occupations](https://skillspanorama.cedefop.europa.eu/en/analytical_highlights/romania-mismatch-priority-occupations).
7. Cojanu, V., Croitoru, C., Becuț, A. (2015), "Sectoarele culturale și creative din România. Importanța economică și contextul competitiv/ The cultural and creative sectors in Romania. Economic importance and competitive context", [Online]. *Pro Universitatea*, p. 17 [Retrieved September 23, 2018]. Available at: <http://www.culturadata.ro/wp-content/uploads/2016/03/Sectoarele-Culturale-si-Creative.pdf>.
8. Competition Council (Romania) (2017), Annual Report Year 2017 (in Romanian), [Online]. [Retrieved September 08, 2018]. Available at: [http://www.consiliulconcurentei.ro/uploads/docs/items/bucket13/id13184/raport\\_anual\\_2017.pdf](http://www.consiliulconcurentei.ro/uploads/docs/items/bucket13/id13184/raport_anual_2017.pdf).
9. Croitoru C., Becuț A. (2016), *Caietele Culturadata*, Volumul I. [Online]. Pro Universitatea, București, p.8 [Retrieved September 19, 2018]. Available at: <http://www.culturadata.ro/wp-content/uploads/2017/04/Caietele-Culturadata-Vol-1-2016.pdf>
10. Croitoru, C., Cojanu, V., Mucică, D., Becuț, A. (2016), "Cartea albă pentru activarea potențialului economic al sectoarelor culturale și creative din România", [Online] [Retrieved September 15, 2018]. Available at: [http://www.culturadata.ro/wp-content/uploads/2017/04/2016\\_Cartea\\_Alba\\_RO.pdf](http://www.culturadata.ro/wp-content/uploads/2017/04/2016_Cartea_Alba_RO.pdf)
11. Grigoraș, V., Tănase, A., Leonte, A. (2017), "Studiu al evoluțiilor sectorului IT&C în România"/ Study of IT & C sector developments in Romania, Bucharest: National Bank of Romania.
12. National Bank of Romania (NBR) (2017). Foreign Direct Investment in Romania in 2017. [Online]. [Retrieved September 08, 2018]. Available at: <http://www.bnr.ro/page.aspx?prid=15278>.
13. UNCTAD (2008), "Creative economy report – The challenge of assessing the Creative Economy: towards Informed Policy – making". [Online]. *United Nations*, [Retrieved September 06, 2018]. Available at: [http://unctad.org/en/Docs/ditc20082cer\\_en.pdf](http://unctad.org/en/Docs/ditc20082cer_en.pdf)

14. UNESCO Institute for Statistics (2009), *Measuring the economic contribution of cultural industries. A review and assessment of current methodological approaches*, UNESCO Framework for cultural statistics handbook no. 1, p.11[Retrieved September 16, 2018]. Available at: <http://unesdoc.unesco.org/images/0021/002182/218251e.pdf>

## **The Effect of Customer-to-Customer Interaction on Perceived Value: Moderating Effect of Customer's Dependency Orientation**

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### **Abstract**

Relationship marketing, tries to establish long-lasting beneficial relationship through co-creation and reciprocity of value between parties involved in a given relationship through financial, social and structural bonds. Social bond, in particular, has traditionally stressed the importance of social interactions between product/service providers on one hand and customers on the other hand. According to Nichollos (2010) the theoretical concept of relational bonds has passed further buyer-seller dyad relationship and has penetrated into the relationship among customers themselves, which is referred to customer-to-customer interactions. To underline the importance of the concept of the customer-to-customer interactions in the larger paradigm shift of relationship marketing, Clark (1994) called customer-to-customer interaction as a forgotten part of the relationship marketing. In general and based on Nichollos (2010), CCI could happen either during the process in which service is delivered in the service encounter (on-site) or after encounter (off-site). In this research, the effect of positive and negative on-site customer-to-customer interactions on customer perceived value is explored and CCI interactions in a coffee house is taken as an example. Dependency orientation of customers is taken as a moderating variable to explore if the dependency orientation of customers would make an effect on the relationship between the CCI and customer perceived value. With respects to on-site customer-to-customer interaction, which is the focus of this study, there are two major categories of CCI as direct and indirect interactions Kim (2012). First one stresses indirect interactions which focus on customers' understanding, perceptions and assessment of other present customers in the process of providing service, whilst the second one focuses on customers' direct interaction with other customers through any type of verbal or action exchanges. This study is on its pilot stage, where experimental design is utilized as the research methodology to test hypothesis. After determining the dependency, orientation of participants six different treatments are planned under two experiments as direct interaction experiment and indirect interaction experiment. Interdependent Scale/Independent Scale Singelis (1994) will be used to measure dependency orientation of respondents. The scale developed by Voss (2003) is used to measure customer perceived value. Six different scenarios are written for the treatments by keeping all variables involved constant except independent variables.

**Keywords:** Customer-to-Customer Interaction, social bonds, customer perceived value



## To Act or Not to Act in a Socially Responsible Way?

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### Abstract

The aim of the signal paper is to show CSR model through the lens of continuum model and Kohlberg's moral development. Referring to the aim, the research question is whether a company, as an entity operating in a competitive market, should fulfill the needs and expectations reported by stakeholders. To answer the question, the author use CSR and Kohlberg's model and exam what CSR level and the levels of Kohlberg moral development have been taken by entities that agree with the above mentioned statement. Referring to the research results, it should be stated that the vast majority of respondents support the thesis that the company should be involved in meeting the needs and expectations of stakeholders (351 of the 385 surveyed companies in Poland). Taking into account the answers of respondents who in the continuum model of CSR obtained the highest (R) level, it can be noted that the most often given answer was that being an honest citizen causes an internal obligation to see and fulfill pro-social initiatives.

**Keywords:** CSR, model, Kohlberg's moral development.

### Introduction

This paper is of a signal nature and aims to indicate the basic conclusions of a study which basis on author's CSR continuum model. The aim of this paper is to show CSR model through the lens of continuum model and Kohlberg's moral development. Referring to the aim, the research question is whether a company, as an entity operating in a competitive market, should fulfill the needs and expectations reported by stakeholders. Additionally, based on the continuum model, it will examined what level in this model have been taken by entities that agree with the above mentioned statement. And referring to the levels of Kohlberg's moral development it will examined what level in the classification took the subjects studied.

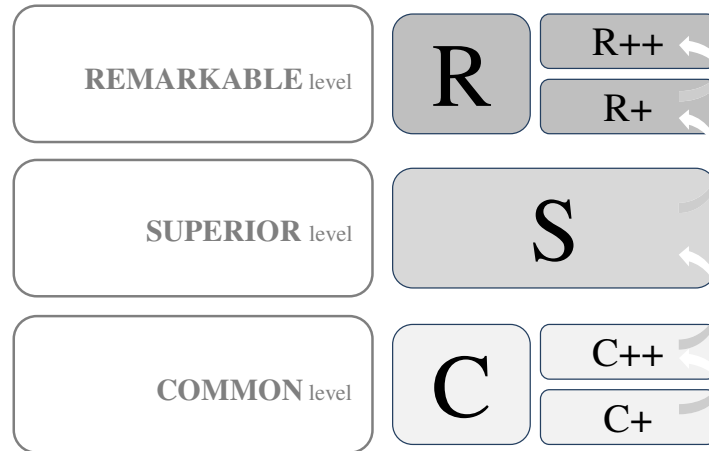
### The CSR and Moral Development Model

The literature of the subject provides us with many examples of CSR models. For example, Basu & Palazzo (2008) described the CSR model in terms of process, distinguishing three dimensions of the sensemaking process: cognitive, linguistic, conative.

Others include the development of CSR in stages, described by the dominant features. For example, Walton (1967) lists such stages as: austere, household, vendor, investment, civic, artistic, Reidenbach & Robin (1991) - amoral, legalistic, responsive, emerging ethical, ethical, Zadek (2004) - defensive, compliance, managerial, strategic, civil.

The model of continuum of corporate social responsibility (see more in: Rojek-Nowosielska, 2014) is a multi-level hierarchy of criteria that allow to organize the business behaviours on a "ladder" of social responsibility. The assessment of a specific enterprise according to the model's guidelines can ultimately indicate one of the three main levels of social responsibility (Figure 1). On the first level – C (common), the actions undertaken are characterised by spontaneity and lack of formalisation. Because of its complexity, this level was divided into two sub-levels called C<sup>+</sup> and C<sup>++</sup>. This specification makes it possible to more clearly determine the degree of involvement of a given entity in the implementation of the CSR's guidelines. The C<sup>+</sup> level includes those entities that, while implementing the concept of CSR, do not benefit from experience and their actions are driven by momentary inspiration. The C<sup>++</sup> level, on the other hand, is characterised by those entities which,

despite the absence of formal records or documents, benefit from their already obtained experience so that it is possible to observe a shorter execution time and greater efficiency.



**Fig. 1: Levels of the continuum model of corporate social responsibility**

Source: (Rojek-Nowosielska, 2014)

The second level – S (superior) is a level in which the most important steps, singled out in the preceding stages, are not only repeated but, above all, have been included in relevant documents and procedures. The resulting documents (assuming they are not merely reports which will never be read) demonstrate that the issues have been thoroughly considered and that the chosen solutions are best suited for the entity in question. The last level – R (remarkable), which takes into the account, among other things, the turbulence of the conditions in which companies operate, assumes the verification and updating of the developed documents and standards of conduct.

The entity at the R<sup>+</sup> level is characterised by the repetition of tasks which are included in the relevant documents streamlining daily operations. Additionally, continuous observation and analysis of ongoing activities is carried out in order to conduct (on the R<sup>++</sup> level) modifications, improvements and updates to the existing solutions, in line with changes in the market and the expectations of stakeholders.

The other point of referee in the paper are the Kohlberg's moral development stages. The concept gained great attention of scientists, although sometimes also received some criticism. It was not universally accepted for example its validity among cultural determinants (Gibbs, Basinger, Grime, & Snarey, 2007). As arguments against the model of moral development were raised also differences rooted in gender (Sparks & Durkin, 1987) or genetics determinant (Turiel, 1998, Gilligan 1993/1982). Based on his research, Kohlberg created three main (six detailed) stages of human moral development (Kohlberg1973). The first stage - pre-conventional, characterizes people whose behavior is motivated by the fear of punishment or the lack of a possible reward. The conventional stage describes those people whose behavior is subordinated to social requirements and expectations. Acting in accordance with the conformist attitude, such behaviors are taken that are best assessed by the society. The highest stage in development is the post-conventional level. According to Kohlberg's research, people who can qualify for this level have a highly developed internal system of values, through which they themselves establish and implement high standards that guide their lives.

## Method

In order to complete the research a database with companies in Poland was bought and the invitation to take part in the research was sent to them. The sample consist of 385 business entities who

accepted an invitation to participate the survey. The study was conducted in 2014. To collect the results of the research and to make calculations the excel database and a pivot table was used (table 1).

**Table 1: Respondents' answers whether companies should engage in actions aiming at meeting stakeholders' needs and expectations? (N=385)**

Answers  CSR level	I do not know		No, it should not engage		Yes, it may improve company's image		Yes, as a honest citizen a company should act to meet stakeholders' needs		Total	
	number	%	number	%	number	%	number	%	number	%
C	9	5,6	12	7,4	97	59,9	44	27,1	162	100
S	1	0,5	9	4,9	96	52,2	78	42,4	184	100
R	0	0,0	3	7,7	15	38,5	21	53,8	39	100

Source: Own research

Referring to the goals set in the initial part of the article, it should be stated that the vast majority of respondents support the thesis that the company should be involved in meeting the needs and expectations of stakeholders. 351 of the 385 surveyed entities in Poland agree with this statement.

The results of the conducted research also indicate that the question about the necessity of engaging in pro-social activities, among all companies that achieved the lowest level - C in the CSR model, is dominated by the affirmative answer indicating the improvement of the company's image (59.9%). This answer suggests that the reason why pro-social activities are undertaken is to adopt a conformist attitude and willingness to follow the current trend.

The second level (S) in the CSR continuum model is also dominated by the "image" answer (52.2%), however, it should be noted that quite numerous indications were directed to the answer suggesting the highest level in the Kohlberg model (42.4% of responses showing the motive of civic honesty). Taking into account the answers of respondents who in the continuum model of CSR obtained the highest (R) level, it can be noted that the most often given answer was that being an honest citizen causes an internal obligation to see and fulfill pro-social initiatives.

## Contribution

The CSR continuum model, described in a short form, introduces hierarchically ordered stages that make it possible to locate a given enterprise in the "ladder" of CSR development. The study was aimed at finding out whether the surveyed companies consider it their duty to engage in pro-social initiatives.

In addition, the intention of the author was to present the obtained results in relation to the Kohlberg's stages of moral development and the level of engagement in CSR in accordance with the continuum model. The assumption that, along with the higher level of CSR development in the continuum model, the level of Kohlberg's moral development of a given enterprise is increasing, among the surveyed enterprises gained confirmation.

Although the signaling nature of this article does not present the details of the model and the tool used as well, the signaled results may inspire further research in this area. Undoubtedly, it would be important to apply statistical methods to investigate possible other correlations, as well as extend the study to other European countries or the world.

## References

- Basu, K., & Palazzo, G. (2008). Corporate Social Responsibility: A Process Model of Sensemaking. *The Academy of Management Review*, 33(1), 122–136. <https://doi.org/10.2307/20159379>
- Gibbs, J. C., Basinger, K. S., Grime, R. L., & Snarey, J. R. (2007). Moral judgment development across cultures: Revisiting Kohlberg's universality claims. *Developmental Review*, 27(4), 443–500. <https://doi.org/10.1016/j.dr.2007.04.001>
- Gilligan, C. (1993/1982). *In a different voice*. Cambridge, MA: Harvard University Press. (Original work published 1982)
- Kohlberg L. (1973), The claim to moral adequacy of a highest stage of moral judgement, *Journal of Philosophy*, vol. 70, no. 18.
- Reidenbach, R. E., & Robin, D. P. (1991). A Conceptual Model of Corporate Moral Development. *Journal of Business*, 10, 273–284. <https://doi.org/10.1007/BF00382966>
- Rojek-Nowosielska, M. (2014). Corporate social responsibility level - theoretical approach. *Management (1429-9321)*, 18(1), 34–42. <https://doi.org/10.2478/manment-2014-0003>
- Sparks, P., & Durkin, K. (1987). Moral reasoning and political orientation: the context sensitivity of individual rights and democratic principles. *Journal of Personality and Social Psychology*, 52(5), 931-936
- Turiel, E. (1998). The development of morality. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (5th ed., Vol. 3, pp. 863-932). New York: John Wiley & Sons, Inc.
- Walton, C. (1967). *Corporate Social Responsibilities*. Belmont, CA: Wadsworth
- Zadek, S. (2004). The Path to Corporate Responsibility: Best Practice. *Harvard Business Review*, Vol. 82 Is, p.125-132. [https://doi.org/10.1007/978-3-540-70818-6\\_13](https://doi.org/10.1007/978-3-540-70818-6_13)

## **Accelerated Amortization Mechanism in Stimulating the Renovation of Fixed Capital**

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### **Abstract**

Up to date, there is a lack of investment in the real sector of the economy in Russia. The consequence of underinvestment is a high level of capital consumption in the leading sectors of the economy: engineering, energetics, and others. Under the conditions of imposed economic sanctions, investments from abroad have practically ceased, and the cost of credit resources in the domestic market remains highly overstated, so the problem of finding own funds for the purpose of renewing fixed capital becomes particularly urgent. Such a resource is the company's amortisation funds. The accelerated amortization mechanism is analyzed in the article as the most important way of accelerated accumulation of own funds intended for financing projects to update industrial base of industrial enterprises.

**Keywords:** fixed capital; accelerated amortization; investment activities; renewal.

### **Introduction**

Successful implementation of the project on timely (in accordance with the objective useful lives) renewal of fixed capital, mainly on a new quality basis, requires the necessary investment support.

There has been a drop in investment in fixed capital in recent years, against the backdrop of a general decline in business activity, crisis phenomena in the Russian economy, due, inter alia, to the introduction of economic sanctions by Western partners. This leads to a disruption in the dynamics of reproduction processes, an increase in the wear and tear and obsolescence of the production base.

Untimely replacement of obsolete and worn-out equipment leads to the fact that it produces a more expensive (due to overstated cost) and inferior quality products - compared to manufactured using more sophisticated equipment. This, inter alia, leads to the loss of the company's competitive advantages in the market, a fall in sales volumes, a deterioration in the financial condition of the enterprise.

The recent negative trends in investing in the reproduction of the fixed capital of industrial enterprises in Russia necessitate to create economic conditions that would solve the problem of financial support for intensive renewal of fixed capital, especially its active part - technological equipment, workers, power machines, etc. The most important source of financing for these processes at the enterprise are amortization allowances. The purpose of this study is to determine the role of amortization in stimulating innovative renewal of fixed capital, as well as in the search for ways to increase its share in the total investment for renewal.

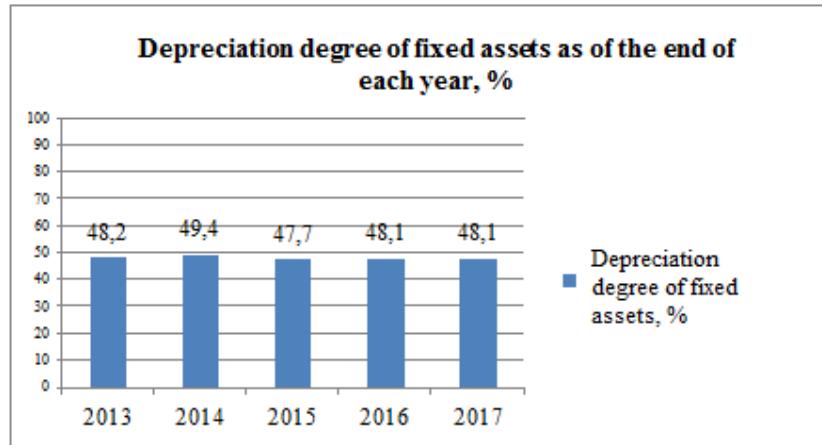
### **Materials and Methods**

The need for amortization is determined by the specifics of the participation of fixed capital in the production process: the fixed capital functions during a number of production cycles, preserving its tangible physical form, while part of the cost of the means of labor is embodied in each unit of the produced product, proportional to its normative physical deterioration.

A reasonable depreciation policy should stimulate the renewal of fixed capital, ensure the growth of investment in production.

At the moment, most Russian industrial enterprises apply a linear method of calculating depreciation because of the simplicity of accounting procedures, in which the amount of monthly amortization allowances is the same throughout the useful life of the mechanical facilities. Amortisation on a

straight-line basis does not allow to accumulate sufficient financial resources necessary for the implementation of the investment project (Ackermann, Fochmann, 2014) - the accumulated amortization amounts have practically no purchasing power due to inflation to the end of the operation of technics, machinery, equipment (Feldstein, 1979). In this regard, own funds are not enough not only for the expanded, but also for simple reproduction of fixed capital. Therefore, a high level of physical depreciation of fixed capital remains (Figure 1), its inefficient use and "loss" of part of the industrial function of industrial enterprises are observed.



**Fig. 1: Depreciation degree of fixed assets in 2013 - 2017. (Federal Statistics Service of the Russian Federation)**

It is necessary to intensify the processes of renewal of fixed capital to change the existing practice of reproduction of the mechanical facilities. First of all intensification assumes timely renewal, and secondly, the renewal of fixed capital (especially its active part) on a new qualitative basis. Overcoming this problem generates a need for solving a number of scientific problems. The initial task is to determine the objective terms of exploitation of the mechanical facilities, without which it is impossible to judge the timeliness of the renewal. In this case, it should be noted that the amortization rates established at the legislative level for various groups of fixed capital objects, in accordance with which the prime cost of production is formed and, accordingly, the means of restoring fixed capital, are a guide for timely renewal. Setting the amortization rates, the procedure for its calculation and use, the state regulates the pace and nature of reproduction. The rate of renewal of fixed capital is set by the amortization rate. The renewal of fixed capital is carried out in a timely manner, if the normalized terms and sizes of amortization meet the objective requirements, i.e. are determined in accordance with the laws of the material and, which is especially important in the context of the transition to a predominantly innovative type of renovation, the laws of moral amortization.

Another important task is the need to develop an organizational and economic mechanism that provides motivation and incentives for the timely renewal of fixed capital elements on a fundamentally new qualitative basis. Given the importance of the first task, we focus on the second task in this study, assuming that the time limits and, accordingly, the amortization rates are due to the above objective circumstances.

For many objects of fixed capital, the useful lives established by groups are averaged and often overstated, as a result of which the effect of obsolescence is not fully taken into account, especially in the recent rapid development of technology (Ibendahl, Norvell, 2007). As a result, equipment at many enterprises is operated much longer than necessary. This leads to technological backwardness of the country's industrial complex.

At the same time, renewal of fixed capital before the end of the normative useful life leads to a non-revaluation of its value. This part of the equipment cost, together with additional capital costs for new units of equipment, must be reimbursed by saving from its use instead of worn-out equipment, and

also in accordance with the regulatory lifetime. As a result, there is a contradiction between the possible accelerated renewal of fixed capital and the practice of its amortization, which ultimately leads to a decrease in the efficiency of renewal and does not allow accelerating the introduction of scientific and technological progress. Therefore, it is necessary to develop such measures to improve the amortization mechanism that would help to resolve this contradiction (Boucekkine, Martinez, 2006).

One of the main elements of the economic mechanism is the mechanism for calculating and using amortization strictly for the purpose of renewal. The role of amortization as the main resource of renewal is determined by the structure of the financial sources of renewal: in the ratio of amortization allowances used for the compensation and expansion of fixed capital, as well as in the proportion between amortization allowances and the accumulated portion of the surplus product, in which the share of the former tends to increase.

An integrated approach to the formation and implementation of amortization policies is necessary to create such a mechanism. This will create the necessary conditions for the formation of synergetic effects of the implemented amortization and investment policies in the direction of not only simple reproduction of fixed capital, but also its innovative renewal (Ackermann, Fochmann, 2014).

## **Results and Discussion**

The practice of domestic enterprises shows that the rate of growth in amortization of fixed capital outstrips the growth rate of amortization allowances. This is due to the almost common usage of the linear method of calculating amortization by enterprises, which does not compensate the advancing rates of scientific and technological progress. The rate of increase in the production and technical characteristics of new equipment should outstrip the rate of amortization.

An important condition for accelerating the process of reproduction of depreciable production resources is the development of a mechanism for using accelerated depreciation as a means of mobilizing financial resources for investment in a short time (Jackson, Xiaotao, Cecchini, 2009).

When applying accelerated amortization, the amount of amortization allowances actually exceeds the cost of depreciation of fixed capital. This allows to direct these funds to invest in simple and expanded reproduction of fixed capital, significantly increasing their share in total net investment by reducing the use of net income and borrowed funds. As a result, amortization is the main financial source of investment in fixed assets, as evidenced by the experience of developed countries (Danciu, Deac, 2011). The government, pursuing a policy of accelerated amortization, contributes to the accumulation of funds in the depreciation fund, which allows to modernize and renew the fixed capital without paying taxes. As a result, the pace of economic development is accelerating, the quality of manufactured products and their competitiveness in the world market are increasing (Douglas, Kahn, 2013). All this compensates the government for the reduction of income from the profit tax.

For the first time accelerated amortization was used in the mid-1940s in Britain and the US to stimulate military production, and later as one of the ways to speed up the development of civilian industry.

New economic reforms were launched as part of the policy of the Reagan administration aimed at accelerating the allowance of fixed capital, accelerating the modernization of the country's production apparatus. One of the main goals of Reaganomics was to stimulate investment activity in the country, as well as reduce the tax burden on corporate business and small businesses, which was realized, mostly by giving companies the right to apply accelerated amortization. This created the necessary background for the early decommissioning of a huge stock of obsolete equipment, the massive introduction of scientific and technological progress in production. Currently, accelerated amortization mechanisms are also actively used, especially in strategically important sectors, such as energetics (Metcalf, 2006), agriculture (Ibendahl, Norvell, 2007).

The policy of accelerated amortization is carried out not only in most western states with a developed economy: Germany, France, Great Britain, Canada, Italy, the Netherlands, etc., but also in developing

countries (Brazil (Schultz, Weise, Borgert, 2009), Thailand (Muthitacharoen, 2016)), which allows to write off the value of fixed capital in a shorter time and at higher amortization rates, creating the opportunity for mass modernization of productive assets.

The experience of developed European countries, which recently carried out the restructuring of the economy from an administrative command to a market economy, also proves the high efficiency of accelerated amortization as the most important tax method for stimulating the renewal of fixed capital (Chang, Radulescu, 2003).

The use of accelerated amortization methods has a beneficial effect on business and the state.

**Table 1: Applicability of methods of the accelerated amortization from positions of business and the state**

Grounds for applying accelerated amortization methods	
for the enterprise	for the state
1) the method of accelerated amortization allows to quickly shift the costs of equipment deterioration, thereby creating a reserve for its replacement;	1) when using the mechanism of accelerated amortization, the economy and, accordingly, the state receive an additional investment resource that is many times larger than the amount of reduction in revenues to the budget of the profit tax;
2) accumulation of own funds free of tax on income;	2) the state stimulates investment activity and provides control over this activity introducing accelerated amortization and increasing its share in total investments;
3) amortization allowances - the most reliable source of funds, which is less affected by the results of economic activity for the reporting period;	3) the acceleration of the renewal of fixed capital creates a material basis for the development of the economy, improving infrastructure, etc .;
4) the peculiarities of machine depreciation theoretically and practically justify the use of accelerated amortization - it should be carried in a pattern that is reverse to the increase in wear and tear;	4) intensive renewal of fixed capital creates the material and technical basis for the production of modern competitive products of high quality: provision of the internal market;
5) the amount of amortization allowances is an absolutely predictable indicator, which allows the company's management to plan the expenditure side of the budget and pursue a balanced investment policy without threatening the company's financial stability;	5) improving the environmental situation, reducing the threat of man-made disasters.



The use of accelerated amortization leads to an increase in the cost of production, a reduction in the taxable base for income tax only in the first half of the useful life of newly introduced fixed assets. The share of amortization in expenses is significantly reduced and the tax base and tax payments to the budget are accordingly increased in the second half of the useful life. At the same time, the total amount of accumulated amortization (and payable taxes) for the entire service life remains the same as for the traditional linear method, only its distribution over the years of the standard useful life is changed (Wielhouwer, Waegenare, Kort, 2002). Thus, additional resources provided to enterprises in the form of savings on income tax are subsequently returned to the state.

Despite the fact that, the application of accelerated amortization is declared as one of the priority areas of Russia's investment and innovation policy, business entities are reluctant to use this mechanism in practice. According to Russian statistics, the share of amortization accrued by non-linear methods in the total amount of amortization is only about 4.5% (Federal Statics Service of the Russian Federation). This is due to a number of reasons:

- 1) imperfection of the regulatory framework, ambiguity in the interpretation of certain norms and calculation algorithms;
- 2) the complexity of accounting and tax accounting when applying various methods for calculating amortization (temporary differences, deferred tax assets and liabilities);
- 3) the lack of incentives on the part of the state to renew the fixed capital strictly at the expense of the amortization fund;
- 4) the absence of accounting of the amortization fund at the enterprises as an independent asset and control over its intended use.

## **Conclusion**

Regressive amortization is used in developed Western countries primarily for the purpose of innovative renewal of fixed capital, development of production, and the prevention of obsolescence of equipment. Enterprises with full transfer of the cost of mechanical facilities may, if necessary, replace them with new ones due to amortization allowances. The application of regressive amortization further increases the rate of expanded reproduction of fixed capital. Despite the fact that a number of authors (Morrisset, Neda, 2000, Aarbu, MacKie-Mason, 2003, Metcalf, 2006) draw attention to the possibility of abuse and financial fraud, the construction of tax evasion schemes based on regressive amortization, a positive impact on the economy of this tool is incomparably larger, especially in countries with developing, transition economies, where there are still such negative phenomena as budget constraints, corruption, etc.

It should also be noted that the use of accelerated amortization may have a different impact on the development of production, depending on whether the economy of the country is currently on the decline or on the rise (Morrow, 2016).

Given the state and the degree of depreciation of the fixed capital of Russian enterprises, it seems reasonable to extend the use of regressive depreciation, especially for small and medium-sized businesses, to expedite the accumulation of funds in the amortization fund with the aim of their soonest investment in the acquisition of new equipment - to ensure innovative development of enterprises.

One of the most important tasks of Russia's economic policy should be to reduce the tax burden on business, since without this it is impossible to successfully implement the policy of import substitution, nor to achieve an increase in investment activity. The usage of accelerated amortization mechanisms will allow to solve this task (Douglas, Kahn, 2013).

The application of accelerated amortization will increase tax revenues to budgets of various levels, update the production base of domestic industrial enterprises without increasing costs and not spending state funds. Accelerated amortization should be considered as the main means of innovative development of enterprises and the economy of the country as a whole (Zwick, Mahon, 2014).

## References

- Aarbu, K.O., MacKie-Mason, J.K. (2003). Explaining Underutilization of Tax Depreciation Deductions: Empirical Evidence from Norway. *International Tax and Public Finance*, 10: 229-257.
- Ackermann, H., Fochmann, M. (2014). The effect of straight-line and accelerated depreciation rules on risky investment decisions: An experimental study. arqus Discussion Papers in Quantitative Tax Research 158, arqus - Arbeitskreis Quantitative Steuerlehre.
- Aruga, O. (2007). Conventional or New? Optimal Investment Allocation across Vintages of Technology. MPRA Paper 6043, University Library of Munich, Germany.
- Boucekine, R.F. Del Rio, Martinez. B. (2006). Technological Progress, Obsolescence and Depreciation. CORE Discussion Paper No. 2006/27.
- Chang, W.N., Radulescu, D. (2003). The Role of Tax Depreciation for Investment Decisions: A Comparison of European Transition Countries. CESifo Working Paper Series 847, CESifo Group Munich.
- Danciu, R., Deac, M. (2011). Issues Related to the Accounting Treatment of the Tangible and Intangible Assets Depreciation. *Annals of Faculty of Economics, University of Oradea, Faculty of Economics*, 1(2): 498-502.
- Douglas, A., Kahn, A. (2013). Proposed Replacement of the Tax Expenditure Concept and a Different Perspective on Accelerated Depreciation. *Florida State University Law Review*.
- Federal Statics Service of the Russian Federation. Retrieved from <http://tverstat.gks.ru>
- Feldstein, M. (1979). Adjusting Depreciation in an Inflationary Economy: Indexing versus Acceleration. NBER Working Papers 0395, National Bureau of Economic Research, Inc.
- Fichtner, J.J., Michel, A.N. (2015). Options for Corporate Capital Cost Recovery: Tax Rates and Depreciation. Mercatus research.
- Gittleman, M., Raa, T., Wolff, E.N. (2003). The Vintage Effect in TFP Growth: An Analysis of the Age Structure of Capital. NBER Working Papers 9768, National Bureau of Economic Research, Inc.
- Ibendahl, G.A., Norvell, J. (2007). Optimal Machinery Replacement under Accelerated Depreciation. 2007 Annual Meeting, February 4-7, 2007, Mobile, Alabama 34873, Southern Agricultural Economics Association.
- Jackson, S.B., Xiaotao, L., Cecchini, M. (2009). Economic consequences of firms' depreciation method choice: Evidence from capital investments. *Journal of Accounting and Economics*, 48(1): 54-68.
- Metcalf, G.E. (2006). Federal Tax Policy Towards Energy. Discussion Papers Series, Department of Economics, Tufts University 0612, Department of Economics, Tufts University.
- Morrisset, J., Neda, P. (2000). How tax policy and incentives affect foreign direct investment - a review. Policy Research Working Paper Series 2509, The World Bank.
- Morrow, R. (2016). Accelerating Depreciation in Recession. *Florida Tax Review*, 19(8).
- Muthitacharoen, A. (2016). Assessing Tax Incentives for Investment: Case Study of Thailand. PIER Discussion Papers 21, Puey Ungphakorn Institute for Economic Research, revised Mar.
- Schultz, Ch.A., Weise, A.D., Borgert, A. (2009). Depreciation in Brazil and Germany: differences in a Ct Scan and an Attached Building. *Revista Catarinense da Ciência Contábil*.
- Wielhouwer, J.L., Waegenare, A. De, Kort, P.M. (2002). Optimal tax depreciation under a progressive tax system. *Journal of Economic Dynamics and Control*, 27(2): 243-269.

Zwick, E., Mahon, J. (2014). Do Financial Frictions Amplify Fiscal Policy? Evidence from Business Investment Stimulus. Working Papers 1415, Oxford CBT, June 26th.

## **The Social Capital, the Micro-Social Capital and the Organizational Culture-Similarities and Differences**

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### **Abstract**

The objective of our analysis is to try to define "micro-social capital" as a time-based element and condition the performance of any business organization. Of course, this theoretically targeted approach by us is to be based on relatively more familiar aspects of management theory, namely organizational culture and formal social groups.

Regardless of the angle from which the existing climate in a company is being analyzed at a certain point in time, it is clear that this climate differs from one organization to another and that itself, through its content and nature, directly influences the daily relations between employees and departments in the organizational chart. However, it is relatively difficult to capture, define and direct the climate that exists in organizations, since the "roots" of its constitution derive from official norms / reports, but also from informal networks / networks.

Our analysis aims to emphasize the importance of formal relationships, especially informal relationships in a business organization as a distinct part of its organizational culture. We understand intuitively that there is a strong link between the quality of human resources available to a company and the nature of formal / informal relationships that develop over time; implicitly, these relationships can more or less support the accumulation of knowledge and the innovative capacity of the organization. However, there are no clear rules / principles in management theory, according to which the formal / informal relationships of an enterprise should be characterized and managed.

**Keywords:** social capital, micro-social capital and the organizational culture, informal relationships, formal relationships

### **Introduction**

There is a certain correspondence between the social capital that defines a particular country / nation and the concept of culture from a macroeconomic perspective (in the sense mentioned, certain traditions, customs, religion, language, trade relations, etc. influence the economic performance of a country over time). Therefore, we believe, to identify a partial correspondence between the concept of organizational culture and the concept of "micro-social capital". The reflection of social capital at the level of a large social group (country, nation, region, etc.) was identified by Bordieau (1979; 1986) on the basis of sustained networks of relationships more or less institutionalized between different groups or subgroups of individuals. In particular, trust, values in which individuals and social norms are imposed or accepted voluntarily direct micro-groups into formal and informal networks in order to solve various social problems.

Among the assumptions of our analysis, we advance the idea that we can discuss a concept of "micro-social capital" (as a direct equivalent although not always visible of what we call social capital from a macro perspective), although defining this concept and determining its content raises some methodological problems.

### **The Concept of Micro-Social Capital Vs Social Capital and Organizational Culture**

In essence, through micro-social capital we understand a major part of the social capital of a nation / nation, namely the part of the formal and informal relationships that develop over time in

organizations and their relationships with the local community they are part of. In other words, we include in the structure of the proposed concept two distinct categories of inter-human relationships and networks that are formed over time (Buta, 2016):

a. *Formal relationships* and networks such as internal ones of a company and given by organizational chart, internal rules and regulations; to these are added the formal relationships, i.e. officially, between a company and various entities / institutions operating in the local community (namely contractual relations with suppliers, clients, with a bank, with an insurance company, institutionalized relations with the city hall, with a university, etc.);

b. *Informal relationships and networks*, in which case we discuss informal relationships that come to double the internal organization chart of a company, but also informal relationships that can double with positive and negative effect, the current collaboration between a company and its environment localization (through the location environment we understand common business relationships with shareholders, suppliers, customers, banks, insurers, public administration and other interest groups).

As a result of the issues we are discussing about the terms "social capital" and "microsocial capital" we consider it appropriate to identify the essential elements that give the content of the concept of "social capital" (whatever the point of view some authors refer to), respectively (Buta, 2015):

a. The inter-individual trust and the confidence between individuals, that is to say, of individuals towards various institutions, whether public, private, religious or otherwise;

b. Values in which the members of a large social group (country / nation or similar) really believe and who essentially relate to the distinction of the person between good and evil, truth and false, correct and incorrect i.e.;

c. Social norms imposed and / or accepted voluntarily by members of a social group (a set of formal / informal rules);

d. Social competition and the tendency to form formal / informal networks between members of a large social group (networking among members of a group / management team).

Deductible we understand that the mix of the four major elements of social capital can induce a beneficial influence in the process of creating / spreading prosperity at the country / nation level (large social group); this potentially beneficial influence is reflected both at the macroeconomic level (ie political, administrative, macro strategies, protection of individual property, mass education, state attitude towards the business world) and at the microeconomic level (i.e. the mission proposed by the firm , organizational structures, type of organizational culture, microeconomic strategies, motivation of employees, dissemination of knowledge in the organization, etc.).

By analogy with this angle of social capital definition, we can outline what are the major elements for structuring in time what we call the "micro-social capital" of a company. More precisely, we believe that there are some essential elements and / or vectors on which the company's "micro-social capital" is constituted over time:

- The values that each employee, employee groups and organization think will be a major vector to which we report;
- Trust as an essential element in the development of social capital remains a second reference vector;
- Correct and transparent competition among employees may be a third vector to report to;
- Networking.

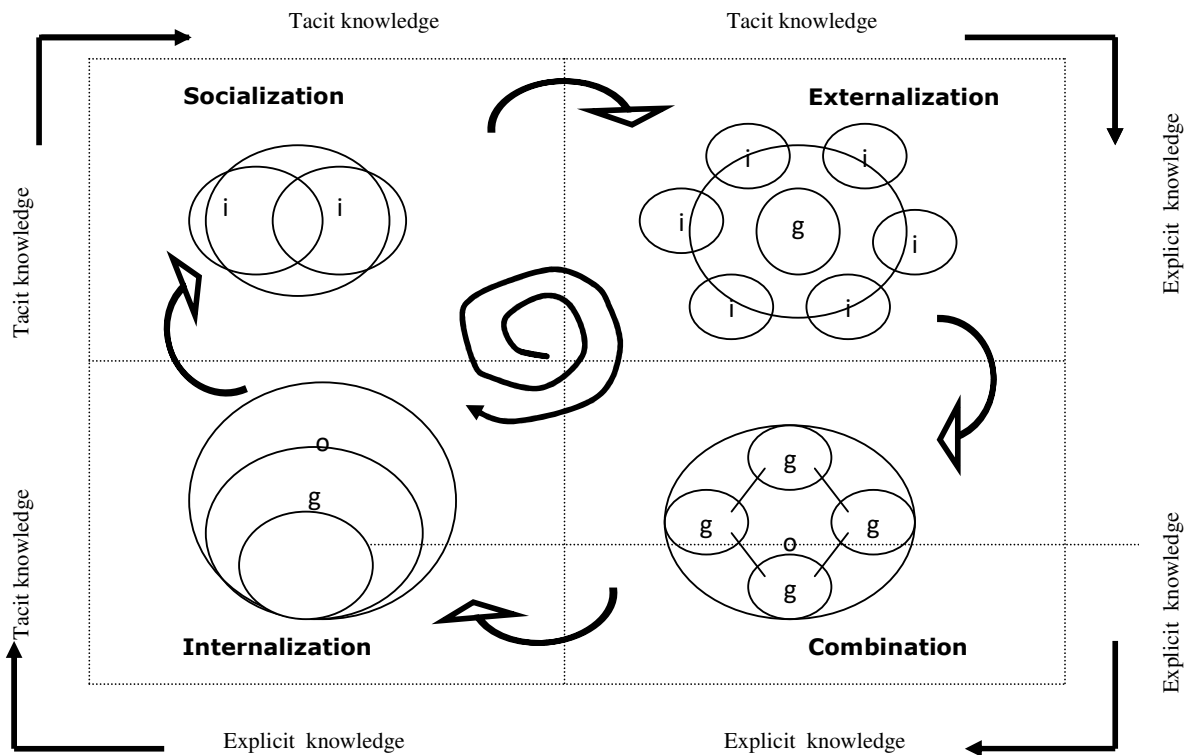
In the sense invoked by us, we understand that these three / four major elements of "micro-social capital" (values, trust, competition and networking) can be found both in the internal functioning of a company, i.e. in the organization chart and in the relationships that the firm engages over time with other entities from outside.

The notion of "micro-social capital" advanced by us could have more methodological implications as it offers, we believe, clearer directions of action for the superior leadership of a company in an attempt to acquire process and capitalize on knowledge as a distinct resource.

One of the major classifications in what is now called KM (Knowledge Management) is sharing knowledge on the two classes:

- Explicit knowledge;
- Tacit knowledge.

It is obvious that what we call explicit knowledge exists in society and organizations under different forms of codification and are differently accessible to each group of employees and / or management teams. In terms of silent knowledge, however, their access and sharing by employees are currently less understood / clarified on a theoretical and pragmatic basis; some explanations are given by some models in KM (Knowledge Management), such as the SECI model proposed by Nonaka (Figure 1).



i – individual/person; g – group; o - organization;

**Figure 1 : Spiral of knowledge conversion**

Source: adapted from Nonaka, I., Konno, N., The Concept of „Ba” Building a Foundation for Knowledge Creation, California Management Review, vol.40, No.3, Spring, 1998; Nonaka, I., Knowledge Advantage Conference, November 11-12, 1997, <http://www.knowledge-nurture.com/downloads/NONAKA.pdf>

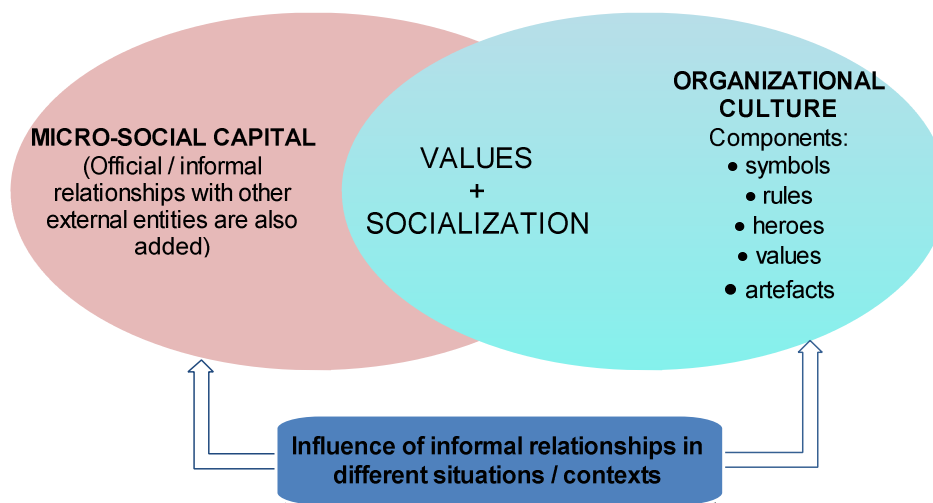
In summary, the so-called SECI model proposed by Nonaka shows us the following:

- In the socialization phase we witness a tacit knowledge conversion in tacit, where each employee / person finishes their informal expertise on a particular field (through informal relationships between people, through discussion and voluntary participation, etc.);
- The stage of outsourcing includes processes in which certain tacit knowledge is transformed into explicit knowledge (also through discussions, description, metaphors, etc.); Once they become explicit they are recorded on a support, and therefore are accessible to others, can be multiplied, transmitted from one generation to the next;
- In the Internalization stage, the transformation of some explicit knowledge into an explicit type of knowledge, which will have an extra value, thus a more systematized character for the concerned person (formal learning, training, study, etc.);
- In the Combination phase, we are witnessing a process of conversion of explicit knowledge into tacit knowledge, knowledge acquired through study and training over several years will be reflected in the form of experiments held by people that is more difficult to explain / describe specific aspect makes it difficult to transfer tacit knowledge from one employee to another).

From this point of view, we believe that in particular the type and nature of informal relationships that form over time within the organization and in its relationships with other entities are likely to favor direct access to tacit knowledge and their conversion into explicit knowledge.

From the perspective of our analysis, we will highlight the content of the concept of "micro-social capital" by referring it to the organizational culture ((it is sufficient to invoke the authorized opinions of Hofstede, Huczynski and Buchanan and more) (Hofstede, 1991, Huczynski and Buchanan, 2001.). The attempt to define "micro-social capital" through the antithesis of what we commonly call organizational culture allows, we believe, two distinct angles of analysis, namely:

a. From the point of view of common content, what is meant to be specific for both the micro-social capital and the organizational culture of a company. From this perspective, we believe that values, socialization, and some aspects of a business organization's history can be considered as common to both conceived concepts. Synthetically, figure no. 2 gives us a clearer picture of the common content of the two concepts and certain directions that can be followed to define and clarify methodologically what "micro-social capital" is.



**Figure 2: Reporting micro-social capital to organizational culture: the common content of concepts**

Source: Buta, S. (2016) *Capitalul uman, capitalul social și studiul relațiilor informale din organizațiile de afaceri*, Editura Prouniversitaria

The aspects outlined in the above figure lead us to the conclusion that we discuss two distinct concepts, namely "micro-social capital", only to a small extent we identify with what we commonly call the organizational culture of a company.

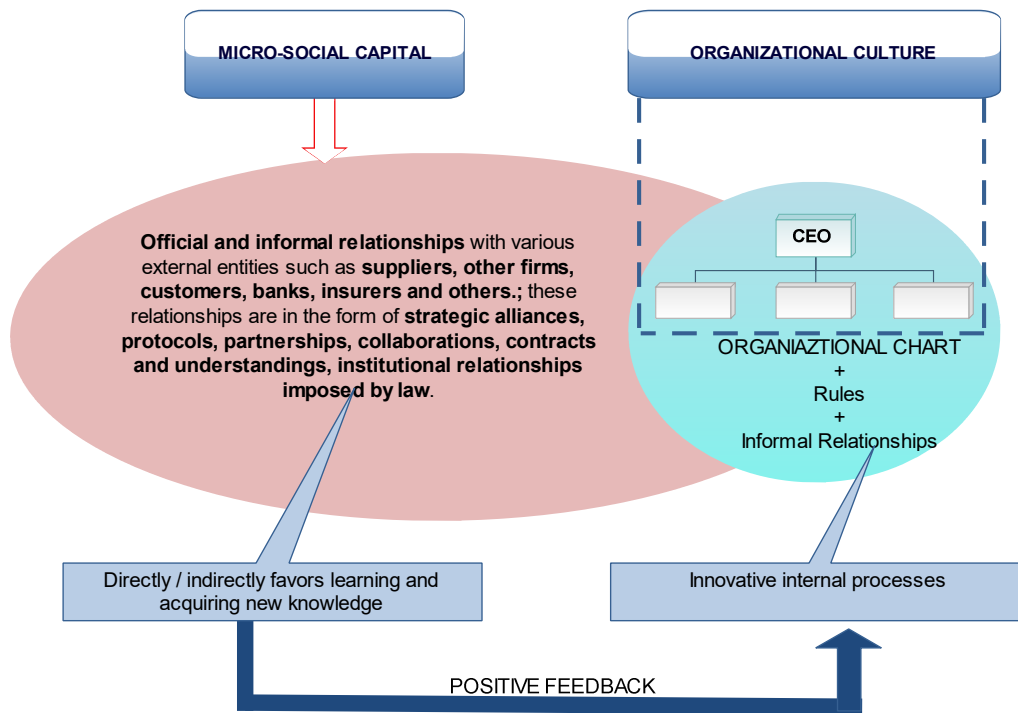
First of all, in the figure we emphasize the idea that there is a direct / indirect influence of informal relations on the "quality" of the organizational culture and implicitly on the type of "micro-social capital" that develops in connection with the path that a company goes through over time.

Secondly, the content of the formal and informal relationships and networks that any company employs with the business environment in which it is located with the market, the community and the local community tend to count more and more, we believe in our annual performance which the organization obtains. This is because firms around the world are being evaluated to an increasing degree and to the social performance that the organization brings as a type of contribution to the realization of the common good. Including from this angle of analysis, we understand that official / formal relationships are needed to maximize the amount of knowledge that the organization takes from outside, noting that it is predominantly explicit knowledge (which is by their nature at the disposal of all the individuals). If we are referring to the tacit knowledge outside the organization and the ways in which the company's employees could have access to this type of resource, things are obviously much more complicated. To the extent that management encourages / supports the development of informal relationships that foster the accumulation of new knowledge then it is highly likely that a certain decentralization of power and freedom of action for each employee will give each one a wider field to improve tacit knowledge (for example, free access during working hours to social networks could help employees to strengthen their explicit knowledge, but also certain tacit skills).

On the other hand, we understand that a total freedom of action for each employee in the relations with the outside of the organization is not possible as negative social / behavioral patterns can be taken and subsequently promoted within the organization. Especially under the effects of the 2008 global crisis, it was noted that a minimum of rules / standards of ethical and moral nature that business organizations ought to respect, and that excessive individualism can become dangerous to modern society. Simply put, Western countries need to support the building of moral capitalism and concepts such as CSR (Corporate Social Responsibility) be widely accepted by the corporate world and the business world;

b. From the point of view of the "area" of reflection and manifestation of "micro-social capital" in the way that the company goes over time, we understand that the organizational culture is also individualized / strengthened over time, but its reflection and contribution to the achieved performance by the organization are very different from the manifestation of the other concept. More precisely, we can find it simplified that the reflection of "micro-social capital" in the daily life of a company "embraces" much of what is visible and specific to organizational culture (the values the members of the organization believe, the functioning of groups in the organizational chart as teams, slogans used by the company, reputation gained over time, power and influence held within the local community, etc.). Obviously, the reflection and / or visibility of the concept of "micro-social capital" associated with the history of a firm remains closely conditioned by the common content that this concept has in relation to the organizational culture (as suggested in Figure 2). In other words, we designate, by the micro-social capital of a firm, certain realities / characteristics that define the position of the firm on the market on which it operates and which are based both on official / informal internal relations and on official / informal external relations. In figure no. 3 we present the graphical synthesis of the relation between the "micro-social capital" and the organizational culture of a company:





**Figure 3 : Content of micro-social capital in relation to the organizational culture**

Source: Buta, S. (2016) *Capitalul uman, capitalul social și studiul relațiilor informale din organizațiile de afaceri*, Editura Prouniversitaria

Thus, as suggested by us in the figure above, it is deduced that there is a common area of reflection and visibility of "micro-social capital" over the culture of an organization, but there are also completely distinct manifest plans of the two concepts. In our opinion, it is useful to understand by business decision makers both the problem specific to the organizational culture and the problem specific to the social capital (we mean, first of all, the macro-economic perspective of the social capital). In fact, we intuitively understand that what we call "microsocial capital" cannot be "broken" by the social, cultural or other realities that define the economy of a country. In other words, the existence and consolidation over time of a social capital that favors the economic performance of a nation / country is undoubtedly beneficial for the country's global / regional competitive position (it is sufficient to invoke the authorized opinions of Putman, Fukuyama, Porter, Bordieau and more) (Fukuyama, 1997, Putman, Leonardy, Nanetti, 1993, Porter, 1990, Bordieau1979; 1986). However, the mere existence of a capital that favors macro-level performance will never automatically and implicitly reflect on the annual performance of all companies in a national economy. This is because the mission proposed by the organization, the general strategy thought by the CEO and his team, the values that the members of the organization really believe and other aspects of the same type will be significantly different from one real firm to another. Simply put, the equivalent of a more performing social capital in a particular firm will only be reflected and / or retrieved by the general management applied by that organization.

From this point of view, the definition of "micro-social capital" can provide a methodological support for understanding and valorizing informal relationships that take place within an organization and its external relations with other entities. This is because the issue of informal relationships as meaning and impact in the performance of various categories of social groups is generally accepted in areas such as: sociology, psychology, etc. In the field of management, it is widely accepted that informal relations within and outside the organizational chart depend on a particular measure the annual

performance of a firm; it is extremely difficult to be surprised and manage the type and quality of informal relationships that various groups of employees develop and therefore the subject is of minor interest to decision makers in companies. To the extent that KM (Knowledge Management) and organizational learning will increase in importance in corporate management theory and practice (since knowledge is increasingly becoming an increasingly valuable resource for organizations and their exploitation in the form of inventions / innovations requires better qualified employees), we believe that what we call "micro-social capital" can become a useful tool in trying to maximize the tacit knowledge stock available to an organization. Therefore, internalization is one of the stages of the SECI model and through it a certain amount of explicit knowledge is transformed into tacit knowledge; the same model says that in the socialization phase the silent knowledge of an employee turns into tacit knowledge of superior value.

## Conclusions

Whatever the KM (Knowledge Management) model we are referring to, we believe that it is necessary to conclude that we know so far little clear / certain information about how the ordinary employee acquires and processes various categories of knowledge; especially the quality of tacit knowledge of an employee is associated with certain skills he / she has and gives him / her greater chances to obtain inventions / innovations regarding the products and services obtained by the organization. How can the quality of silent knowledge available to an employee be improved? As far as this question is concerned, we have only a minimal sketch in the right answer and can be identified in the contemporary management theory. It is quite clear, we believe, that no employee can be "forced" by some internal rules / regulations of the organization to become more involved in the outsourcing phase of the SECI model, i.e. to describe his / her own knowledge silences in the form of explicit knowledge; on the contrary, we believe that it is absolutely necessary for the employee to participate voluntarily in order to activate various stages of the SECI model.

*Equally obvious, we believe, there is a clear and strong link, i.e. a connection between the voluntary nature of employee involvement in the SECI model and the voluntary nature of involving the same employee in various informal groups within and outside the organization. Such informal groups mean informal relationships that can be (but not automatically, but based on values and ethical norms) extremely beneficial for acquiring and processing tacit knowledge and for maximizing the number of inventions and innovations that a company makes.*

As it is known in the business administration theory, there is no "recipe" after which an organizational culture can be built to foster / sustain the continuous performance achieved by the company. Similarly, there is, we believe, a certain recipe in which the company can build up in time a "micro-social capital" that will in turn favor the top performance achieved by the organization.

So, we have a certain similarity or correspondence between the two concepts, namely organizational culture and "micro-social capital", but there are also many differences in content and distinct plans of their manifestation. Moreover, we believe that there are dozens of different directions of action whereby a company's top management can encourage or support the exploitation of "micro-social capital" as a factor contributing to the annual performance (among such directions we mention):

- implementing CSR in a real and not just a declarative manner; ethical and fair behavior in relation to all the interest groups towards the company;
- annual contribution to the good of the local community;
- designing long-term strategies in various action plans that are not just profit-driven as a performance criterion;
- the gradual development of civic responsibility and inter-group trust within the organization and on this basis in relation to outside groups.

## References

1. Bourdieu, P. (1986) Forms of Capital, în Richardson J, *Handbook of Theory and Research for the Sociology of Education*, West Port
2. Bourdieu, P. (1979) Les trois états du capital culturel, *Actes de la recherche en sciences sociales*, No. 30 (“L’institution scolaire”)
3. Buta, S. (2015) Capital & formal social groups - the potential implications, *Academic Research International*, Vol. 6(3), May
4. Buta, S. (2016) Capitalul uman, capitalul social și studiul relațiilor informale din organizațiile de afaceri, *Editura Prouniversitaria*
5. Fukuyama, F. (1997) Social Capital, Taner Lecture on Human Values, (Online)
6. Hofstede, G. (1991) Cultures and Organizations, Software of the mind, *Institute for Research on Intercultural Cooperation (IRIC)*, Published by McGraw – Hill Book Company Europe, London
7. Huczynski, A., Buchanan, D. (2001) Organizational Behaviour – An Introductory Text, *Prentice Hall*, Harlow
8. Nonaka, I. (1997) Knowledge Advantage Conference, November 11-12, <http://www.knowledge-nurture.com/downloads/NONAKA.pdf>
9. Nonaka, I., Konno, N. (1998) The Concept of „Ba” Building a Foundation for Knowledge Creation, *California Management Review*, vol.40, No.3, Spring
10. Porter, M. (1990) The competitive advantage of nations, *MacMillan Press LTD*, London
11. Putman, R., Leonardy, R., Nanetti, R. (1993) Making Democracy Work: Traditions in Modern Italy, *Princeton University Press*

## Examining the Attitude toward Halal Food Products: The Case of a Private University

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### Abstract

Companies, governments, and consumers have considered the halal food products with the increase in the number of products certified as halal across the local and global markets. The purpose of the study is to investigate the consumer's attitudes toward halal food products in a private university sample. Accordingly, the effect of subjective knowledge, awareness, perceived risk and behavioral tendency to attitude toward halal food products is investigated. Factor analysis and multiple regression analysis are conducted on data obtained from the valid 153 surveys. Depending on the results, a psychological risk which is a factor of perceived risk, and behavioral tendency affect the attitude toward halal food products.

**Keywords:** Consumer attitudes, Halal Food, Consumer Awareness, Perceived risk. JEL Code: M31

### Introduction

According to 2016 data, halal certified products in the world in halal food market have a share of 15%. Food products, cosmetic products, textile products, medical products and cleaning products were formed in the market<sup>1</sup>. According to the report of the Halal Products Expo, compiled by the Organization of Islamic Cooperation in 2017, the halal economy created by these products reached approximately \$ 3.9 trillion. The market for halal food products is reported to have a capacity of around \$ 1 trillion in the world<sup>2</sup>.

With the increase in the number of products certified as halal, consumers' behavior and attitudes toward these products have gained importance. Therefore, the framework of the study is to determine the consumer attitude toward halal food products.

### Theoretical Background

Consumer behavior is vital for marketing research for the reason of constituting the basis of marketing activities. Understanding how consumers make purchasing decisions and determination of which factors affect them may provide significant clues for marketing (Foxall, 2014). It is estimated that attitudes have an important factor among these factors forming consumer behaviors. The aim of this study is to investigate consumers' attitude toward halal food products.

Attitudes are individuals' positive or negative reactions to a particular person, object or phenomenon (Ajzen, 2005, p. 3). Consumers' attitudes toward a product, brand or company are the general evaluations of them (Okumus, 2018, p. 111). Thereby attitudes may reflect how consumers approach or avoid to particular product category.

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<sup>1</sup> <https://www.yenisafak.com/ramazan/turkiye-helal-gida-sektorunun-neresinde-2474037>

<sup>2</sup> <http://helalexpo.com.tr/doc/2017tr.pdf>

Attitudes consist of three components. The cognitive component refers to the individual's belief which is the reality of an attitude toward an object. The emotional component is the feelings aroused by the attitude. The behavioral component includes the actions and the intentions toward the subject to attitude (Solomon, 2017).

The level of subjective knowledge is significant for consumer behavior. When consumers consider that they have a high level of knowledge about a particular product or brand, they are encouraged to buy and increase the amount of purchase (Cadirci, 2010). If consumers are informed about a certain product category, they may recognize the products easily. Besides, their ability of decision-making may develop (Hadar, Sood and Fox, 2013). The hypothesis about the cognitive component of the attitude toward halal food product is below.

H1: Subjective knowledge affects the attitude toward halal food products.

H2: Awareness affects the attitude toward halal food products.

Perceived risk theory provides a significant tool for marketing researchers for understanding consumers and explaining consumer behavior. Because consumers tend to avoid mistakes to gain benefit from the buying action (Mitchell, 1999). Therefore, it is assumed that perceived risk, as an emotional component, constituting the attitude toward halal food products, may affect the attitude.

H3: The perceived risk has influence on the attitude toward halal food products.

The behavioral component of the attitude refers to the tendency to exhibit behaviors related to the subject to attitude. If an individual has a positive attitude toward an object, he will take favorable actions to it (Guney, 2016). Accordingly, consumers tend to purchase when they have a positive attitude toward a particular product, product category, company or brand. Consequently, it is predicted that the behavioral tendency affects consumers' attitude toward halal food products.

H4: Behavioral tendency affects the attitude toward halal food products.

## **Methodology**

Firstly, which factors form the attitude was investigated. Then the research variables measured with the following scales: Shaari and Arifin (2010), Aziz and Chok (2013), Mohayidin and Kamarulzaman's (2014) scales were used for measuring the halal food awareness. The subjective knowledge scale was adapted from Briliana and Mursito's (2017) study. The perceived risk scale adapted from the study of Jacoby and Kaplan (1972) to halal food products. Behavioral tendency scale was adopted from Shaari and Arifin (2010), Briliana and Mursito (2017), attitude toward halal food products measured through Abd Rahman, Asrarhaghighi, and Ab Rahman's (2013) scale.

In this research, Istanbul, a cosmopolitan city where individuals with different segments, values, lifestyles, and habits come together from different provinces, constitutes the population of the research. Vocational school students of a private university preferred for the sample. Since these students have various values and lifestyles, so the sample is compatible with the research purpose. Inadequate time and financial budget restricted sampling for reaching to whole students of the university.

IBM SPSS Statistics 22.0 software was used for analysis. The data obtained from the total of 153 questionnaires. Principal component factor analysis performed to ensure content validity and regression analysis were carried out to test the relationships among variables.

## **Results**

The demographic characteristics of the participants were subjected to frequency analysis. Findings on gender, age and monthly personal income are given in Table-1.

**Table1: Demographic Profile**

Gender	Frequency	Percent (%)	Monthly Income	Frequency	Percent (%)
Female	105	68,63	0-500TL	99	64,71
Male	48	31,37	501-1000TL	14	9,15
Total	153	100,00	1001-1500TL	8	5,23
Age	Frequency	Percent (%)	1501-2000TL	11	7,19
18-20	87	56,90	2001-2500TL	9	5,88
21-23	66	43,10	2501TL and above	12	7,84
Total	153	100,00	Total	153	100,00

Principal components factor analysis was conducted to ensure the construct validity of dependent and independent variables. Findings on subjective knowledge and awareness variables are shown in Table-2.

**Table-2: Subjective Knowledge and Awareness Scale**

Factor-1: Subjective Knowledge	Factor Loading	Variance Explained (%)
FRK2	,867	0,52
BLG3	,829	
FRK4	,828	
BLG4	,699	
Factor-2: Awareness		
FRK1	,756	0,15
FRK3	,723	
BLG2	,677	
BLG1	,676	
BLG5	,774	
KMO Sampling Adequacy Value: ,870, Cronbach's Alfa: ,876, Total Variance Explained: %67		

Factor analysis results for the perceived risk scale are demonstrated in Table-3.

**Table-3: Perceived Risk Scale**

<b>Factor-1: Performance-Related Social Risk</b>	<b>Factor Loading</b>	<b>Variance Explained (%)</b>
R_PER3	,720	24,91
R_FIN3	,537	
R_ZMN1	,848	
R_SOS3	,823	
R_SOS2	,675	
R_SOS1	,641	
<b>Factor-2: Financial Risk</b>		
R_FIZ1	,758	20,74
R_FIN2	,726	
R_PER1	,709	
R_FIN1	,708	
R_PER2	,621	
R_PSK1	,484	
<b>Factor-3: Psychological Risk</b>		
R_PSK2	,870	11,2
R_PSK3	,826	
<b>Factor-4: Time Risk</b>		
R_ZMN2	,857	6,66
R_ZMN3	,746	
KMO Sampling Adequacy Value: ,766, Cronbach's Alfa: ,768, Total Variance Explained: %63,51		

Factor analysis findings on the behavioral tendency scale are presented in Table-4.

**Tablo-4: Behavioral Tendency Scale**

	<b>Factor Loading</b>
DAVE1	,857
DAVE2	,856
DAVE3	,881
DAVE4	,877
DAVE5	,868
DAVE6	,821
KMO Sampling Adequacy Value: ,899, Cronbach's Alfa: ,928, Total Variance Explained: %73,96	

The results of factor analysis for the attitude toward halal food products which constitute the dependent variable of the study are indicated in Table-5.

**Tablo-5: Attitude Toward Halal Food Products Scale**

	Factor Loading
TUT1	,925
TUT2	,859
TUT3	,938
TUT4	,787
KMO Sampling Adequacy Value: ,802, Cronbach's Alfa: ,901, Total Variance Explained: %77,35	

Multiple regression analysis (enter mode) was performed to investigate the effect of independent variables on the dependent variable in the research model. The mean values of the variables were calculated and used in the analysis. Regression analysis results are shown in Table-6.

**Table-6: Regression Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error	Durbin-Watson
1	0,835	,697	,683	,45239	1,710

*Dependent Variable: Attitude Toward Halal Food Products*

According to Table 6, the adjusted R<sup>2</sup> coefficient of the regression model is 0.683. Therefore, it can be stated that 68% of the attitude toward halal food products is explained by subjective knowledge, awareness, perceived risk, and behavioral tendency. In addition, the F value (47.72) in the ANOVA analysis showed that the model was valid as a whole (Nakip, 2013). Durbin-Watson value was 1.71. As a result, there is no autocorrelation problem that one of the multivariate statistical assumptions (Field, 2009).

The correlation coefficients among the independent variables included in the analysis were examined. Hence the highest value was found to be 65%. Since this value is below 70%, it can be stated that there isn't any multicollinearity problem (Cinko, Yurtkoru and Durmus, 2016). The results of the multiple regression analysis are shown in Table-7.

**Table-7: Result of Regression Analysis**

	Unstandardized Coefficient		Standardized Coefficient	t-value	Significance	Collinearity Statistics	
	B	Standard Error	Beta			Tolerance	VIF
<b>(constant)</b>	2,221	,294		7,544	,000		
<b>BILG_OR</b>	,069	,057	,082	1,211	,228	,453	2,207
<b>FRK_OR</b>	-,093	,056	-,092	-1,655	,100	,675	1,481
<b>R_1_PS</b>	<b>,176</b>	,067	,190	<b>2,642</b>	<b>,009</b>	,402	2,487
<b>R_2_FF</b>	-,088	,055	-,091	-1,605	,111	,646	1,548
<b>R_3_PSK</b>	-,015	,037	-,019	-,393	,695	,879	1,138
<b>R_4_ZMN</b>	-,069	,044	-,092	-1,571	,118	,603	1,658
<b>DAVE_OR</b>	<b>,506</b>	,067	,596	<b>7,593</b>	<b>,000</b>	,339	2,949

Dependent Variable: Attitude Toward Halal Food Products



In Table-7, it is observed that VIF values are between 1 and 3. This indicates that there is no multicollinearity. VIF values shouldn't be expected to be equal or higher than 10 (Cokluk, Sekercioglu and Buyukozturk, 2012).

According to Table-7, behavioral tendency and psychological risk, a dimension of perceived risk, affect the attitude toward halal food products. Other independent variables didn't affect the attitude. Thereby H1 and H2 hypotheses were rejected ( $0,228 > 0,05$ ,  $0,100 > 0,05$ ). The hypothesis H3 was partially accepted because only the psychological risk dimension affects the attitude ( $0,009 < 0,05$ ). H4 hypothesis was accepted as behavioral tendency affects the attitude ( $0,000 < 0,05$ ).

## Discussion

Even though the participants evaluate their level of knowledge (3.88) and awareness (3.63) about halal food products as above the average, these variables did not have a significant effect on the attitude. From this point, the study has revealed contrast findings with certain studies (Briliana and Mursito, 2017). It can maintain that consumers like to have information about a particular product, brand or company, but it doesn't indicate that they have a positive attitude toward these in all cases.

The perceived risk level of the participants was relatively low (2.73), on the other hand, it did not have a significant effect on the attitude toward halal food products. Solely, psychological risk had a significant effect on perceived risk dimensions. It can be inferred that the higher level of psychological tension about not being able to reach halal food products, the higher possibility of having a positive attitude toward them.

Yener (2015) has found that there is no significant effect of perceived risk, only physical risk had a significant effect on attitude toward halal food product. In our study, since the perceived risk is included as the emotional component of the attitude, it is estimated that the psychological risk has a significant effect on the attitude.

The behavioral tendency, a behavioral component of the attitude, positively and significantly affects the attitude toward halal food products. In this case, it is estimated that consumers' recommendation for halal food products and easily accessing them help to develop the positive attitude (Ozkan and Kizgin, 2014).

When the findings of the research are evaluated totally, the most important element is the behavioral component of the attitude playing an important role to have the positive attitude toward halal food products. Therefore, trigger messages may put forward in marketing communications activity for halal food products marketing. Likewise, halal certificated food brands need to establish their distribution networks effectively to get closer with consumers.

It is helpful to make some recommendations for future researchers. The characteristics of participants should be different and larger sample may provide some other results. The product may be different for example halal cosmetic, halal hygienic, halal tourism products. Such recommendations would contribute to theoretical and practical literature.

## References

- Abd Rahman, A., Asrarhaghighi, E., and Ab Rahman, S. (2015), "Consumers And Halal Cosmetic Products: Knowledge, Religiosity, Attitude And Intention," *Journal Of Islamic Marketing*, 6 (1), 148-163.
- Ajzen, I. (2005) *Attitudes, Personality, And Behavior*, Mcgraw-Hill Education, Berkshire.
- Aziz, Y. A. and Chok, N. V. (2013), "The Role Of Halal Awareness, Halal Certification, And Marketing Components In Determining Halal Purchase Intention Among Non-Muslims In Malaysia: A Structural Equation Modeling Approach," *Journal Of International Food & Agribusiness Marketing*, 25 (1), 1-23.
- Briliana, V. and Mursito, N. (2017), "Exploring Antecedents And Consequences Of Indonesian Muslim Youths' Attitude Towards Halal Cosmetic Products: A Case Study In Jakarta", *Asia Pacific Management Review*, 22 (4), 176-184.

- Cadirci, T. O. (2010), "Tuketicilerin Sosyopsikolojik Ve Demografik Ozellikleri, Ilgilenim, Subjektif Bilgi Ve Guven Duzeyine Bagli Olarak Moda Giysi Pazarinin Bolumlendirilmesi," *Oneri Dergisi*, 9 (33), 143-152.
- Cinko, M., Yurtkoru, E., and Durmus, B. (2016), *Sosyal Bilimlerde SPSS'le Veri Analizi*, Beta Yayinlari, Ankara.
- Cokluk, O., Sekercioglu, G., and Buyukozturk, S. (2012), *Sosyal Bilimler Icin Cok Degiskenli SPSS Ve LISREL Uygulamalari*, Pegem Yayıncılık, Ankara.
- Field, A.P. (2009), *Discovering Statistics Using SPSS: And Sex And Drugs And Rock 'N' Roll*, Sage, London.
- Foxall, G. (2014), *Consumer Behaviour (RLE Consumer Behaviour): A Practical Guide*, Routledge.
- Guney, S. (2016), *Davranis Bilimleri*, Nobel Yayıncılık, Ankara.
- Hadar, L., Sood, S., and Fox, C. R. (2013), "Subjective Knowledge In Consumer Financial Decisions," *Journal Of Marketing Research*, 50 (3), 303-316.
- Jacoby, J., and Kaplan, L. B. (1972), "The Components Of Perceived Risk," *ACR Special Volumes*.
- Nakip, M. (2013), *Pazarlama Arastirmalarina Giris: SPSS Uygulamali*, Seckin Yayıncılık, Ankara.
- Mitchell, V. W. (1999), "Consumer Perceived Risk: Conceptualisations And Models," *European Journal Of Marketing*, 33 (1/2), 163-195.
- Mohayidin, M. G., and Kamarulzaman, N. H. (2014), "Consumers' Preferences Toward Attributes Of Manufactured Halal Food Products," *Journal Of International Food & Agribusiness Marketing*, 26 (2), 125-139.
- Okumus, A. (2018), *Tuketici Davranisi: Teorik Ve Uygulamali Bir Yaklasim*, Turkmen Yayıncılık, Istanbul.
- Ozkan, B., and Kizgin, Y. (2014), "Tuketicilerin Helal Gida Tuketim Egilimlerinin Belirlenmesine Yonelik Bir Calisma," *Business & Management Studies: An International Journal*, 2 (1), 18-37.
- Shaari, J. A. N., and Mohd Arifin, N. S. (2010), "Dimension Of Halal Purchase Intention: A Preliminary Study," *International Review Of Business Research Papers*, 6 (4), 444-456.
- Solomon, M. R. (2017), *Consumer Behavior: Buying, Having, And Being*, Pearson, Essex.
- Yener, D. (2015). "Factors That Affect The Attitudes Of Consumers Toward Halal-Certified Products In Turkey," *Journal Of Food Products Marketing*, 21 (2), 160-178.
- <https://www.yenisafak.com/ramazan/turkiye-helal-gida-sektorunun-neresinde-2474037>, Retrieved September, 01, 2018.
- <http://helalexpo.com.tr/doc/2017tr.pdf>, Retrieved September, 11, 2018.
- <https://www.aa.com.tr/tr/ekonomi/helal-akreditasyon-kurumu-kuruldu/1204484>, Retrieved September, 15, 2018.
- <https://www.campaigntr.com/ipsos-ve-etuder-ev-disi-tuketimi-olcumledi/>, Retrieved September, 21, 2018.

## **Development of Balanced Scorecard Perspectives for The Polish City of Olsztyn**

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### **Abstract**

Balanced Scorecard is a strategic performance measurement model which was introduced by Robert Kaplan and David Norton. Its main aim is to translate organization's mission and vision into operational activities. The paper tackles the significance of Balanced Scorecard as a tool of strategy management. It can help provide information on chosen strategy and determine key measures in terms of different perspectives. The article presents various benefits from Balanced Scorecard implementations in cities worldwide. The further goal of this article is to present Author's own concept of the Olsztyn's development and implementation of innovative solutions perspective for the Balanced Scorecard project in Olsztyn and employee perspective for the Balanced Scorecard implementation project in Olsztyn.

**Keywords:** Balanced Scorecard, city management, strategy.

### **Introduction**

The Balanced Scorecard (BSC) is a strategic planning and management system that organizations use to:

- 1) Align the day-to-day work with the strategy (Kaplan and Norton, 1996),
- 2) Prioritize projects, products, and services (Kaplan and Norton 2000),
- 3) Measure and monitor progress towards strategic targets (Rivenbark and Peterson, 2008).

This article is a continuation of Authors' concept for Balanced Scorecard in Polish city of Olsztyn. In September 2018 the author presented the concept of the inhabitants perspective and the financial perspective for the Balanced Scorecard implementation project in Olsztyn at the International Scientific Conference Knowledge for Market Use organized by Palacky University in Olomouc. Therefore the main goal of this article is to present Authors' own concept of the inhabitants perspective for the Balanced Scorecard implementation project in Olsztyn and the employee perspective for the Balanced Scorecard implementation project in Olsztyn.

Balanced Scorecard was developed to look at an organization's strategy from the four perspectives: financial, customer, innovation and learning, internal process.

The authors modified perspective to adjust Balanced Scorecard to the special requirements of functioning Polish cities.

## Methodology

In this article the following methods were used:

1. Direct interviews:
  - a) at the Tarnow City Hall, with the Director of the City Development Center, person involved in Balanced Scorecard implementation. Their knowledge about Balanced Scorecard implementation is both theoretical and practical,
  - b) at the Olsztyn City Hall, with the Coordinator of the Audit Team and the Director of the Control Department, people responsible for implementation of selected new public management tools such as Balanced Scorecard in Olsztyn.
2. Analysis of the background documents at the Olsztyn City Hall such as the existing development strategies, the local development plans.
3. Observation and analysis of the BSC development and implementation processes in the city of Tarnow was used to develop a pattern for implementing the BSC and its stages in Olsztyn.
4. Case-study analysis of the Balanced Scorecard implementation processes in American Charlotte Town Hall and Hillsborough Town Hall, and Spanish Town Hall.

## The Olsztyn's development and implementation of innovative solutions perspective

Preparation of the Olsztyn's Development and implementation of innovative solutions perspective as well as its measures is aimed at an increase of innovativeness and development of Olsztyn's metropolitan functions, through: communication improvements, greater availability of domestic and foreign connections, realization of innovative projects as part of Olsztyn agglomeration as well as improvement of the quality of public transportation. Table 1 presents the strategic and operational objectives for the Olsztyn's Development and the implementing of innovative solutions perspective.

**Table 1: the strategic and operational objectives for the Olsztyn's development and implementation of innovative solutions for the Balanced Scorecard implementation project in Olsztyn**

Strategic objective	Operational objective
Development of metropolitan functions	Creation of a regional communication center
	Promotion of cooperation with foreign cities
Growth of innovativeness	Olsztyn center of intelligent specializations
	Environmentally friendly center of innovativeness and modern technology

Source: *Strategia Rozwoju Miasta-Olsztyn 2020 (The Development Strategy for the Olsztyn City 2020)*

The measure "share of the cases registered electronically in the general number of cases" has been developed on the basis of a Spanish Sports Center in Granada. The measure "number of innovative customer-service services" has been created following the example of the American city of Hillsborough. An innovative service is understood as, for example, introduction of a social consultation portal, an

electronic queuing system or a possibility to make payments using a city card. Table 2 presents Olsztyn's Development and the implementing innovative solutions perspective.

**Table 2: the Olsztyn's development and implementation of innovative solutions perspective for the Balanced Scorecard project in Olsztyn**

	Activity	Measure	Measurement unit	Measurement frequency	Source of data	Target value
1	Constructing new roads and reconstructing existing ones	Length of constructed roads	km	annually	Department of Communication	Increase by 5%
2	Increasing availability of services of international significance	Number of the tourists using the accommodation base	amount	annually	Central Statistical Office in Olsztyn	Increase by 9%
3	Supporting the development of intelligent specializations in Olsztyn	Number of the entities classified as intelligent specializations per 1000 inhabitants	amount	annually	Forum of intelligent specializations	Increase by 5%
4	Building a strong position of the Science-Technology Park in Olsztyn	Number of the entities in the Science-Technology Park in Olsztyn	units	annually	The Science-Technology park in Olsztyn	Increase by 8%
5	Creation of information systems for customer service purposes	Share of the cases registered electronically	%	annually	Department of Organization and Staff	Increase by 15%
6	Creation of innovative customer-service services	Number of innovative customer-service services	amount	annually	Customer Service Office	Increase by 15%

Source: own elaboration

Measures “the number of the entities of classified as intelligent specializations per 1000 inhabitants” as well as “the number of the enterprises registered in the Science-Technology Park” in Olsztyn have been created on the basis of a document “The Development Strategy for the Olsztyn City 2020”. The target values of these measures have been estimated based on the statistical data from the Strategy Section at the Olsztyn City Hall.

The measure “length of new roads constructed” has been estimated in reference to the data from the Department of Communication at the Olsztyn City Hall. The target value of the measure “number of the tourists using the accommodation base” has been estimated in reference to the statistical data provided by the Central Statistical Office in Olsztyn. The target values of the measure “number of innovative customer-service services” as well as “of the cases registered electronically in the general number of cases” have been estimated in reference to the experience of the city of Tarnow

### The Employee Development Perspective

Increasing amount of attention has been paid to the employees’ role in organizations. Their proper preparation contributes to raising their competencies, thus they can perform their duties and task in the best possible manner. Adequately trained employees are crucial for effective implementation of the BSC in the Olsztyn City Hall. An increase in employee satisfaction determines an increase in the quality and in proper servicing of the residents of Olsztyn. Creation of better development opportunities for employees results in higher motivation for work.

The strategic and operational objectives for the employee perspective for the Balanced Scorecard implementation project in Olsztyn are presented in table 3.

**Table 3: the strategic and operational objectives for the employee perspective for the Balanced Scorecard implementation project in Olsztyn**

Strategic objective	Operational objective
Increase in the level of social capital	Building the city’s identity
	Promotion of employee development
	Recruitment and retainment of qualified employees
	Increase of trust-based cooperation
	Promotion of employee development

Source: *Strategia Rozwoju Miasta- Olsztyn 2020 (The Development Strategy for the Olsztyn City 2020)*

The measure “share of the employees with higher education” and its target value has been prepared in reference to the American city of Charlotte (Syfert and Elliot and Schumacher L. 1998).

Following the model of American cities of Charlotte and Hillsborough, a development perspective for BSC employees at the Olsztyn City Hall has been proposed. The measure “spending level for trainings” has been created based on the American city of Hillsborough (FY2017, Strategic Operating Plan and FY 2017-FY2021 Community Investment Plan). The measure “support level for employee self-education” has been created on the example of the city of Tarnow, because it promotes further education of employees outside the Olsztyn City Hall, e.g. as part of post-graduate studies.

The measure “number of development trainings per 1 employee” and its target value have been prepared in reference to the Municipal Sports Center in Granada, Spain (Kasperskaya 2008). Indicators of

employee rotation and employee satisfaction, along with their target values have been prepared based on the example of american cities.

The target values of the measures “spending level for trainings”, “support level for employee self-education” have been estimated in reference to the experience of the city of Tarnow. The target value of the measure “spending level for social purposes per 1 employee” has been prepared in reference to a Spanish city X. (Yetano 2005).

The employee perspective for the Balanced Scorecard implementation project in Olsztyn is presented in table 4.

**Table 4: the employee perspective for the Balanced Scorecard implementation project in Olsztyn**

	Activity	Measure	Measurement unit	Measurement mode	Measurement frequency	Source of data	Target value
1	Facilitation of conditions for employee development	Indicator of employee rotation in the Olsztyn City Hall	%	the number of employees who left in year X/ the number of employees in year X *100%	annually	Department of organization and human resources	decrease by 2%
2	Development of professional trainings	The spending level for trainings	%	actual expenses in year X/ planned expenses for trainings in year X*100%	annually	Department of organization and human resources	increase by 4%
3	Facilitation of conditions for further employee education	The number of development trainings per 1 employee	hours	the number of training hours of all employees in year X/ the number of employees in year X	annually	Department of organization and human resources	20 hours annually
4	Facilitation of conditions for employee development	The share of employees with higher education	%	the number of the persons with higher education in year X/ the number of the employed in year X*100%	annually	Department of organization and human resources	80%

5	Facilitation of conditions for employee development	The spending level for social purposes per 1 employee	%	total expenses for social purposes in year X/ the number of the employed in year X	annually	Department of organization and human resources	increase by 2%
6	Co-financing of development trainings undergone by employees	The level of support for employee self-education	number of persons	The number of employees who have contracts for education subsidy in year X	annually	Department of organization and human resources	increase by 3%
7	Introduction of financial and non-financial allowances for employees	Employee satisfaction indicator	median of employee opinion	on-line questionnaire	annually	Department of organization and human resources	increase by 4%

Source: own elaboration

The above-presented tables contain a proposed authorial concept describing the link between the strategic objectives and the operational ones, along with the accompanying activities. Each measure has a measurement unit and is measured with various frequency in a different manner. Additionally, the sources of data and the target values have been provided.

### Balanced Scorecard Implementation in Olsztyn

The city of Olsztyn should introduce a BSC in accordance with the stages presented below, thanks to which it will be possible to monitor the realization of the Olsztyn strategy adopted in the document “The Development Strategy for the Olsztyn City 2020”. To develop these stages, experience of the cities that implemented this has been used.

The analysis has presented that in the American city of Charlotte, it was essential to build a Balanced Scorecard for each department, which enabled transmission of information regarding what objectives a given section ought to achieve, in connection with the selected strategy, and fostered monitoring and evaluation of the results of its activity. The last phase of BSC implementation involved integration of the city’s budget with the strategy ([www.chamreck.org.pl](http://www.chamreck.org.pl)).

Based on the experience of the city of Charlotte, a concept was created for a next American city – Hillsborough (FY14 Town of Hillsborough Annual Budget and Financial Forecast Work). An important step during the BSC implementation in Hillsborough was the adaptation of the BSC to the results of



individual departments. Each department was tasked with developing a set of measures for each of the four BSC perspectives.

In Poland, the first city that became interested in a BSC was Tarnow, where the City Hall implemented a BSC as a system supporting management of the city. To implement it, an appropriate IT system was used, which had been developed by an external company. The main advantage of this system is rapid circulation of the data on the strategic and the operational objectives of the City of Tarnow.

In turn, a Spanish City Hall in the city of X, in order to implement a BSC involved a senior cost and managerial control manager. His duties included collection and analysis of the measures used in the BSC (Kasperskaya Y., 2008).

The BSC implementation stages planned at the Olsztyn City Hall encompass:

1. Selection and development of an IT system.
2. Implementation of the IT system.
3. Employee trainings on the IT system.
4. Reports.
5. Evaluation and corrections.

Implementation should begin with a selection of an IT system with a database, whose main element constitutes provision of information on the system of measures and automatic calculation of that data. An IT system is essential, because it creates the database. It will be supervised by a person selected from the BSC implementation team, having adequate qualification and experience in implementation of IT projects. This person will also be the recipient of reports. In turn, the project manager will be burdened with the responsibility for carrying out the necessary analyses and presentation of the derived results to the President of Olsztyn.

The second stage of BSC implementation involves introduction of the IT system, requiring application of an IT program, e.g. ADOScore, which was used by the City of Tarnow. There are many companies offering such programs on the market. Numerous organizations also apply IT systems of a Business Intelligence class, which support the BSC implementation process.

The shape of the IT system will be influenced by the entire BSC implementation team. Before the organization introduces the IT system, testing must be performed, which can last around 3-4 weeks. Evaluation of the system's functionality and checking whether it realizes all the objectives set is necessary. In case of errors or deviations, a system correction ought to be performed. A person designated from the IT Department at the Olsztyn City Hall will be responsible for proper functioning of the system.

After selection and installing of the IT system, it is proposed to begin the next stage of the BSC implementation, that is a training of the entire managerial staff at the Olsztyn City Hall on the scope of the installed software supporting implementation of the Balanced Scorecard.

The main employee-related problems may turn out to be the lack of communication between the management and the departmental employees as well as the lack of adequate training on the part of the

persons directly engaged in the BSC creation process, that is the BSC implementation team. To reduce the risk of occurrence of such problems, it is necessary to introduce regular meetings of the employees with the management as well as to organize a series of trainings on BSC issues.

It is worth to support the BSC implementation process via an employee evaluation system. One of the solutions may involve introduction of a grading system, in which employees perform tasks related to the strategic objectives of the city. They are subjected to periodical employee evaluation, which is aimed at assessment of the level of task realization. The person responsible for this system is the staff manager.

The fourth stage of BSC implementation in Olsztyn involves reporting. Ensuring systematic reporting on the measures is a prerequisite for BSC implementation. The idea behind the creation of the reports is to monitor the execution of the strategy and motivation of the City Hall employees to become more involved in the BSC implementation process. An additional advantage of reporting is improvement of the information flow process at the City Hall. Reports will be prepared every six months by a member of the project team and forwarded to the President of Olsztyn. Based on those reports, the President will make decisions regarding possible changes to the strategy-realization measures in the four BSC perspectives.

It ought to be mentioned, that reports were used in the process of BSC implementation in the American city of Hillsborough as well as in Tarnow and they contributed to an improvement of the efficiency of city functioning. As such, it is proposed that the President of Olsztyn should oblige the departments, in an appropriate order, to prepare annual reports on operational activity, which should include:

- an obligation to analyze the operations and identify the chances for their improvement;
- data on the efficiency of activity, change strategies and resource allocation;
- presentation of the financial needs to the City Council, in the context of achieved objectives;
- creation of the evaluation process.

The next stage of BSC implementation concerns assessment and correction of measure realization by an internal auditor. Once a year, a control of measure realization will be carried out by him/her. In case of significant deviations from the objectives set, it will be necessary to correct them in the next year.

## **Conclusion**

Among the barriers that can be expected during the BSC implementation in Olsztyn, the following should be mentioned: the time-consuming development of a BSC, considering the city's specificity, inadequate support from the management and the lack of connection between the BSC and the system of employee motivation.

It ought to be ensured, that the composition of the BSC implementation team is determined in advance. Lack of an appointment of a specific and competent person, who will care for implementation of the management system and will steer the process, will lead to a loss of the possibility to obtain full benefits from its implementation.

The city's resource barriers should also be taken into consideration. Implementation of a BSC can be blocked or suspended due to insufficient time set for the implementation, failure to determine an adequate number of the persons for the BSC implementation team or insufficient financial resources needed to purchase appropriate software and to carry out trainings.

For proper and efficient BSC implementation, it is important to maintain consistency among all management systems at the Olsztyn City Hall. It will be supervised by the BSC implementation project manager. Integration of the management systems is aimed at achievement of a synergy effect between the BSC and various process taking place at the Olsztyn City Hall.

## References

References section should be at the end of the manuscript. References to previously published research studies must in Harvard style. References should be arranged alphabetically without numbers. Keep one blank line space between each two references. Please follow the examples below.

FY2017, Strategic Operating Plan and FY 2017-FY2021 Community Investment Plan [online], [retrived February 13, 2018], [charlottenc.gov/budget/Documents/FY2017%20Strategic%20Operating%20Plan.pdf](http://charlottenc.gov/budget/Documents/FY2017%20Strategic%20Operating%20Plan.pdf)

FY2017 Town of Hillsborough Balanced Scorecard Report. [online], [retrieved February 2018], <http://www.hillsboroughnc.gov/government/departments-and-divisions/budget/>

Kaplan R.S., Norton D.P. (1996). The Balanced Scorecard: Translating Strategy Into Action. *Harvard Business Review*, 70(1), 71-79.

Kaplan R. S., Norton D. P. (2000). Having Trouble with Your Strategy? Then *Map It*. *Harvard Business Review*, 78(5), 167-176.

Kasperskaya Y. (2008). Implementing the Balanced Scorecard: a comparative study of two Spanish city councils – an institutional perspective, *Financial Accountability & Management*, November, No 24., pp. 363-384.

Rivenbark W. C., Peterson E. J. 2008. A Balanced Approach to Implementing the Balanced Scorecard, *Popular Government*, fal I 2008.

Strategia Rozwoju Miasta-Olsztyn 2020 (The Development Strategy for the Olsztyn City 2020) [online], [retrived February 16,2018] , [www.bip.olsztyn.eu](http://www.bip.olsztyn.eu)

Syfert P., Elliot N., Schumacher L. (1998). Charlotte adapts the "Balanced Scorecard" , *City/County Management*.

Yetano A., (2005). Hacia la gestión estratégica en la administración local: El Balanced Scorecard, *Revista Española de Financiación y Contabilidad*, 34.

## Estudio de Proyección Sobre Proyectos de Energía Solar Fotovoltaica en la Región de Atacama.

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### Abstract

Actualmente en Chile se requieren tecnologías más amigables con el medio ambiente para la generación de energía eléctrica, con las cuales poder cumplir con los compromisos internacionales y ayudar al país para no agotar su fuente generadora, ante este escenario, en la Región de Atacama, la energía solar surge como una de las principales alternativas, debido a que la región cuenta con un gran potencial natural. El objetivo de este trabajo consiste en realizar un estudio de proyección asociado a los proyectos de energía solar fotovoltaica en la Región de Atacama. La metodología de trabajo comenzó con un estudio de la industria mediante un análisis PESTEL, posteriormente se realizó un diagnóstico de la situación actual de la Región de Atacama, y por último se realizan las proyecciones en materia de generación de energía para la región. Como resultado de la proyección, se estima que, a finales del 2020, la matriz regional se compondría en un 66,39% por Energías Renovables No Convencionales (ERNC), de las cuales el 53,93% de la matriz estaría representada por energía solar fotovoltaica. Este estudio permite mostrar el aumento de la presencia de ERNC en la matriz energética considerando por un lado los proyectos de energía solar operativos como aquellos que se encuentran en alguna otra fase de avance.

**Palabras clave:** Proyección, Energía Solar, Energía Fotovoltaica, ERNC, Región de Atacama.

### Introducción.

Según el Ministerio de Energía (2018), *“Las energías renovables son aquellas que no se consumen ni agotan, a escala humana, en sus procesos de transformación y aprovechamiento de energía útil, además generan impactos ambientales significativamente inferiores que aquellas producidas por las fuentes energéticas convencionales”*.

En Chile, de acuerdo con lo dispuesto en la letra aa) del artículo 225 de la Ley General de Servicio Eléctrico (LGSE) de la Biblioteca del Congreso Nacional de Chile (2007), la energía renovable no convencional es aquella energía eléctrica generada por medios de generación renovables no convencionales, como: Aquellos cuya fuente de energía primaria sea la energía de la biomasa, obtenida de materia orgánica y biodegradable; Aquellos cuya fuente de energía primaria sea la energía hidráulica y cuya potencia máxima sean inferior a 20.000 kilowatts; Aquellos cuya fuente de energía primaria sea la energía geotérmica, que se obtiene del calor natural del interior de la tierra; Aquellos cuya fuente de energía primaria sea la energía solar, obtenida de la radiación solar; Aquellos cuya fuente de energía primaria sea la energía eólica, energía cinética del viento; Aquellos cuya fuente de energía primaria sea la energía de los mares, toda forma de energía mecánica producida por el movimiento de las mareas, de las olas y de las corrientes, así como la obtenida del gradiente térmico de los mares.

La energía solar es abundante y gratuita, y constituye una alternativa cuya aplicación es creciente en los últimos años. Sin embargo, su aprovechamiento ha de ser afrontado, cuidando el equilibrio del beneficio de su utilización con la inversión económica que exige la solución adecuada para conseguirla, de acuerdo a lo planteado por Blanch (1999). La radiación solar electromagnética por unidad de superficie que alcanza a la atmósfera de la tierra es en promedio  $1.370 \text{ W/m}^2$  (Wattios por metro cuadrado de la superficie perpendicular a los rayos del sol), según Bachiller (2009).

Chile es un país privilegiado por su potencial de energía solar, sobre todo en el norte del país, donde existe uno de los niveles de radiación más altos de todo el planeta. El desierto de Atacama presenta 330 días de cielo despejado cada año y una radiación media de 6,5 kWh.

Generalmente el problema de su incorporación es el alto costo de inversión y la falta de incentivos, sin embargo, a partir de la Ley 20.257, publicada por la Biblioteca del Congreso Nacional de Chile (2008) se obliga a las grandes generadoras a inyectar energía a centrales en base a energías renovables, por lo cual estas últimas tienen la posibilidad de establecer contratos a largo plazo, incentivándose el desarrollo de esta tecnología.

En los últimos años, las ERNC han tenido un aumento considerable de su participación en la matriz energética nacional. En el año 2009, solo el 2,7% de la matriz energética chilena provenía de fuentes de ERNC, de acuerdo a lo expuesto por Sauma (2012). Dicha cifra ha crecido en gran medida, debido principalmente a iniciativas gubernamentales de fomento a la tarificación, transmisión y generación, alcanzando un 17,3% de la matriz energética chilena en agosto del año 2017 (el 82,7% restante de la matriz energética chilena proveniente de fuentes de energía convencional), considerando que la capacidad instalada a la fecha era de 22.999 MW (Comisión Nacional de Energía, 2017).

A través de la Hoja de Ruta 2050 (Comité Consultivo de Energía 2050, 2015), iniciativa del Ministerio de Energía desarrollada por un grupo de 27 expertos, se dieron a conocer las visiones, lineamientos, transformaciones y metas para los próximos 30 años. La meta principal de este trabajo apunta a un futuro energético bajo en emisiones, a costos competitivos, inclusivo y resiliente. De acuerdo con el Ministerio de Energía: “no se jerarquiza un pilar de la sustentabilidad por sobre otro, sino que se intenta encontrar soluciones armónicas a los desafíos económicos, ambientales y sociales del sector”. Uno de los principales lineamientos apunta a aumentar la proporción de energías renovables no convencionales en la matriz energética.

Las ERNC aumentan la independencia energética ya que disminuyen la importación de combustibles fósiles, proyectándose que hasta el año 2028 los ahorros en combustibles debido a la presencia de ERNC se reducirían a US\$2.300 mil millones, según lo afirma la Asociación Chilena de Energías Renovables (2013).

De acuerdo a la Comisión Nacional de Energía (2017), actualmente la matriz energética de Chile está orientada principalmente a la generación de energías de forma convencional representando un 82,7% de la matriz nacional, siendo además la principal responsable de las mayores emisiones de carbono.

Por otro lado, a través de la nueva política energética chilena, con miras al año 2050, el desafío nacional está en que para el año 2035 el 60% de la matriz eléctrica nacional se componga de ERNC y para el año 2050 se componga del 70%, con énfasis en la ERNC eólica y solar, según lo declarado por el Ministerio de Energía (2015).

De acuerdo con lo anteriormente expuesto, es que surge la necesidad de buscar alternativas de generación eléctrica que sean más amigables con el medio ambiente, que contribuyan a cumplir con los compromisos internacionales y que ayuden a país a no incurrir en el consumo, gasto o agotamiento de su fuente generadora, siendo la energía solar una de las principales alternativas, especialmente considerando que la zona de estudio cuenta con un gran potencial natural

El estudio se estructura como sigue en la siguiente sección, antecedentes, corresponde a una breve descripción teórica sobre los sistemas fotovoltaicos. La sección 3, trabajos relacionados, se revisan algunos trabajos previos. La sección 4, metodología, presenta la metodología de investigación utilizada para llevar a cabo el estudio. La sección 5, resultados, muestra las proyecciones obtenidas en materia energética para la región. La sección 6, conclusiones, refleja las conclusiones extraídas del estudio.

## Antecedentes

La tecnología fotovoltaica busca convertir directamente la radiación solar en electricidad. Basada en el efecto fotovoltaico, en el proceso se utilizan dispositivos denominados celdas fotovoltaicas, los cuales son semiconductores sensibles a la luz solar.

Delbridge-Bernard define el término fotovoltaico como “*que proporciona una fuente de corriente eléctrica bajo la influencia de una luz o radiación similar*” (1998). Si bien esta es una definición bastante amplia, el término fotovoltaico se le acredita a Becquerel (1839) quien fue el primero en demostrar el efecto fotovoltaico en 1839, iluminando electrodos de Platino recubiertos con Cloruro de Plata o Bromuro de Plata insertados en una solución ácida.

Posteriormente en 1876 Adams y Day (1877) investigaron el efecto de la luz sobre Selenio, comprobando que se creaba un flujo de electricidad. En su experimento, notaron anomalías cuando los contactos de Platino se ubicaron en una barra de Selenio.

La primera celda solar fue fabricada por Fritts (1883), consistía en una lámina delgada fabricada en base a Selenio. Una celda solar fotovoltaica (PV - Photovoltaic) es, esencialmente, un semiconductor que puede generar un potencial eléctrico cuando es ionizado por radiación, de acuerdo con lo planteado por Chang et al (1994) y Nelson (2003)

Los sistemas eléctricos fotovoltaicos (Photovoltaic o PV, en inglés) transforman la energía solar en electricidad de corriente continua (CC). Se emplean paneles con celdas PV generalmente de silicio, los cuales reaccionan con los fotones de luz, liberando electrones y produciendo electricidad. Para utilizar la electricidad generada por un panel PV se requiere de un inversor, este aparato convierte la corriente continua en corriente alterna (CA). Solamente hay generación eléctrica cuando hay luz solar, el resto del día no existe generación, lo que obliga a que se haga una acumulación de energía en baterías eléctricas, para que se pueda seguir con fluido eléctrico cuando no hay generación de energía fotovoltaica.

## Trabajos Relacionados

En la literatura existen diversos trabajos relacionados a la energía solar fotovoltaica. Algunos de estos señalan las aplicaciones de la energía solar fotovoltaica. Mejía et al (2010) propone un algoritmo que permite que las áreas de los paneles fotovoltaicos se ubiquen de forma perpendicular a la radiación lumínica de la fuente de luz. En su trabajo, Sánchez (2010), refleja la necesidad de contar con energía eléctrica distribuida. Además, desarrolla las ventajas que presenta la integración de sistemas fotovoltaicos en edificios residenciales.

Otros autores, abarcan la evolución energética solar. Tal es el caso de Duran y Godfrin (2004), quienes realizan una revisión sobre la evolución histórica sobre el aprovechamiento de la energía solar fotovoltaica a nivel mundial y particularmente en Argentina. Sumado a ello, analizan el mercado fotovoltaico en el mundo y particularmente en Argentina. De manera similar, Espejo Marín (2004), realiza una revisión sobre la industria fotovoltaica en España y la evolución de esta. Además, menciona temas legales y medioambientales. Por último, Rodríguez (2008), presenta el desarrollo de la energía solar en Colombia, en el cual menciona temas relacionados con sus aplicaciones, así como de investigación y desarrollo.

No obstante, estos artículos hacen hincapié en la necesidad de incorporar energías alternativas en reemplazo de las actuales, pero carecen de un estudio que incluya una proyección o cálculo futuro de la energía solar fotovoltaica necesaria a futuro.

## Metodología De Investigación

La metodología utilizada para llevar a cabo este estudio se describe a continuación:

- **Análisis de la industria energética en Chile:** Para contar con una descripción más amplia de los escenarios actuales en los que se encuentra el país en esta materia, se lleva a cabo un análisis PESTEL del entorno energético de Chile.
- **Diagnóstico de la situación energética actual en la región:** Una vez conocidos los escenarios actuales, a nivel país, se requiere conocer la realidad regional en cuanto a generación de energía. Lo cual se establece a través de información proveniente de la Comisión Nacional de Energía. Lo que permite conocer la situación actual, la evolución energética y el estado de los proyectos de ERNC en la región. Cabe mencionar que hasta finales del año 2017, la Región de Atacama formaba parte del Sistema Interconectado Central (SIC), posterior a esto, los dos principales sistemas del país se unen formando lo que se conoce como “Sistema Eléctrico Nacional”.
- **Cálculo de proyección energética:** Esta proyección se realiza sumando las proyecciones energéticas de cada uno de los proyectos, las cuales se presentan al Sistema de Evaluación de Impacto Ambiental.

## Resultados

Según las proyecciones de la capacidad instalada en Chile realizada por el Centro de Despacho Económico de Carga (CDEC) (Ver Tabla 1), estas muestran que en el SIC, al cerrar el año 2017, las fuentes de generación térmica presentan una disminución en su participación en la matriz energética de un 2,6% respecto al cierre del año 2016, mientras las ERNC presentan un aumento de su participación de un 4,6% alcanzando un 20,8%. Por su parte, la energía solar fotovoltaica presenta un aumento del 2,6% de su participación en la matriz eléctrica, pasando de 5,6% al cierre del año 2016 a un 8,2% al cierre del año 2017.

**Tabla 1: Proyección de la capacidad instalada y porcentaje de participación por tecnología en el SIC. 2016-2017.**

Por Tecnología	2016		2017	
	Cierre a Diciembre		*Proyección Cierre a Diciembre	
	MW	%	MW	%
<b>Térmica</b>	8.250	49,3%	8.358	46,7%
<b>Embalse</b>	3.402	20,3%	3.402	19%
<b>Pasada</b>	3.212	19,2%	3.337	18,7%
<b>Eólica</b>	940	5,6%	1.333	7,5%
<b>Solar</b>	938	5,6%	1.469	8,2%
<b>Total</b>	<b>16.742</b>	<b>100,0%</b>	<b>17.900</b>	<b>100%</b>
<b>ERNC</b>	<b>2.703</b>	<b>16,2%</b>	<b>3.722</b>	<b>20,8%</b>

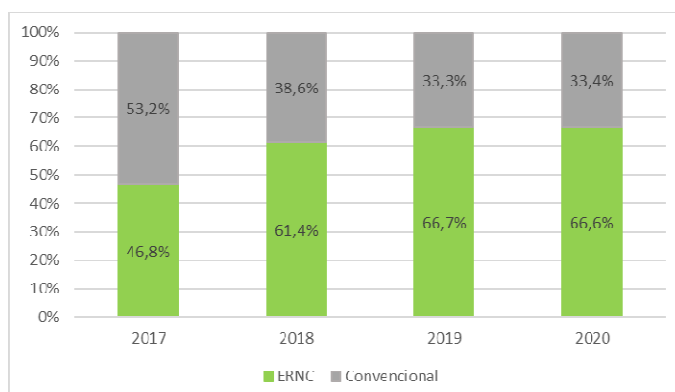
En base a la información proporcionada por la ficha catastro nuevos proyectos CDEC/SIC, se pudo realizar la proyección de la generación eléctrica en la Región de Atacama desde lo que queda del año 2017 hasta el año 2020. Esta proyección considera los proyectos que se encuentran actualmente en operación más otros proyectos según su fecha de inicio de construcción y puesta en operación para estos años. De esta manera se puede realizar la proyección de la generación de energía eléctrica en la región a través de las diversas fuentes de energía existentes.

En agosto del 2017 la Región de Atacama contaba con 2.244 MW de potencia instalada, a lo cual se sumarían 27 Proyectos Catastrados y Proyectos Declarados en Construcción en el Sistema Interconectado Central, cuya proyección de capacidad instalada anual para los años 2017 a 2020 se proporciona en la Tabla 2. De estos proyectos, 22 corresponden a proyectos fotovoltaicos con una potencia conjunta de 2.166,7 MW, 3 proyectos eólicos con una potencia conjunta de 488,5 MW, 1 proyecto de petróleo diésel con una potencia de 100 MW y 1 proyecto de gas natural con una potencia de 540 MW. Lo que implica una instalación de 3.295,2 MW adicionales en la región, de los cuales 2.655,2 MW corresponden a fuentes de ERNC.

Como se puede observar en el Gráfico de la Figura 1, se estima que las ERNC se potenciarán cada año más. Al finalizar el año 2020, el 66,39% de la matriz regional podría pertenecer a ERNC, desplazando la generación de energía mediante fuentes convencionales.

**Tabla 2: Cálculo de la capacidad instalada de participación por tecnología en la Región de Atacama. 2017-2020**

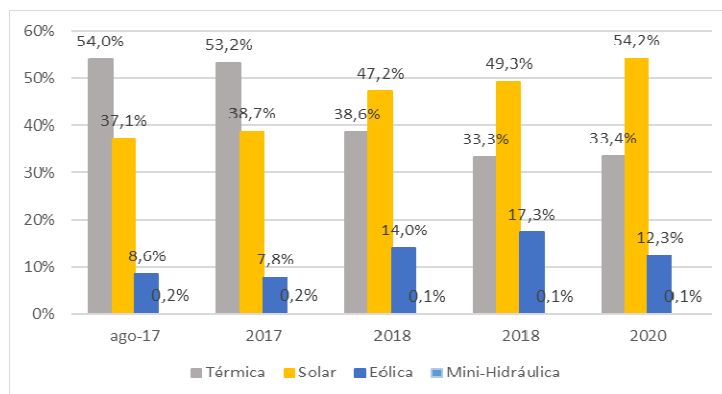
Por Tecnología	2017 Cierre Agosto (MW)	2017 *Cierre Diciembre (MW)	2018 *Cierre Diciembre (MW)	2019 *Cierre Diciembre (MW)	2020 *Cierre Diciembre (MW)
Térmica	1.212,2	1.312,2	1.312,2	1.312,2	1.852,2
Solar	833,1	955,1	1606,8	1940,8	2999,8
Eólica	193,2	193,2	477,7	681,7	681,7
Mini-Hidráulica	5,1	5,1	5,1	5,1	5,1
<b>ERNC</b>	<b>1.031,4</b>	<b>1.153,4</b>	<b>2.089,6</b>	<b>2.627,6</b>	<b>3.686,6</b>
<b>Total</b>	<b>2.243,6</b>	<b>2.465,6</b>	<b>3.401,8</b>	<b>3.939,8</b>	<b>5.538,8</b>



**Fig. 1: Proyección de la evolución porcentual de las ERNC vs Convencionales en la Región de Atacama entre los años 2017 al 2020.**

Por su parte, la energía solar fotovoltaica podría llegar a representar el 54,2% de la matriz al año 2020, como se puede apreciar en el gráfico de la Figura 2, llegando a ser sin duda alguna de las alternativas de generación eléctrica más interesantes a desarrollar en esta región, lo que es un punto bastante positivo, dado que lo cierto es que se trata de una energía absolutamente limpia y que para su control de funcionamiento no requiere presencia física en el terreno, dos puntos fundamentales a la hora de realizar la elección de inversión en energías. Cabe señalar que estas cifras podrían aumentar considerablemente, ya que existen múltiples proyectos fotovoltaicos en la región que aún no han declarado su construcción y operación, y ya se encuentran con su Resolución de Calificación Ambiental (RCA) favorable.





**Fig. 2: Proyección porcentual de la capacidad instalada de la participación por tecnología en la Región de Atacama. 2017-2020.**

## Conclusiones

Este estudio realiza una proyección de la generación de energía eléctrica en la Región de Atacama en base a un análisis de estado de los diferentes proyectos de energía eléctrica operativos en la región. Respecto a esto, la región cuenta con una capacidad energética, en base a fuentes convencionales, específicamente a carbón y petróleo. Sin embargo, las ERNC han presentado un rápido desarrollo dentro de esta matriz.

En la región de Atacama, existen diversos proyectos fotovoltaicos, los cuales se encuentran en diferentes estados como: en operación, pruebas, construcción, con RCA aprobada y en calificación. Con esto, lo relevante, es que si se consideran los proyectos en operación, pruebas, construcción y con RCA aprobada, la región podría llegar a contar con una capacidad instalada de más de 6.500 MW de potencia, incrementando considerablemente la capacidad actual.

Considerando los proyectos que se encuentran actualmente catastrados y declarados en construcción, la región de Atacama podría contar con una capacidad adicional de 2.655,2 MW en base a ERNC, desplazando de esta manera la generación de energía en base a fuentes convencionales. Es así como, al finalizar el año 2020, las ERNC podrían representar el 66,6% de la matriz energética regional, siendo la tecnología solar fotovoltaica la energía más potente en la región, representando el 54,2% de la matriz energética.

## Referencias

Adams, W. G. and Day, R. E. (1877) 'The action of light on selenium', *Proceedings of the Royal Society of London*, 25(171-178), 113-117.

Asociación Chilena de Energías Renovables (2013) 'Beneficios Económicos de Energías Renovables No Convencionales en Chile', Recuperado 25, Octubre, 2018 de <http://www.acera.cl/wp-content/uploads/2016/09/11.2013-Beneficios-Economicos-ERNC.pdf>

Bachiller, R. (2009) 'El sol: nuestra estrella, nuestra energía', *Observatorio Astronómico Nacional. Instituto Geográfico Nacional-Ministerio de Fomento*, 381-382.

Becquerel, A. E. (1839) 'Recherches sur les effets de la radiation chimique de la lumiere solaire au moyen des courants electriques', *CR Acad. Sci*, 9(145), 1.

Biblioteca del Congreso Nacional de Chile (2008) 'Ley 20.257. Introduce modificaciones a la ley general de servicios eléctricos respecto de la generación de energía eléctrica con fuentes de energía renovables no convencionales', Recuperado 25, Octubre, 2018 de <http://bcn.cl/1uw25>.

Biblioteca del Congreso Nacional de Chile (2018) 'Decreto con Fuerza de Ley Número 244, Ley General de Servicio Eléctrico', Recuperado 25, Octubre, 2018 de <http://bcn.cl/1vqff>.

Chang, L. (1994) 'A solar battery charger with improved energy utilization', In Electrical and Computer Engineering, 1994, Conference Proceedings. 1994 Canadian Conference on (pp. 105-108). IEEE.

Comisión Nacional de Energía (2017) 'Reporte Mensual ERNC', Recuperado 25, Octubre, 2018 de [http://www.revistaei.cl/wp-content/uploads/sites/5/2017/09/RMensual\\_ERNC\\_v201709.pdf](http://www.revistaei.cl/wp-content/uploads/sites/5/2017/09/RMensual_ERNC_v201709.pdf).

Comité Consultivo de "Energía 2050" (2015) 'Hoja de Ruta 2050. Hacia una energía sustentable e inclusiva para Chile'. Santiago, Chile. Recuperado 25, Octubre, 2018 de [http://www.acenor.cl/archivos/Ruta\\_Energ\\_a\\_2050\\_-\\_Comit\\_Consultivo\\_de\\_Energ\\_a\\_2050.pdf](http://www.acenor.cl/archivos/Ruta_Energ_a_2050_-_Comit_Consultivo_de_Energ_a_2050.pdf)

Delbridge, A. and Bernard, J. R. L. B. (1998) 'The Macquarie Concise Dictionary', 3rd Edition, The Macquarie Library, Sydney.

Duran, J. and Godfrin, E. (2004) 'Aprovechamiento de la Energía Solar en la Argentina y en el Mundo', *Boletín energético*, 16, 44.

Felipe Blanch, J. J. D. (1999) 'Sistemas solares térmicos de baja temperatura', Ediciones UPC, Cataluña.

Fritts, C. E. (1883) 'On a new form of selenium cell, and some electrical discoveries made by its use'. *American Journal of Science*, (156), 465-472.

Ministerio de Energía (2015) 'Energía 2050: Política Energética Chilena', Recuperado el 25, Octubre, 2018 de [http://www.minenergia.cl/archivos\\_bajar/LIBRO-ENERGIA-2050-WEB.pdf](http://www.minenergia.cl/archivos_bajar/LIBRO-ENERGIA-2050-WEB.pdf).

Ministerio de Energía (2018). 'Definición de ERNC'. Recuperado el 25, Octubre, 2018 de <http://www.energia.gob.cl/energias-renovables>.

Nelson, J. (2003). 'The physics of solar cells'. World Scientific Publishing Company.

Marín, C. E. (2004). 'La energía solar fotovoltaica en España', *Nimbus: Revista de climatología, meteorología y paisaje*, (13), 5-32.

Mejía, A. E., Londoño, M. H. and Osorio, J. C. (2010) 'Diseño e implementación de un seguidor solar para la optimización de un sistema fotovoltaico'. *Scientia et Technica*, 1(44), 245-250.

Rodríguez Murcia, H. (2008) 'Desarrollo de la energía solar en Colombia y sus perspectivas'. *Revista de ingeniería*, (28).

Sánchez Pacheco, C. (2010) 'Sistemas de energía solar fotovoltaica aplicados a viviendas residenciales en entorno urbano (Doctoral dissertation)'.  
Escuela de Ingeniería UC.

Sauma Santis, E. E. (2012). 'Políticas de fomento a las energías renovables no convencionales (ERNC) en Chile'. Escuela de Ingeniería UC.

## Strategic Partnership of Business and Households

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### Abstract

The article describes a new approach to the household problem and the prospects for its development in the domestic economy. Authors study the prevailing typology of strategies: strategies applicable to business and organization, including strategies of demand of innovations and business growth by expanding the boundaries of the market (with the current crisis of business growth); strategies aimed at implementing competitive advantages; competitive strategies implemented within the framework of the strategic planning system; strategies of medium, small businesses, business units and households. Authors analyse the possibility of a strategic business partnership (represented by an entrepreneur without state registration, engaged in legally permitted activities) and a household with family property, financial and real assets. The risks and hazards that threaten such a partnership are analysed in the paper. The qualitative gradation of risks, their characteristics, and the level of losses are given. An example of an acceptable (minimal) risk (first-order risk) associated with disability in case of sickness and disability of an entrepreneur is considered. In the article, the amount of under-received entrepreneurial income is determined. Indicator of the lifetime income of an entrepreneur (BLI - Businessman's lifetime income) is calculated, which is the modern value of all future incomes that he / she can bring to the household in the future. The expected income from business should compensate the described risks and ensure the effectiveness of the proposed strategic partnership.

**Keywords:** strategic partnership, business model of rational optimism, businessperson's lifetime income (BLI), disability-adjusted life year (DALY), retention rate ( $r_B$ ), qualitative risk grading.

### Introduction

There are several fundamental changes taking place in the world growth of strategic surprises emanating from the competitive environment; structural shifts that have affected various industries and functioning commodity and resource markets; the rapid emergence of alternative technologies and new generations of products and services; an innovative approach to the construction of business models of companies (4W),

which has become popular in recent times. Everything mentioned above called for increased attention to the use of strategic tools in theory and practice of management. These changes were accompanied by the evolution of the strategies themselves, the expansion of their classifications and typology. The concepts that determine the current direction of strategy research have also evolved: business strategies today differ not only in the context of different industries, taking into account their life cycle and specific functioning (Grant, 2008; Masterson, 2008; Adizes, 2014), but also "taking into account the binding" of the strategies being implemented to the business models chosen by the organization (Girotra & Netessine, 2014, Gassmann, Frankenberger & Csik, 2014).

There is a logical question about possible directions and determining further development trends and future areas of application of strategies. The proposed work, based on the study of relevant theoretical developments and applied works, as well as analysis of available statistical material, describes the content of a new business model that is a "symbiosis" of business and households.

It combines the competitive advantages of the household and the entrepreneur entering into it (without its state registration as an individual entrepreneur). The leading role of an entrepreneur engaged in private business without registration, and a new distribution of roles in the process in the implementation of the selected household strategy will allow:

- firstly, successfully functioning as a participant in the economic cycle of incomes and expenditures, without losing flexibility at the local level;
- secondly, transforming the strategy chosen by the household and often differing in a high degree of abstraction into a set of concrete actions.

The strategic partnership based on the business model of rational optimism can be considered as the leading strategy, the most acceptable in the current conditions of economic development for the household. The leading strategy, the most acceptable in the current conditions of economic development for the household, can be considered strategic partnership, based on the business model of rational optimism. On the one hand, the key strategic factors of this alliance are the possibility of using family property and real household assets and, on the other hand, the changing status of the entrepreneur itself without registration as an individual entrepreneurs in the transition to self-employment, the growing demand for remote work and the spread of the freelance market. The operation of business without registration of individual entrepreneurs together with the household will lead to an increase in the well-being of the strategic partnership participants. In this tandem, the entrepreneur provides the budget-forming share of the household income. This contribution can be assessed using an indicator called the Businessman's lifetime income (BLI), which reflects the income generated by the entrepreneur during his life cycle within the household, taking into account the values of the retention rate.

At the same time, the strategic partnership contributes to the growth of household financial risks and the risk of losing its assets. The most dangerous risk becomes the risk of disability. Successful implementation of the strategy chosen by the household depends on the active life of all its members. In this regard, it becomes important to calculate the amount of income lost by the household due to the causes of being ill, including illness and disability of its members. In a calculation based on the definition of DALY (the number of future years of life lost due to premature mortality or disability), the lost years of potential and active life, as well as the loss of labour potential by individual members of the household, were taken as companion indicators. The loss of household income includes the loss of wages by individual able-bodied household members and the loss of entrepreneurial income. This means direct losses to the household in the implementation of the chosen strategy. There is a need to compare, on a case-by-case basis, the amount of expected remuneration in the form of additional income (entrepreneurial income) and the risk of losses under uncertainty. To assess the risk, it is important to find out whether the strengths and weaknesses of the strategic partnership are balanced and whether there is an

opportunity to compensate for the obvious uncertainty that the household will face. This concept can be expressed as follow statement:

$$\text{Strengths} - \text{Weaknesses} > \text{Uncertainty} = \text{Acceptable risk}$$

Thus, authors of this paper suggest a new approach to the formation of strategies at the household level using a business model of rational optimism with the allocation of risks that have the most negative impact on its effectiveness.

## Literature Review

In the economic literature, the largest basic concepts of strategic planning and existing models for the selection of strategies for the development of economic entities are still the model of the five forces of competition developed by M. Porter in his fundamental work "Competitive strategy" (Porter, 1980), the growth matrix proposed by I. Ansoff in the book "Corporate strategy" (Ansoff, 1965), the matrix of market growth and market share created by Bruce D. Henderson (Henderson, 1965).

The analysis of the economic literature published in recent years devoted to the problem of research, development, and implementation of the proposed strategies revealed the following trends, reflecting the evolution of the theories of strategic planning and strategic management, the main object of study of which is the "strategy".

1) There are strategies, the implementation of which contributes to maintaining the existing competitive advantages (defensive strategies) or the formation of new advantages (offensive strategies). The main supporter of this strategy is Michael E. Porter, with his work "Competitive Advantage", in which he assesses the "bad" and "good" competitors of the organization, reveals the essence of competitive advantages and the principles of selecting competitors (Porter, 1998). Quite well known among experts was the book by Jorge Vasconcellos e Sá "Strategic moves", which appeared in print in 2007. Considering in detail the content of each of the six offensive and eight defensive strategies, the developer determines their competitive advantages for companies depending on the competitive situation in a particular product market (Vasconcellos e Sá, 2005). The well-known economist Robert Grant has also contributed to the further development of strategy models, allocating in his book "Modern strategic analysis" a significant number of pages devoted to the study of competitive advantages taking into account the influence of industry specifics on them (Grant, 2008). In recent years, it has become increasingly common to talk about the transient nature of a competitive advantage, no matter how attractive it may seem to the company. R.G. McGrath published the book under the intriguing title "The End of Competitive Advantage." In it, the author substantiates the short-term existence and instability of a specific competitive advantage, as well as indicates the inevitability of the transition to the design of new scenarios for the creation of strategies (McGrath, 2013). The topic of "competitive advantage" from the standpoint of its fragility was continued by Richard Rumelt in his fundamental work "Good strategy, bad strategy". He draws the attention of specialists engaged in research in this field to the fact that the essence of the advantages lies in the difference and variety of asymmetries existing between competitors, but at the same time indicates the possibility of their implementation only under certain conditions (Rumelt, 2011).

2) The competition strategies implemented in the strategic planning system of the organization and the strategic business plan developed by them has been further developed.

The first foreign work, translated into Russian, containing a study of the strategic planning system and universally accepted by economists, was the book by W. King and D. Cleland "Strategic Planning and Economic Policy". It defined the methodological tools for making managerial decisions within the framework of the created strategic planning system, the individual elements of strategic planning and the

organization's basic strategies (the product-market strategic field, the life-cycle strategy of the multi-product enterprise) (King & Cleland, 1978).

M. Porter's book "Competitive strategy" generalized serious theoretical statement and offered alternative business strategies of organizations belonging to different industries at different stages of the life cycle (Porter, 1980). Strategic planning in addition to forming a portfolio of strategies should link the strategic and business plan for the development of the organization into a single whole. The solution to this problem is devoted to the work of N. Paley "Successful business plan" (Paley, 2004). In one of his last works, "Strategic Management for Kotler", Kotler studied strategic planning as a concept from the perspective of understanding the process of creating a strategy and meeting the requirements for it (Kotler, Berger & Bickhoff, 2016).

The transition from strategic planning to scenario planning in 2008-2010 is of particular interest. The most well known authors reflecting this analytical direction is, M. Lindgren, "Scenario planning: the link between future and strategy" (Lindgren, 2009) and George Ringland "Scenario planning for business strategy development" (Ringland, 2006).

3) The typology of strategies is expanding; strategies are applied to the organization of medium and small businesses, business units that are part of large companies, as well as households.

The creation and formation of ten schools of strategies - design, planning, positioning, cognitive school, and school of learning, power, culture, environment, and school configuration influence the set of strategies originally proposed by each school. It was constantly expanding since the 1950s (Henry Mintzberg, Bruce Ahlstrand & Joseph Lampel, 2005). Today the possibilities of applying strategies in small and medium business organizations are analysed. Jerry Johnson in the book "Corporate Strategy" in the paragraph "Strategic Management in Different Contexts" illustrates various aspects of strategic options and strategies for small business, taking into account its competitive advantages and gained positions in a particular market (Gerry Johnson, Kevan Scholes & Richard Whittington, 2007). This book also provides strategic options for business units with the identification of pricing strategies, differentiation strategies, hybrid and failed strategies, as well as focus differentiation strategies that are used based on the competitive advantages that the business has. The type of the chosen strategy reflects the competitive advantages inherent in individual business units located at different positions of the strategic hours that identify the basis of the competitive strategy. Materials collected in the textbook of Farhad Analoui are devoted to the implementation of strategies in small and medium-sized businesses (Analoui & Karami, 2003). Robert Sher, as an active expert in strategic planning, promoted the idea of implementing strategies in medium-sized businesses in his work "Strong Medium Business" (Sher, 2016). The author connects the choice of strategy with the peculiarities of the functioning of medium-sized businesses, which creates more income than a small one; the life of an average company corresponds to a large one, and finally, medium-sized companies have more stability than small ones. In authors' opinion, he proposed the separation of two types of planning – strategic and operational, which allow streamlining experiments with strategies in the context of non-standard risks of medium-sized businesses.

It seems logical to emphasize the strategies beyond the business and involve them in the strategic planning of households. In the mid 60-ies of the last century there was a "new theory of households", its representatives were G. Becker, J. Mincer, and K. Lancaster. Among modern economists who develop household strategies, including in the framework of strengthening their economic security, the following authors are distinguished: O. Andreeva, V. Bobkova, N. Bondarenko, V. Galperin, V. Zherebin, R. Nureyev, A. Oleynik, and V. Ostanin.

Among all existing strategies, most often in the special literature are: a survival strategy focused on reducing needs rather than increasing incomes; an active stability strategy that supports "wealthy" households and associated with capital accumulation; an "active instability" strategy that means

increasing welfare for the middle class with an increasing role of the main breadwinner, taking into account his employment in additional work; a passive survival strategy or an inert (weakly active) strategy supporting "poor" households; long-term strategies of the family budget; savings strategies of households taking into account the rational structure of savings.

The savings strategy firstly is connected with the standard theories of savings proposed by Milton Friedman and Franco Modigliani. Analysing the factors that influence the modern savings strategy of households, Richard Thaler in the book "New Behavioural Economics" points to those that government cannot control, namely age, income level, life expectancy, etc.

On the other hand, the author draws attention to the factors contributing to the increase in the total amount of savings by creating non-taxable savings (Thaler, 2016).

The effective functioning of households is associated with the prevention of threats and risks in their activities. A list of possible threats is presented in Table 1.

In modern conditions, households quite commonly use traditional strategies along with adaptive strategies and recovery strategies designed to reduce threats and reduce the risks of households operating in the economic system.

**Table 1: list of threats and risks specific to households**

<b>Types of risks</b>	<b>Source of threats</b>	<b>Consequences of emerging risks</b>
External risks	Strengthening the property stratification of society and differentiation of incomes of the population and households	Uneven distribution of available resources among households
	Dependence of households on external sources of financing	Possibility of loss of household assets: loss of work by household members, movable and immovable property
	Ignoring the performance of social functions by the state and the degradation of social institutions	Growth in social vulnerability of households; Limiting access of low-income families to secondary and higher education
Internal risks	Irrational behaviour associated with abandoning the savings policy Irrational behaviour associated with the rejection of the savings policy, and in the future from investing part of the income received by households in favour of its consumption	Loss of solvency of households
	Availability of unmotivated, unorganized cash savings generated outside the banking system; Changes in the structure of savings in favour of unorganized investments	Loss of household solvency and reduction of their real assets
	Increasing number of ill health, morbidity, disability, mortality of household members, loss of work activity and disability and reduced ability to work	Loss of household income, decline in quality of life and standard of living

Adaptive strategies are logical to use in cases where the conditions for the functioning of the external business environment can neither be predicted nor changed. For example, when uncontrolled factors

prevail and possible development forecasts are mostly short-term. The success of the existence of households in this situation depends on the ability quickly and consistently creates temporary (transient) competitive advantages without claiming to create a sustainable competitive advantage. Households should constantly test various strategic initiatives, choosing the most successful options. A scenario for each new strategy can be a reconfiguration involving the use of available assets of the household, a combination of stability and dynamism in the formation of the budget, the growth of professional activity and business activity of each member of the community. The adaptation strategy is designed to support and enhance the competitive life cycle of the household. Flexibility of adaptation strategy is a guarantee of economic security of household activities.

Recovery strategies are proposed to be implemented by households under the influence of extremely negative external and internal factors. External events (economic crisis, unfavourable for the household tax and credit policy) do not allow maintaining a stable position in the current market situation. In this case, households should reduce their costs and free up the available resources for perspective investment activities that will ensure return in the future. Investment activities are carried out for the sake of gaining a sense of security. The recovery strategy is defensive in nature and can be seen as a strategy for holding positions.

The new strategy of the household can be a strategy of strategic partnership, reflecting the model of rational optimism that can unite the ideology of business, family property, and real assets of the household. The prerequisite for choosing such a strategy is the presence of an entrepreneur in the household who does not have the registration of an individual entrepreneur.

The entrepreneur should be able to predict the most profitable direction of his activity, using the financial possibilities and assets of the household. The entrepreneur must be able to predict the most profitable direction of his activity, using the financial possibilities and assets of the household. An entrepreneur is a person who is ready not only to take risks, but also has the ability to find potential opportunities to earn entrepreneurial income in various business areas. An entrepreneur should be an innovator in the creation of new products or services, strive to develop fundamentally new business models and ways of its organization.

The entrepreneur acts as a leader, realizing the competitive advantages of the business and household, making strategic decisions in terms of risk and uncertainty with innovative orientation (which can lead to a significant breakthrough in the market environment).

The transition to a strategic partnership will help to shape the thinking of household members in the categories of the business model. The separation of the entrepreneur (without registration) as a strategist within the household and the recognition of the leading role of the business (representing the informal economy) will allow the use methods of strategic planning specific to business in household activities and reduce traditional threats from the external business environment.

The proposed strategy and the described business model have greater mobility, contribute to the formation of economic thinking among household members, and allow the use of the entrepreneurial initiative of business and the assets available to the household.

At the same time, the analysis of risks specific to the household's chosen strategy implies the allocation of minimal, moderate (increased) and maximum (critical) risk according to a qualitative risk grading. The minimum risk or first-order risk is characterized by the level of possible losses for individual members of the strategic partnership (loss of work and wages of one of the household members who are in working age; reduction of working capacity, labour productivity due to ill health and disability of the entrepreneur and, as a consequence, the loss of expected household income). Moderate (increased) risk or the risk of the second order is characterized by losses, including not only the amount of lost business income, but



also part of the income that the household has lost (the conflict of partners caused by the mismatch of motivations due to unformed income associated with the functioning of the wrongly chosen business during using assets; the loss of household solvency). Critical (maximum) risk or the risk of the third order reflects the excess of expected losses. Its size exceeds the total income of the household and the assets invested in business (introduction of a tax on income of the self-employed at a rate of 3-6% per annum). The considered business model of the household generates additional risks associated with a lower (in comparison with the entrepreneur with official status) access to credit resources, lower guarantees for supporting business activities. The increase in traditional risks listed in table 1 is facilitated by households moving beyond the formal economy and becoming part of the informal economy.

Decrease in the amount of accumulated comprehensive income, as well as its significant losses, can arise because of:

- stable insolvency of households caused by inefficient entrepreneurial activity;
- limited application of real assets of business and household due to unfavourable competitive situation;
- reduction of labour activity and loss of years of healthy life by the entrepreneur and individual members of the household due to ill health, illness, disability, death.

In this study, authors focus on assessing the effectiveness and possible negative consequences in implementing the proposed strategy of strategic partnership.

## **Data and Methodology**

### ***The Concept and Model of the Businessperson's Lifetime Income***

Evaluation of the effectiveness of strategic partnership is based on the concept of lifetime income of the businessperson (BLI). The fundamental point in the proposed approach should be considered an indicator that authors call the lifetime income of the businessperson (Businessman's lifetime income or BLI). This indicator represents the present value of all future income that it can bring to the household in the future. Assessing the lifetime profitability of an entrepreneur who is a part of the household with his or her business will help in making strategic decisions at the household level. Businessperson's lifetime income can be defined as the present value of all current and future incomes earned by the entrepreneur during cooperation with the household. Conducting calculations of BLI requires understanding of the term of such cooperation in a strategic partnership. For this purpose, a retention rate valid for a certain period shall be applied.

The entrepreneur is not obliged to remain in the household structure for an infinite interval of time. The retention rate ( $r_B$ ) depends on the mutual interest of the participants in the strategic partnership, the riskiness of the entrepreneur's business, the tightness of family relations between the entrepreneur and the members of the household. The retention rate can be 60 - 90%. Over time, the value of the retention coefficient decreases.

When the retention rate decreases, the chances of maintaining a partnership decrease. So in five years the value of the retention rate will be expressed in the value of 59.05%

$$\left(\frac{r_B^5}{100\%} = \frac{(90\%)^5}{100\%}\right) \tag{1}$$

It is possible to simulate scenarios in which the retention rate will grow over time, but it seems more logical for authors to discuss the possibility of decreasing its value. The formula for calculating the businessperson's lifetime income is:

$$BLI = \frac{m \cdot r_B}{(1+i)} + \frac{m \cdot r_B^2}{(1+i)^2} + \frac{m \cdot r_B^3}{(1+i)^3} + \dots + \frac{m \cdot r_B^t}{(1+i)^t}, \quad (2)$$

where  $m$  is the expected entrepreneurial income (the flow of money from the entrepreneur) received for the year;

$r_B$  is the businessperson's retention rate;

$i$  is the annual discount rate;

$t$  is the time period.

At the same time, the functioning of the entrepreneur's business is associated with uncertainty and risk, which is the main weakness of the strategic partnership. A special danger and unpredictability is the risk of loss of working capacity by the entrepreneur.

### ***Assessment of the Consequences of the Risk of Disability of the Entrepreneur***

Loss of labour activity and ability to work is related to the state of health, morbidity, disability, mortality. Currently, assessing the state of human health as a separate indicator is included in a number of well known in the world practice indices.

Such as the quality of life index developed by the Economist Intelligence Unit, which contains nine indicators, including the definition of health status on life expectancy (the index was calculated in 2005). In the foreign and domestic practice, an integral indicator the Human Development Index (HDI) has become widespread. HDI as one of the three components contains a sub-index measuring "health and longevity", reflecting the average life expectancy.

Modern methods of assessing competitiveness also use the Global Competitiveness Index (GCI), which also includes an assessment of health status based on life expectancy. Life expectancy is a quantitative indicator but does not cover the category of quality of life. For qualitative assessment within the concept of Global burden of disease (GBD) the DALY (Disability-adjusted life year) indicator is used.

The risk of loss of labour activity can occur because of death, ill health, illness, disability. Loss of ability to work can range from 40 to 60% in obtaining the III group of disability, from 70 to 80% with the establishment of the II group of disability and from 90% to 100% with an inability to work - the establishment of the I group of disability. Significant loss of household income will arise if an entrepreneur who is part of the household becomes disabled. Authors, using a five-year strategic plan for the development of the household and determining the cost of the entrepreneur's loss of health for future years, will be able to calculate the amount of possible losses. It is necessary to estimate the future losses in the present. DALY (Disability-Adjusted Life Year) indicator that reflects the number of years of inferior life, or the number of years of health loss due to illness or disability. DALY is a quantitative integral assessment of the state of health condition because this is the number of years of life adjusted for disability. DALY, which is equal to 1, represents one lost year of healthy life. The sum of these losses measures the gap between current and ideal health conditions in which people live to old age without disease or disability. The formula for calculating DALY is:

$$DALY = \left[ \frac{(D)(C e^{-\beta a})}{(\beta + r_d)^2} \right] \left\{ e^{-(\beta + r_d)L} [1 + (\beta + r_d)(L + a)] - [1 + (r_d + \beta)a] \right\} \quad (3)$$

where  $D$  is the weight coefficient of the disease or the degree of the disease (suffering level), that is, the coefficient characterizing the degree of disability and is in the range from 0 (total health) to 1 (death);

$C = \text{const} = 0.16243$  (according to World Health Organization methodology);

$e = \text{const} = 2.71$ ;

$\beta = \text{const} = 0.04$ ;

$a$  is the age at onset of the disease or the age at which death from the disease occurred (year of the beginning of the health analysis);

$r_B$  is the discount rate (3% per year);

$L$  is the number of years of life left to live a person from the age of  $a$  (as the age of onset of the disease). The number of years of life left to live a person from the age of  $a$  (the onset of the disease) is taken from the table of mortality of the population of Russia for the calendar year 2014 (Mortality.org, 2014).

### Comparative calculation of the effectiveness of a strategic partnership between business and households

Using proposed model, authors will determine the amount of income lost by the household due to the illness and disability of the entrepreneur. To carry out the required calculation, which allows comparing the remuneration in the form of additional income generated by a businessman without official registered status and the accompanying risk, authors of this paper use the data contained in statistical collection of Rosstat "Small and medium – sized enterprises in Russia" (2014-2017).

Entrepreneurial income remaining after taxation was determined based on using the key performance indicators achieved by actually operating individual entrepreneurs for different years and applying a simplified taxation system (payment of tax with a simplified taxation system is counted as Income - Expenses). The share of expenses reaches 60%; the tax rate is 15%. Entrepreneurial income reached 138.874 roubles per month in 2016. When carrying out further calculations, we will focus on the income that an entrepreneur can earn without registering an individual entrepreneur, equal to 75 thousand roubles per month (900 thousand roubles per year).

As an example, authors consider the following situation. A forty-year-old entrepreneur who is part of the household has been diagnosed with a serious illness and surgical intervention. After that he received the II group of disability, the degree of disability was 70% ( $D = 0.7$ ). Life expectancy at the age of 40 in accordance with the data of the mortality table should be 29.8 years. The calculation of the DALY indicator is presented in Table 2.

**Table 2: calculation of the DALY indicator for men 40 years old, disabled of II, III groups**

The age at onset of the disease or the age at which death from the disease occurred ( $a$ )	The weight coefficient of the disease or the degree of the disease ( $D$ )	The number of years of life left to live a person from the age of $a$ ( $L$ )	DALY indicator (Disability-Adjusted Life Year)
40 years old	0.70	29.80	14.427
	0.65		13.396
	0.60		12.366
	0.55		11.335
	0.50		10.305
	0.45		9.274
	0.40		8.244

If the value of the employer's disability is equal to 40%, the expected income will be 540.000 roubles per year ( $900.000 \times 0.6$ ). In this case, total business income for eight years of "defective life" will be equal to:

$$D = \frac{D_1}{(1+i)^1} + \frac{D_2}{(1+i)^2} + \dots + \frac{D_8}{(1+i)^8} \quad (4)$$

where  $D_1, D_2, \dots, D_8$  - the value of expected business income for 1, 2, 3 ... 8 years;  
 $i$  - the annual discount rate ( $i = 7.25\%$ ).

The values of the discount rate ( $k_d$ ) for different periods are determined by the formula:

$$k_d = \frac{1}{(1+i)^t} \tag{5}$$

where  $k_d$  – the value of the discount rate.

In the given initial conditions, the amount of the expected income will be  $D = 3\ 193.5$  thousand roubles. To calculate the indicator of the businessman’s lifetime income (BLI) during the same 8-year period, use the initial value of the retention rate at the end of the first year equal to 90% (the value of  $r_B$  by year is presented in Table 3).

**Table 3: the values of the retention rate ( $r_B$ ) by years**

Year	Values of the retention rate, %
1-st	90.00
2-nd	81.00
3-rd	72.90
4-th	65.61
5- th	59.05
6- th	53.14
7- th	47.83
8- th	43.05

Using the formula (1) (for  $i=7.25\%$ ) and the data of Tables 4 and 5 for the calculation, authors obtain:

$$LRB_8 = 3\ 540\ 000 \text{ rubles}$$

A comparison of the two values of the expected business income received over 8 years confirms the effectiveness of the proposed strategic partnership ( $3\ 540.0 - 3\ 193.5 = 346.5$  thousand roubles).

In that case, if as business income is used its value of monthly income 138874.0 roubles, annual income 1666487.6 roubles, the difference in the second calculation will be 641.4 thousand roubles. Thus, this gap is almost doubled.

## Conclusion

The proposed strategy, called strategic partnership, is a combination of the strengths of the business (represented by the entrepreneur without registration of individual entrepreneurs) and the household, which has at its disposal financial and real assets. The implementation of the chosen strategy will improve the material well-being of the household, smooth to a certain extent income inequality and act as a social absorber. At the same time, external threats and risks associated with the tax reform of the relatively self-employed (including entrepreneurs without state registration of their status) are increasing. Tax reform concerns introducing a tax on the income of the self-employed with the aim of removing the latter from the shadow economy.

At the same time, comparative calculations have shown that the amount of earned income in the form of Businessman’s lifetime income (BLI) exceeds the losses caused by the effect of risks. The positive result of the implementation of the strategy will depend on the balance of the economic system, taking into account the interests of all participants in the strategic partnership.

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## References

Adizes, I.K. (2014). *Managing Corporate Lifecycles – How Organizations Grow, Age and Die, Volume 1. (Second edition)*. Santa Barbara, CA: The Adizes Institute Publications, in conjunction with Embassy Book Distributors.

Analoui, F., & Karami, A. (2003). *Strategic Management: In Small and Medium Enterprises*. Cengage Learning EMEA.

Ansoff, H.I. (1965). *Corporate Strategy: Business Policy for Growth and Expansion*. McGraw-Hill.

Christensen, C. M., Grant, A., Govindarajan, V., & Davenport, T.H. (2016) *Harvard Business Review 10. HBR'S 10 Must Reads On Strategy*. Harvard Business Review Press.

Gassmann, O., Frankenberger, K., & Csik, M. (2014). *The Business Model Navigator. 55 Models that Will Revolutionise Your Business*. Pearson Education Limited.

Girotra, K., & Netessine, S. (2014). *The risk-driven business model. Four questions that will define you company*. Harvard Business Review Press.

Grant, R. M. (2008). *Contemporary Strategy Analysis*. Blackwell publishing.

Johnson, G., Scholes, K., & Whittington, R. (2007). *Exploring Corporate Strategy. (8th ed.)*. Prentice Hall. Financial times.

King, W.R., & Cleland, D.I. (1978). *Strategic Planning and Policy*. Van Nostrand Reinhold Company.

Kotler, P., Berger, R., & Bickhoff, N. (2016). *The Quintessence of Strategic Management: What You Really Need to Know to Survive in Business*. Springer-Verlag Berlin Heidelberg.

Masterson, M. (2008). *Ready, Fire, Aim: Zero to \$100 Million in No Time Flat*. John Wiley & Sons, Inc.

McGrath, R.G. (2013). *The End of Competitive Advantage: How to Keep Your Strategy Moving as Fast as Your Business*. Harvard Business Review Press.

Mintzberg, H., Ahlstrand, B. & Lampel, J. (2005) *Strategy safari: A guided tour through the wilds of strategic management*. Simon and Schuster.

Mortality.org. (2014). *Human Mortality Database*. [online] Available at: <http://www.mortality.org> [Accessed 13 Sep. 2018].

Paley, N. (2004). *Successful Business Planning. Energizing Your Company's Potential*. Thorogood.

Porter, M. E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.

Porter, M.E. (1998) *Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press.

- Ringland, G. (2006). *Scenario Planning: Managing for the Future (2nd ed.)*. Wiley.
- Rumelt, R.P. (2011). *Good Strategy, Bad strategy: The difference and Why It Matters*. Crown Business.
- Sher, R. (2016). *Mighty Midsized Companies: How Leaders Overcome 7 Silent Growth Killers*. Routledge.
- Thaler, R.H. (2016). *Misbehaving: The Making of Behavioral Economics*. W. W. Norton & Company.
- Vasconcellos e Sá, J. A. (2005). *Strategy Moves: 14 Complete attack and defense strategies for competitive advantage*. Prentice Hall. Financial times.

# Carbon Emission Impact on Sustainable Logistics and Operations: Responses and Failure Consequences

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## Abstract

Environmental issues, particularly carbon and greenhouse gases emission significantly threaten sustainability; therefore, more efforts are needed to address this issue. Furthermore, to address the issue between economic development, social and environmental sustainability in the present supply chain and operational management (SC&OM) system, organizations must figure out how to adjust these, and enable them to exist together to guarantee supportable practices. This equalization might be conceivable by creating elective vitality sources, as well as generally by significantly containing the development spirals of economy, populace and exhaustion of environmental assets and advance innovations. This exercise in careful control should likewise be joined by a profound understanding that the idea of the issue is the pressure between here and now development and long haul survival. Companies which incorporate sustainability in practices, business ethics and collaboration along entire supply chain tend to be leading in respective industries. Given this situation, incorporation of sustainability issues need to be integrated to competitive and supply chain strategy. Sustainable practices can be defined from many dimensions; however, the most popular dimensions are: economic, social and environmental (Triple Bottom Line). Thus, keeping sustainability issues in the centre, this paper makes an attempt to identify a significant issue that threatening sustainability, analyse the response of the companies on this issue, and finally shows the potential consequence for the companies in case of failure to adopt sustainable SCM practices.

**Keywords:** Environment, Sustainability, Supply chain management, Strategy, Economic, Social.

## Introduction

In a broader sense, sustainability means 'ability to be maintained at a certain rate of level'(OED Online, 2016). Yet, there is no universally agreed upon definition of 'sustainability'. The idea of sustainability stem from 'sustainable development', which was officially discussed on global platform in 'First Earth Summit, Rio, 1992'. Since then, there had been many variations and extensions of definition from scholars, academics, business experts, and environmentalists. However, to narrow down 'sustainability'; befitting to Supply chain and operations management (SC&OM) domain, number of definitions have been constructed from different point of views (Appendix -1). The most popular and common definition viewed sustainability from there dimensions; Social, economic and environmental (John Elkington, 1998). Furthermore, sustainability in today's SC&OM activities are closely linked to 'Global Sustainable Development Goals'. Thus, keeping sustainability issues in the centre, this paper will make an attempt to identify a significant issue that threatening sustainability, analyse the response of the companies on this issue, and finally shows the potential consequence for the companies in case of failure to adopt sustainable SCM practices.

Keeping global Sustainable Development Goals and Triple Bottom Line (TBL) as guiding principles for sustainability, the most significant issue concerning SC&OM can be identified by considering the following criteria. Table-1 defines various criteria and sub-criteria to prioritize most significant issue threatening global sustainability.

**Table 1: Criteria and Sub-criteria for Selecting Most Vulnerable issues for Sustainability**

Criteria	Sub- criteria	Explanation
<b>1. Risk</b>	a. Probability of occurrence of the event	The likelihood of occurring the event ( in percentage)
	b. Impact or probable damage from the event	Impact on society, economy, and environment ( triple bottom line)
<b>2. General/ Cross cutting</b>	a. Length of effect and time requires to decay	How long the issue would persist and how long it would take to recover
	b. Irreversibility	The damage or loss cannot be reversed.
	c. Delayed response	Gap between occurrence of event and response
<b>3. Ubiquity</b>		Geographical dimension of the event( global/local)
<b>4. priority</b>		Significance of the event in terms of social and cultural norms, and environmental norms ( still vulnerable or marginalized)
<b>5. Resolvability</b>		
<b>6. Novelty</b>		New issue to policy-makers and yet to understand the scientific issues of the event
<b>7. Potentials for mobilization</b>		Extent of political relevance
<b>8. Plausibility</b>		A clear connection between causes of the event and impact of the events in society, economy and environment. Evidence-based.

Source: Amanitidou et al. (2012) & German Advisory Council on Global Change (1998)

Given these criteria as indicators, analysis of Global Sustainable Development Report (2016), UN-Secretary general’s Scientific Advisory Board report (2016), Swiss Reinsurance report (2016) and studies of Sutherland et al. (2016), the most common setback in achieving sustainability is ‘failure to achieve climate change mitigation’. However, there are also few important issues, like water pollution, unemployment, migration, cyber security, and de-globalization. Furthermore, Liew W.T. et al. (2014) conducted text mining on world top 2000 companies reports, and categorises all these companies in four segments, and found Greenhouse gas (GHG) and Carbon emission (including health safety and human rights) are most significant challenge for sustainability (Table-2).



**Table 2: Sustainability trends in the process industries: A text mining-based analysis**

serial	Bulk/specialty chemical	Consumer Products	Oil/petrochemicals	Pharmaceuticals
1	Raw material	Raw material	Human rights	Health and safety
2	<b>GHG emission</b>	Human rights	<b>GHG emission</b>	Human rights
3	Climate change	Health and safety	Climate change	Access to medicine
4	Health and safety	Environmental impact	Energy efficiency	<b>GHG emission</b>
5	Human rights	<b>GHG emission</b>	Health and safety	Climate change
6	Responsible care	<b>CO2 emission</b>	Oil spill	Environmental impact
7	Process safety	Water use	Environmental impact	<b>CO2 emission</b>
8	Hazard management	Life cycle	Local community	Hazard management
9	<b>CO2 emission</b>	Energy consumption	Hazard management	Hazardous waste
10	Energy consumption	Product safety	<b>CO2 emission</b>	Raw material

Source: Liew W.T. et al., 2014

In sum, the most common issues from all the reports, and text mining search of the biggest contributor of climate change in SC&OM domain show that carbon/GHG emission issue is at the top of the list.

## **Overview of Carbon Emission Problem from Sustainable Logistics and Operations Management Perspectives: Companies Response**

### *Incorporation of Total Life Cycle Perspectives*

Carbon emission in SC&OM, is concerned with release of carbon into the atmosphere by various SC&OM activities. More than seventy-five percent of the carbon outflows related with industry parts originate from their supply chains (Huang et al., 2009). However, because of changing trends of customers' perception, and various regulatory issues, companies are more concerned about reducing carbon emission by ensuring robust and sustainable logistics and operational practices (Grant et al., 2015). Many researchers agreed that the efficiency of carbon management strategies from organizational point of view are aiding decision makers to achieve environmental sustainability (Carballo.Panela and Domenech, 2010). Few researchers suggest cost-effective initiatives to reduce carbon emission within the design of a green supply chain (Finkbeiner, 2009; Hua et al., 2011; Pandey et al., 2010); for example, the utilization of vitality proficient vehicles, squander decrease through process advancement and reusing (Sundarkini et al., 2010). Furthermore, Carbon emission issues has been incorporated in product Life Cycle analysis (LCA), which identifies total emission throughout the life-cycle of the products (Heijungs et al., 2010).

In addition, Companies started including cost of environmental impact on their financial report. Though these practices are yet to be ubiquitous, companies are becoming more concerned about sustainable practices to reduce CO2 emission.

### ***Integration Carbon Reduction Efforts in Company's Business Strategy***

Incorporating Carbon emission issue is a significant step towards achieving sustainable SC&OM performance. From theoretical perspectives, Carbon reduction efforts can be divided into three categories (Weinhofer and Hoffmann, 2010).

- a. Carbon Compensation Strategies
- b. Carbon Reduction Strategies
- c. Carbon Independent Strategies

Concerning compensation strategies, Weinhofer and Hoffmann (2010) defines the strategies of inward exchange of carbon emissions through support in carbon counterbalance ventures and emissions trading. In practice, implementing these strategies, companies formulate various action plan in line with above mentioned strategies. For example, Apple supports its stakeholders in implementing energy-efficient technologies, and companies within EU Emission Trading Scheme (EU-ETS) can formulate carbon trading strategies. However, the other side of coin is; companies are not doing much for effective carbon reduction. For example, 96 big companies doubled their carbon emission in comparison to 2002 carbon emission level, due to their business expansion. In 2007, total voluntary carbon reduction was 65 million tons, whereas only three major power plants of USA emitted same amount in atmosphere (matthew J.Kotchen, 2009). In sum, despite having few challenges, companies are proactively integrating sustainability issues at all level of SC&OP planning and execution.

### ***Integrating Carbon reduction strategy to SC&OM Action Plan at Operation Level***

Carbon reduction action plan is based on action framework of a centralized and decentralized decision making, monitoring and reporting of carbon emission from SC&OM activities, and evaluation and revaluation of decision to update decision. Decision making at tactical level could be based on various international and national regulations on carbon emissions, best practices on carbon reduction, measurement of total carbon emissions from lifecycle of SC&OM activities. Thus, companies identify which decision need to be centralized and which to be decentralized. Thereafter, companies assign departments for appropriate responsibilities and methods that to be utilized for lessening the immediate emissions amid the inside supply chain exercises; such as production or transportation. Finally, companies select, negotiate and contact with the rest of the supply chain stakeholders, who are responsible for direct and indirect carbon emission within whole life-cycle of the products and processes. Yet, most of the companies are reporting carbon emission in yearly basis, which provides least opportunity for re-evaluation of the strategies. In a dynamic global environment, the environment related legislations are frequently changing (Grant et al., 2015); therefore, companies need to re-evaluate their action plans. For instance, CEZ Group, a Europe-based power company, formulated its action plan based on four pillars; use of renewable energy sources, reducing intensity of carbon emission from its operation by improving efficiency, energy saving through strict regulations, and investment in the projects leading carbon emission reduction (CEZ Group, 2012). In sum, translating carbon emission strategies to action plan play vital role in SC&OM activities.

### **SC& OM Sustainable Activities in Reducing Carbon Emission**

The most significant achievement in carbo reduction is- setting carbon emission standards and regulations at international and national levels (Grant et al., 2015). Companies are now able to calculate total carbon emission from its SC&OM activities (Carbon Smart, 2017). Table-3 explains various standards

(developed at national and international levels) for calculating carbon emission of products and organization.

**Table 3: Methodologies and Approaches for Calculating Carbon Emission of Products and organizations**

Scope	Developed by	Standard/Methodology	Product	Corporate
International	GHG Protocol	Corporate Accounting and Reporting Standards		X
		Project Accounting Protocol and Guidelines		X
		Product Standards	X	
	ISO	ISO 14064-1		X
		ISO 14067	X	
		ISO 14069		X
Europe	European Commission	Corporate and product Carbon Footprint	X	X
UK	British Standard Institutions (BSI)	UK's Product Carbon Footprint (PAS 2050)	X	
France	AFNOR	BP X30-323	X	
	ADEME	Bilan Carbone		X
Sweden	SEMCo	EPD System	X	
Japan	JISC	TS Q 0010	X	

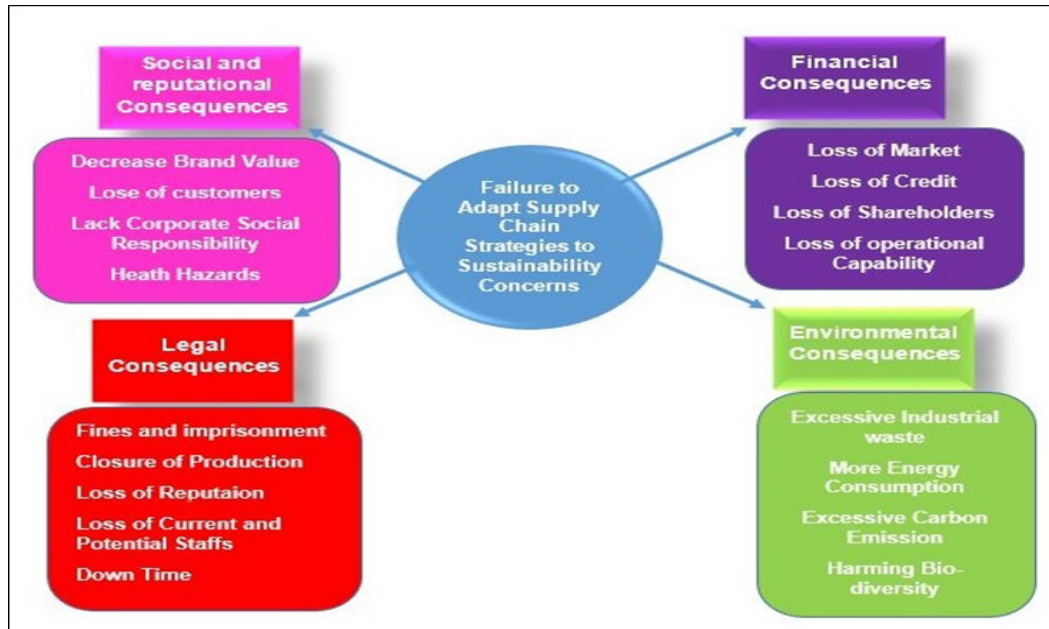
Source: European Commission, 2011; Finkbeiner, 2009; Pandey et al., 2010

These practices and standards ensure visibility on the organizations' carbon emission performance, as well as create awareness among the customers (Physics.org, 2016). In addition, other practices are: use of clean advance technologies like; use bio-mass, bio-fuel, solar and wind energy (Chel and Kaushik, 2017), cloud-based carbon information sharing and measurement (Stephan Schmidt, 2010), carbon auditing, and renewable practices (European Commission, 2011). Global business giants like, IBM, Amazon, Dell, Coca-Cola, Nestle, Ford, Toyota and many other companies are taking proactive stance in incorporating sustainable practices in their corporate strategy to reduce carbon footprint (Borgen, 2018). For example, IBM focuses on relying on technological edge to reduce carbon emission from its products line, allocate CO2 target to department heads, and encourage renewable energy use, cloud –based carbon information sharing and incorporates carbon regulation in IBM corporate strategy. However, these practices are still in infancy level (Borgen, 2018).

### **Failure to Adapt Sustainable Supply Chain Strategy (SCS): Potential Impacts and Consequences**

British economist, journalist and academics Frances Cairncross rightly pointed out that companies are responsible for suitability issues; in respect of cost, society and environment. Companies which incorporate sustainability in practices, business ethics and collaboration along entire supply chain tend to be leading in respective industries (Munson, 2013). Given this situation, incorporation of sustainability issues need to be integrated to competitive and supply chain strategy. Sustainable practices are defined from many dimensions; however, the most popular dimensions are: economic, social and environmental (Triple Bottom Line) (John Elkington, 1998). Given this situation, failure to adapt sustainable supply

chain strategy can be viewed from three dimensions. Thus, the failure consequence of SCM strategy from TBL perspective can be drawn from the following mind map (Figure-1).



**Figure 1: Mind Map of Failure Consequence for the companies' SCM**

Source: Developed in this Study

### ***Financial Consequences***

From financial standpoint, sustainability defined as the capability of a company to sustain in time, both in terms of profitability, financial performance and productivity. In a nutshell, economic sustainability is the matter of remaining in the business (Doane and McGillivray, 2001). However, economic sustainability is not an isolated practice, instead, it is connected with social and environmental dimension of sustainability (Gray, 2010; Lovins and Lovins, 1999). The consequence of failure to adapt economic sustainability in SC&OP is catastrophic for any organization. The consequence is: Supply chain disruptions (Chopra and Sodhi, 2004), price decline of products and services, decline market performance, loss of strategic partnership, and overall decline of supply chain performance (Hendricks and Singhal, 2005), which ultimately affect social and environmental dimension as well. For instance, after flood in 2011; economic loss of the country was estimated \$ 45 billion in Thailand. Due to financial losses and infrastructural damage the hard-drive manufacturers of Thailand for Hitachi, Dell, and HP faced tremendous financial crisis, which was not only created risks for the workers-employability, but also impacted the global supply chain networks. It is also evident that green purchasing practices, ethical sourcing, and sustainable warehousing initiatives by the companies increase profitability. A study published in 2017 by EcoVadis found that organizations can use their obtaining influence to lessen emissions and help their providers to set aside some cash — a consolidated \$12.4 billion in reserve funds in 2016. Hewlett-Packard, for example, helped its providers to decrease 800,000 metric huge amounts of CO2 emissions and spare more than \$65 million. Therefore, it is evident that failure to achieve sustainable economic logistics strategy adversely affects economic dimension of a company (The Gurdian, 2013).

### ***Social and Reputational Consequences***

Carter and Jennings (2002) argued that organizational sustainability based on organizational culture, deeply ingrained organizational corporate practices, organizational citizenship, values and ethics. Few researchers indicated the potential benefits of socially sustainable SCM; for instance, increase safety and health costs resulting from hazardous working conditions, risky transportation and warehouse management (Brown, 1996; Carter et al., 2007). Carter and Dresner (2001) indicated that companies that do not include social concern, can also fall under strict government regulations. Furthermore, Ellen et al. (2006) added that non-compliance of sustainable social issues can make organization more vulnerable to employees, suppliers and customers, and ultimately contribute to degrade reputation of the organizations. Therefore, failure to adapt socially sustainable Supply chain strategy would negatively affect companies. One of the significant adverse impact of non-adaptation of social sustainability in SCM would be on buyer- supplier relationship. For instance, world's biggest toymaker Mattel have faced tremendous social crisis concerning supplier relations when customers found impermissible levels of lead in the toys. These toys were painted in China by Mattel's suppliers. To compensate this issue Mattel has to recall almost 850,000 unit of toys around the world. Failure to maintain a vibrant socially responsible supplier relationship management can greatly harm the reputation of an organization (Mark Kleinman, 2007). Therefore, recent trends show that companies are not only concern about their direct suppliers, but also be concerned about the entire supply chain to meet the global market demand and manage a vibrant SRM and CRM (Chen and Paulraj, 2004).

Besides, in operational and manufacturing dimensions, failure to adapt sustainable supply chain practices can adversely impact on social issues; like, working condition, and social wellbeing of workers (Hutchins and Sutherland, 2008). For Instance, China Labour Watch and Bloomberg has recently release a report which highlights the harsh working condition in the Apple's manufacturing plant in China. The report reveal that the workers are exposed to hazardous activities, lack training, exceedingly long working hours, dirty facilities, and low wage. This report negatively affected the reputation of Apple's global brand image (Edoardo Maggio, 2018). One of significant social implication of failure to adapt socially sustainable SCM is also concerned with overall national Image. There were many cases in which companies fail to adapt socially sustainable SCM. Thus, companies had to incurred tremendous financial and reputational loses. For instance, DRAX used to burn bulk amount of coal for electricity generation. However, UK's commitment to Kyoto Protocol, ethical standard, and national image supported DRAX to shift its strategy towards biomass based environmental-friendly electricity generation effort. Nowadays, unethical practices put the companies under scrutiny by the customers (Geoffrey Smith and Roger Parloff, 2007). Furthermore, Coulter and Coulter (2002) theorized trust as the perception of honesty, integrity, confidentiality, and high ethical standards. Stakeholder's trust, which refers to trust that stakeholders have toward a firm, is based on prior experience with a firm, with numerous opportunities to evaluate a firm's integrity ability, and benevolence (Berry, 2001). Thus, Failure to adapt sustainable SCM can not only negatively impact on social issues in isolation, but also on financial and environmental dimension (Closs et al., 2011). In sum, the negative impacts are on: health, safety, ethical issues, stakeholder's welfare, national image and social wellbeing (Carter and Jennings, 2002; Hutchins and Sutherland, 2008).

### ***Environmental Consequences***

The concerns of environmental sustainability are fast developing among consumers and governments around the globe, and organizations are under expanding strain to work in a feasible way (Coyle et al., 2015). Nowadays Companies' corporate image is highly dependent on their environmental sustainable practices. Jayaraman et al. (2012) examined the relationship of environmentally sustainable supply chain and manufacturing practices on client's conduct in India, and discovered proof for a noteworthy positive relationship between environmentally cognizant creation and clients' purchasing choices. For example, Shells inability to acknowledge open concerns with respect to the sinking of Brent Spar (oil installation in

Atlantic) was one of the major cases of non-environmental sustainable supply chain issue that led BP to expensive harm of its global notoriety (Neale, 1998). An investigation by Kearney, (2009) was directed on 99 sustainability-centered associations crosswise over 18 ventures to distinguish the effect of environmental exercises on the execution of the association. The examination uncovered that amid the economic downturn, associations with proactive practices toward ensuring the environment have beaten their industry peers fiscally. The economic favorable position has come about because of decreased operational costs (vitality and water use, and so forth.) and expanded incomes from the improvement of inventive green products (Kearney, 2009). Furthermore, companies could achieve greater success by incorporating various environmentally sustainable practices throughout the entire supply chain. Figure-2 shows various environmentally sustainable practices within SCOR performance framework to achieve environmental sustainability.

PLAN	SOURCE	MAKE	DELIVER	RETURN
<ul style="list-style-type: none"> <li>• Environmental Cost Accounting</li> <li>• Environmental Life Cycle Analysis</li> <li>• Design for environment principle</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Management Systems (EMS)</li> <li>• Environmental auditing by 3<sup>rd</sup> party or buyer</li> <li>• Certification</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution prevention, for example, substitution, product modification, recycling</li> <li>• Environmental management, e.g., ISO14001</li> </ul>	<ul style="list-style-type: none"> <li>• Green logistics</li> </ul>	<ul style="list-style-type: none"> <li>• Reverse logistics activities for post-sale products and materials</li> <li>• Remanufacturing process to clean, repair and restore durable products for resale</li> <li>• Recycling to reuse materials</li> </ul>

**Figure 2: SCOR Model for Environmental Sustainable Business Practices**

Source: APICS, 2018

However, when companies fail to adopt environmentally sustainable SCM, the negative impact is not only on environment, but also on society and economy (Closs et al., 2011). The most significant negative environmental consequence is related to the inefficient use of energy resources, emission of carbon and greenhouse gases, increase of ecological footprint (Geol, 2010). From SCM perspective, environmental impacts incorporate lethal waste, water contamination, and loss of biodiversity, long haul harm to environments, unsafe air emissions, ozone depleting substance emissions, and vitality utilize (Danish Ethical Trading Institute, 2010). Furthermore, studies show that ISO-14001 non-compliance companies significantly damaged their reputation in global business. For instance, a study results from a Harvard, shows that employees at ISO 9001 certified firms were of a higher fitness and were paid better, in view of usage of standard had brought about a turnover increment, which sequentially implied more work. In sum, ISO-14001 and ISO-9001 have been proven to help organizations (British Assessment Bureau, 2012).

Finally, environmental sustainability also connected to social concern, like, ethical sourcing, local employment, health and social wellbeing issues, carbon and waste management, air quality, noise and disruptions. Thus, non-adaptable environmental sustainable SCS would negatively affect social norms, ethical and ambient (Supply Chain Sustainability School, 2017).

## ***Legal Consequences***

As far back as the primary environmental directions were instituted in the 1970s, there have been worries about their potential effects on organizations. Dealing with the harmony between environmental limitations and economic effects has been a progressing quandary. The ongoing economic downturn, joined with expanded rivalry from developing economies, has made the discussion much more intense, especially in connection to environmental change arrangements (Dechezleprêtre and Sato, 2014). Therefore, regulatory pressure from national and international bodies play vital role in sustainable SCM practices. A research done by Alvarez-Gil et al. (2007) reveals that 87% the companies incorporates environmental sustainability practices in their strategies due to government regulation and pressures. Furthermore, the consequence includes legal action and financial compensation. For instance, the Natural Resources Wales (NRW) is the main body responsible for issuing permits and enforcement, considers environmental liabilities under criminal law, civil law, public or administrative law and company law. Thus, legal consequence plays vital role in adaptation of sustainable SCM (Coxall and Hardacre, 2018).

However, Christiansen and Haveman (1981) evaluated that around 10 percent of the lull in profitability development saw in the United States somewhere in the range of 1965 and 1980 can be ascribed to environmental directions, while Dufour et al. (1998) locate that environmental control cut efficiency development in the Quebec fabricating area somewhere in the range of 1985 and 1988. To counter these perspectives, an elective proposition was verbalized by Porter (1991). The 'Watchman speculations contends that environmental directions may lead private firms and the economy all in all to wind up more aggressive universally by giving motivating forces to environmentally-accommodating advancement that would not have occurred without arrangement (Dechezleprêtre and Sato, 2014).

## **Conclusion**

Environmental issues, particularly carbon and greenhouse gases emission significantly threaten sustainability; therefore, more efforts are needed to address this issue. Furthermore, to address the issue between economic development, social and environmental sustainability in the present supply chain and operational management (SC&OM) system, organizations must figure out how to adjust these, and enable them to exist together to guarantee supportable practices. This equalization might be conceivable by creating elective vitality sources, as well as generally by significantly containing the development spirals of economy, populace and exhaustion of environmental assets and advance innovations. This exercise in careful control should likewise be joined by a profound understanding that the idea of the issue is the pressure between here and now development and long haul survival (Ellen et al., 2006). Future research may direct towards total life-cycle sustainability from TBL perspectives.

## **References**

- APICS. (2018), "SCOR Framework", available at: <http://www.apics.org/apics-for-business> (accessed 4 March 2018).
- Berry, W. (2001), *Life Is a Miracle: An Essay Against Modern Superstition*, New Ed edition., Counterpoint, Berkeley, Calif.
- Borgen. (2018), "BORGEN Magazine - The Borgen Project", BORGEN, available at: <http://www.borgenmagazine.com/> (accessed 10 April 2018).
- British Assessment Bureau. (2012), "Making ISO 9001 Exciting", November, available at: <https://www.british-assessment.co.uk/guides/making-iso-9001-exciting/> (accessed 11 April 2018).
- Brown, S. (1996), "Q methodology and qualitative research", *Qualitative Health Research*, Vol. 6 No. 4, pp. 561–567.



- Carballo.Panela, A. and Domenech, J.L. (2010), "Managing the carbon footprint of products: The contribution of the method composed of financial statements (MC3)", *The International Journal of Life Cycle Assessment*, Vol. 15(9), pp. 962–969.
- Carbon Smart. (2017), "BDO LLP Carbon Footprint Report 2016/17".
- Carbon trust. (2017), "Carbon Trust Report", available at: <https://www.carbontrust.com/resources/reports/> (accessed 15 March 2018).
- Carter, C. and Dresner, M. (2001), "Purchasing's Role in Environmental Management: Cross-Functional Development of Grounded Theory", *Journal of Supply Chain Management*, Vol. 37 No. 2, pp. 12–27.
- Carter, C. and Jennings, M.M. (2002), "Social responsibility and supply chain relationships", *Transportation Research Part E: Logistics and Transportation Review*, Vol. 38 No. 1, pp. 37–52.
- Carter, T., Jones, R. and Lu, X. (2007), "New assessment methods and the characterisation of future conditions", *IPCC Working Groups*, pp. 133–171.
- Cetinkaya, B., Cuthbertson, R., Ewer, G., Klaas-Wissing, T., Piotrowicz, W. and Tyssen, C. (2011), *Sustainable Supply Chain Management: Practical Ideas for Moving Towards Best Practice*, 2011 edition., Springer, Berlin.
- CEZ group. (2012), "Action Plan for the Reduction of CO2 Emissions".
- Chel, A. and Kaushik, G. (2017), "Renewable energy technologies for sustainable development of energy efficient building", *Alexandria Engineering Journal*.
- Chen, I. and Paulraj, A. (2004), "Towards a theory of supply chain management: the constructs and measurements", *Journal of Operations Management*, Vol. 22, pp. 119–150.
- Chopra, S. and Sodhi, M.S. (2004), "Managing risk to avoid: Supply-chain breakdown", *Managerial Economics and Decision Science*.
- Christiansen, G. and Haveman, R.H. (1981), "The Contribution of Environmental Regulations to the Slowdown in Productivity Growth", *Journal of Environmental Economics and Management*, Vol. 8 No. 4, pp. 381–390.
- Closs, D., Speier, C. and Meacham, M. (2011), "Sustainability to support end-to-end value chains: the role of supply chain management", *Journal of the Academy of Marketing Science*, Vol. 39 No. 1, pp. 101–116.
- Coulter, K.S. and Coulter, R.A. (2002), "Determinants of trust in a service provider: the moderating role of length of relationship", *Journal of Services Marketing*, Vol. 16 No. 1, pp. 5–50.
- Coxall, M. and Hardacre, E. (2018), "Environmental law and practice in the UK (England and Wales)", February, available at: [https://uk.practicallaw.thomsonreuters.com/6-503-1654?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/6-503-1654?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1) (accessed 11 April 2018).
- Coyle, J.J., Thomchick, E.A. and Ruamsook, K. (2015), "Environmentally Sustainable Supply Chain Management: An Evolutionary Framework", *Marketing Dynamism & Sustainability: Things Change, Things Stay the Same...*, Springer, Cham, pp. 365–374.



- Danish Ethical Trading Institute. (2010), *Environmental Supply Chain Management- A Guide to Danish Companies*, Policy report, Danish Ministry of Environment, Denmark, pp. 1–30.
- Dechezleprêtre, A. and Sato, M. (2014), “The impacts of environmental regulations on competitiveness”, *Global Green Growth Institute*, pp. 1–28.
- Deloitte. (2017), *Energy Efficiency in Europe- The Levers to Deliver the Potential*, Environmental Report, pp. 1–80.
- Doane, D. and MacGillivray, A. (2001), “Economic Sustainability The business of staying in business”, *The Sigma Project*.
- Dufour, C., Lanoie, P. and Patrie, M. (1998), “Regulation and Productivity”, *Journal of Productivity Analysis*, Vol. 9 No. 3, pp. 233–247.
- Edoardo Maggio. (2018), “Workers at a Catcher manufacturing plant in China have complained about poor working conditions and exposure to noxious chemicals - Business Insider”, United Kingdom, January, available at: <http://uk.businessinsider.com/china-labour-watch-apple-catcher-working-conditions-2018-1> (accessed 10 April 2018).
- Eirini Aivazidou, Eleftherios Iakovou, Dimitrios Vlachos and Christos Keramydas. (2013), “A Methodological Framework for Supply Chain Carbon Footprint Management”, *Chemical Engineering Transaction*, Vol. 35, pp. 1–6.
- Ellen, P.S., Webb, D.J. and Mohr, L.A. (2006), “Building Corporate Associations: Consumer Attributions for Corporate Socially Responsible Programs”, *Journal of the Academy of Marketing Science*, Vol. 34 No. 2, pp. 147–157.
- European Commission. (2011), “European Economic Forecast - Autumn 2011”, *Economics and Financial Affairs*.
- Finkbeiner, M. (2009), “Carbon foot print—opportunities and threats”, *The International Journal of Life Cycle Assessment*, pp. 91–94.
- Geoffrey Smith and Roger Parloff. (2007), “Inside Volkswagen’s Diesel Fraud”, *Fortune*, March, available at: <http://fortune.com/inside-volkswagen-emissions-scandal/> (accessed 10 April 2018).
- Geol, P. (2010), “Triple bottom line reporting: An analytical approach for corporate sustainability”, *Journal of Finance, Accounting, and Management*, Vol. 1 No. 1, pp. 27–42.
- Global Sustainable Development Report. (2016), “Global Sustainable Development Report”, available at: <https://sustainabledevelopment.un.org/globalsdreport/2016>.
- Grant, D., Trautrim, A. and Wong, C.Y. (2015), *Sustainable Logistics and Supply Chain Management*, 1 edition. Kogan Page, London ; Philadelphia.
- Gray, R. (2010), “Field Guide to Sustainability”, available at: <http://sustainability.psu.edu/fieldguide/> (accessed 10 April 2018).
- Heijungs, R., Huppes, G. and Guinee, B. (2010), “Life cycle assessment and sustainability analysis of products, materials and technologies. Toward a scientific framework for sustainability life cycle analysis”, *Polymer Degradation and Stability*, pp. 422–428.

- Hendricks, K. and Singhal, V. (2005), "An Empirical Analysis of the Effect of Supply Chain Disruptions on Long-Run Stock Price Performance and Equity Risk of the Firm", *Production and Operations Management*, Vol. 14 No. 1, pp. 35–52.
- Hua, G., Cheng, T.C. and Wand, S. (2011), "Managing carbon footprints in inventory management", *International Journal of Production Economics*, Vol. 132(2), pp. 178–185.
- Huang, Y.A., Christopher, L.W. and Mathew, H.S. (2009), "Categorization of Scope 3 Emissions for Streamlined Enterprise Carbon Footprinting", Department of Engineering & Public Policy and Department of Civil & Environmental Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania 15213, pp. 3–7.
- Hutchins, M.J. and Sutherland, J.W. (2008), "An Exploration of Measures of Social Sustainability and their Application to Supply Chain Decisions", *Journal of Cleaner Production*, Vol. 16 No. 15, pp. 1688–1698.
- Jayaraman, V., Singh, R. and Anandanathan, A. (2012), "Impact of sustainable manufacturing practices on consumer perception and revenue growth: an emerging economy perspective", *International Journal of Production Research*, Vol. 50 No. 5.
- John Elkington. (1998), "Measuring Business Excellence 'ACCOUNTING FOR THE TRIPLE BOTTOM LINE'", Vol. 2 No. 3, pp. 18–22.
- Kearney, A. (2009), "'Green' winners: The performance of sustainability-focused organizations during the financial crisis", available at: [file:///C:/Users/hasnat/Downloads/TBLandSustainability\\_Alhaddi.pdf](file:///C:/Users/hasnat/Downloads/TBLandSustainability_Alhaddi.pdf) (accessed 3 January 2018).
- Liew W.T., Adhitya, A. and Srinivasan, R. (2014), "Sustainability trends in the process industries: A text mining-based analysis", *ScienceDirect*, No. 65(3), pp. 393–400.
- Lovins, A. and Lovins, L.H. (1999), *Natural Capitalism: The Next Industrial Revolution*, Earthscan Ltd, London.
- Mark Kleinman. (2007), "Mattel plunged into deeper crisis as it recalls Barbie toys", September, available at: <https://www.telegraph.co.uk/finance/markets/2815162/Mattel-plunged-into-deeper-crisis-as-it-recalls-Barbie-toys.html> (accessed 10 April 2018).
- matthew J.Kotchen. (2009), "Offsetting Green Guilt (SSIR)", available at: [https://ssir.org/articles/entry/offsetting\\_green\\_guilt](https://ssir.org/articles/entry/offsetting_green_guilt) (accessed 16 March 2018).
- Munson, C. (2013), *Sustainability in Supply Chain Management Casebook: Applications in SCM*, 01 edition., Pearson FT Press, Upper Saddle River, N.J.
- Neale, A. (1998), "Organisational learning in contested environments: lessons from Brent Spar", *Business Strategy and the Environment*, Vol. 6 No. 2.
- OED Online. (2016), "sustainability, n.", Oxford University Press, available at: <http://www.oed.com/view/Entry/299890> (accessed 10 April 2018).
- Pandey, D., Agrawal, M. and Pandey, J.. (2010), "Carbon footprint: current methods of estimation", US National Library of Medicine.
- Physics.org. (2016), "Consumers care about carbon footprint", available at: <https://phys.org/news/2016-02-consumers-carbon-footprint.html> (accessed 4 March 2018).

Porter, M.. (1991), "Towards a Dynamic Theory of Strategy", *Strategic Management Journal*, Vol. 12, pp. 95–117.

Stephan Schmidt. (2010), "The dark side of cloud computing: soaring carbon emissions", *The Guardian*, 30 April, available at: <http://www.theguardian.com/environment/2010/apr/30/cloud-computing-carbon-emissions> (accessed 10 April 2018).

Sundarkini, A., Robert.D. Suza and Mark Goa. (2010), "Modeling carbon footprints across the supply chain", *International Journal of Production Economics*, Vol. 128, pp. 43–50.

Supply Chain Sustainability School. (2017), *Social Value and Design of the Built Environment*, United Kingdom, pp. 1–54.

Sutherland, W.J., Steven, B., Jacqueline, C. and Mick, C. (2016), "A Horizon Scan of Global Conservation Issues for 2016", available at: <https://www.sciencedirect.com/science/article/pii/S0169534715002918> (accessed 10 April 2018).

The Guardian. (2013), "Why sustainable supply chains make business sense", United Kingdom, 31 October, available at: <https://www.theguardian.com/sustainable-business/sustainable-supply-chains-business-sense> (accessed 10 April 2018).

Weinhofer, G. and Hoffmann, V. (2010), "Mitigating climate change – how do corporate strategies differ?", *Business Strategy and the Environment*, Vol. 19 No. 2, pp. 77–89.

## **Regional Innovation Clusters as Catalyst for Development of the Regional Economy of the Russian Federation**

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### **Abstract**

The article defines the role of regional innovation clusters in enhancing the innovative development of Russian regions. The authors review the structure of regional innovation clusters and the benefits of creating regional innovation clusters in Russia, study and present a classification of innovation clusters, as well as explore some support programs for Russian regional innovation clusters. The article studies also financial structure of development programs based on source and industry-specific areas of pilot regional innovation clusters, presents the distribution of regional innovation clusters with respect to various sectors. The authors also study certain parameters and characteristics of efficient innovation clusters.

**Keywords:** regional innovation cluster; regional economy; technology; science; innovation.

### **Introduction**

Currently, there are significant changes in the functioning conditions of market and economic entities in the Russian Federation. This reinforces the importance of improving the competitiveness of the country as a whole, its constituent entities, enterprises and organizations, as well as necessitates building efficient technology networks based on mutually beneficial long-term relationships (Guseva, 2012).

The development of effective forms of innovative activities' implementation and the creation of conditions to accelerate the innovative process are becoming increasingly important at the present stage of economic development.

According to the economic concepts, regional innovation clusters (RIC) are able to accelerate innovation processes initiated in the contemporary society, since clusters tend to innovate.

Implementation of innovative model of national economy development is provided by balanced and sustainable advancement of certain regional economies.

International management practices of innovative, and active application of innovations (Guseva, 2012). The competitiveness of a contemporary knowledge-based economy depends not only on technical achievements, inventions, and knowledge creation, but also on organizational changes that promote the commercialization of scientific and technical developments as well as marketing innovations (Kazantsev, 2012).

The formation of economy receptive to innovation is today a priority task at all management levels. The successful solution of this problem determines the strategic competitiveness of the country in total. Implementation of development programs of regional innovation clusters in Russia will contribute to improving the competitiveness of regional innovation systems.

The creation and development of regional innovation clusters in Russia contributes to the attraction of foreign investments in various regions of the country.

## Materials and Methods

Methodological basis of the research is made up of the principles, provisions and conclusions contained in the works of Russian and foreign scholars on problems related to creation of effective regional innovation clusters and the role of innovation clusters in regional economy development, study of clusters development and support programs, as well as regulatory documents of the Russian Federation and international practices.

Studies of innovation clusters is a subject of many scientific works of Russian and foreign scientists (useva, 2012; Kazantsev, 2012; Grodskaya, 2008; Guseva, 2010; Shuleshko, 2010; Evseev, Konovalova, 2012; Nefedyev, 2011; Kotov, 2010; Makarova, Petrov, Averina, 2012; Markov, Yagolnitsler, 2006; Novitsky, 2008; Morgunov, Snegirev, 2004; Bunchuk, 2010; Bykovo, 2009; Dreving, 2009; Doroshenko, 2004; Gokhberg, Shadrin, 2013; Doroshenko, 2010; Porter, 1998; Dynkina, Ivanov, 2004).

Issues on the creation, development, and ensuring the effective functioning of regional innovation clusters are studied in the works of Gokhberg L.M., Guseva, M.S., Makarova I. V., Shuleshko A.V., Kazantsev A.K., Feldmann M. P., Barkley O., Henry, M., etc.

Issues of innovative development of the regions are analyzed in the works of Evseev O.S., Konovalov M.E., Nazarov M.G., Kotov V.D., Nefediev A.D., etc.

Research was conducted using general scientific methods, traditional statistical techniques of information processing and decision making, search method based on the analysis of the strategic development schemes of economic systems, risk assessment methods of economic systems, project management methods, and methods of comprehensive economic analysis of business processes.

## RESULTS AND DISCUSSION

Encouraging the emergence of new scientific and technical trends and their commercial applications, as well as supporting indirectly the education sector, university science and venture businesses in the region, cluster's approach is the basis for the creation of new forms of knowledge integration.

Regional innovation cluster is an association within the same territory of interrelated companies and organizations operating in a certain area, having a functional dependency and complementing each other (Guseva, 2010).

The structural diagram of the regional innovation cluster is shown in Fig. 1

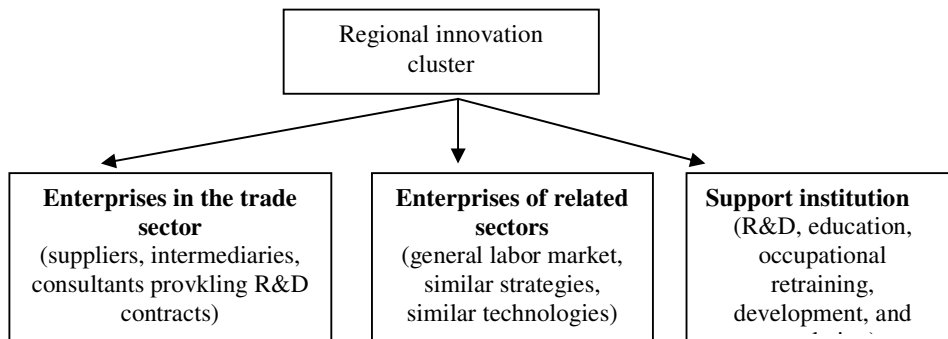


Fig. 1.

Structural diagram of the regional innovation cluster

The advantages of creating regional innovation clusters in Russia include the following:

- integration of the participants' resource potential (informational, scientific, industrial, human, financial, and other resources);
- providing a rapid increase of the economy innovative component;
- improving the economy competitiveness of the country and its regions;

- ability to lobby the interests of cluster members in the government authorities bodies;
- consolidation of capitals, organizational and managerial capabilities;

Cluster is one of the modern types of organizational structures. Innovation clusters are characterized by:

- reduction in the centralization of management and number of hierarchy levels;
- the growing importance of horizontal ties between its participants;
- the increase of resources mobility;
- widespread subcontracting relations;
- ensuring synergetic effect in their activities.

Regional innovation cluster as a cross-sectoral innovative system provides the following:

- 1) comprehensive development of innovation activities within a compact area by the generation and commercialization of innovative cycles based on the integration of knowledge, innovation and investment to create high-tech and science-intensive competitive products;
- 2) the equalization of the industry-specific and local profitability of the territory;
- 3) the elimination of the social reproduction imbalances;
- 4) the achievement of necessary transformation and dynamic sustainability.

Regional innovation clusters allow to attract a large capital investment and highly qualified personnel to the territory.

In the course of expanding inter-industry linkages, the cluster attracts the resources that are inefficiently used in other industries. The advantage of inter-sectoral diversification is the effect of coverage, arising from the existence of the factor of production, which can be used simultaneously for the manufacturing of several types of products (Nefedyev, 2011). Innovative structure of intersect oral cluster is characterized by multifunctional nature. Under these conditions, the effect of coverage allows:

- 1) cluster enterprises to reduce the total R&D cost of innovations by increasing the effect of the industrial structure to perform all the functions;
- 2) regions to maintain their advantage over others.

Cross-sectoral innovative regional clusters are multi industrial systems of a new type.

Effective functioning and development of regional innovation clusters on the territory of Russia is contributed by the current cluster policy. Cluster policy is a joint, task-oriented, and formalized action on the part of business, authorities, educational and research institutions, and other members of the cluster focused on the formation of favorable business environment for development of regional innovation clusters and improving the effectiveness of all their elements. Cluster policy is formed under certain efforts of concerned parties. Such efforts are called cluster initiatives. Cluster initiatives represent both individual and collaborative organized efforts of the cluster firms, governmental, educational and research organizations, aimed at increasing the growth and competitiveness of a specific cluster in a certain area.

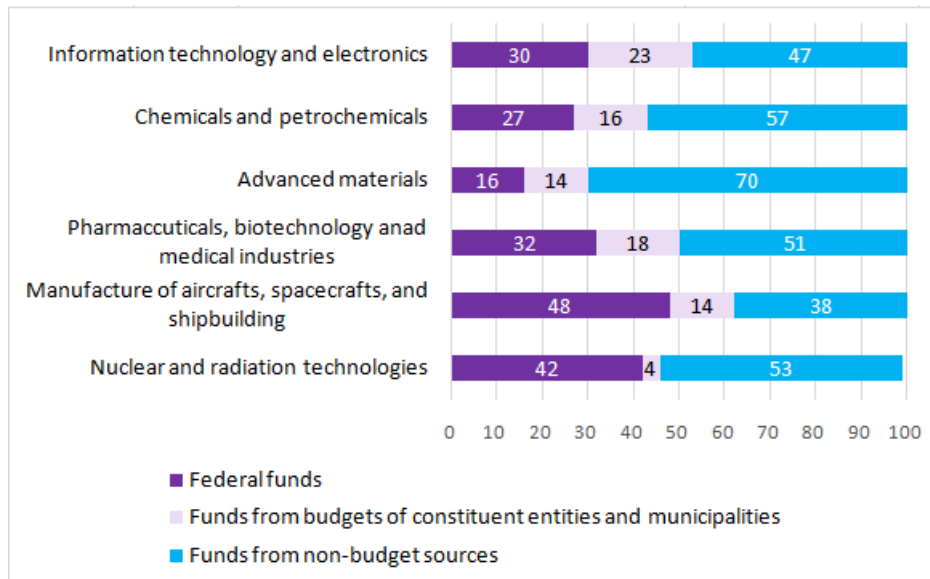
Please consider some of the existing cluster initiatives at the regional level of the Russian Federation. For example, in 2012, the Ministry of Economic Development of the Russian Federation was receiving proposals on the inclusion of development programs of innovative regional clusters into the list of pilot development programs of innovative regional clusters approved by the Russian Federation Government. There were 94 applications in total. The Government commission on high technologies and innovations selected the development programs of 25 clusters for their inclusion into the draft list of pilot programs of innovative regional clusters development.

The development programs of pilot innovative regional clusters submitted for competition provide for implementation of measures in several areas:

- scientific research and development, including cooperation in scientific-technical sphere;

- improving the training and advanced training system of scientific, technical design, and managerial personnel;
- enhancement of production capacity and production cooperation;
- modernization of cluster infrastructure;
- organizational development of the cluster.

The total funding of the projects laid down in development programs of 25 innovative regional clusters in 2012-2017 will amount to around 1.5 trillion rubles. At that, 33% of the total sum will be allocated from the Federal budget, about 14% will be provided by regional and local budgets, while 53% of the total funding, as expected, will be allocated from extra-budgetary sources (Gokhberg, Shadrin, 2013). Maximum proportion of extra-budgetary funding is expected in the development programs of the clusters involved in "Advanced materials" (70%), while the smallest proportion - in the segment of "Manufacture of aircrafts, spacecrafts, and shipbuilding" (38%). Block of "Information technologies and electronics" distinguishes itself by the greatest expected contribution of the budgets of the Russian Federation constituent entities and municipalities (23%), while the segment "Nuclear and radiation technologies" is characterized by the smallest proportion of local funding (4%) (Fig.2).



**Fig. 2: The financial structure of the development programs by sources and industry-specific areas of pilot innovative regional clusters**

In accordance with the industry specifics, regional innovation clusters in Russia are structured in six industry-specific areas: "Manufacture of aircrafts, spacecrafts, and shipbuilding"; "Information technologies and electronics"; "Nuclear and radiation technologies"; "Pharmaceutical, biotechnology and medical industries"; "Advanced materials", and "Chemicals and petrochemicals" (Table 1).

The areas of "Information technology and electronics" and "Pharmaceuticals, biotechnology and medical industries" involve the maximum number of regional innovation clusters. By integration of several clusters, similar in their specialization and regional location, some incorporated clusters acquired combined interdisciplinary nature.

Regional innovation clusters are mostly concentrated in the European part of the country, while 7 of the 25 clusters are located in the Asian part of Russia (Gokhberg, Shadrin, 2013). The vast majority of regional innovation clusters are located in the regions traditionally characterized by high level of innovative activity, such as the Volga Federal District (9 clusters), the Central Federal District (6 clusters), and the Siberian Federal District (5 clusters).

**Table 1: The distribution of regional innovation clusters over industry-specific areas**

No	Industry-specific area	Cluster
1.	Manufacture of aircrafts, spacecrafts, and shipbuilding	Aerospace cluster (Samara Region), "Technopolis", "NovyiZvexdnyi" (Perm Territory), Aircraft Engineering and Shipbuilding cluster (Khabarovsk Territory), "Ulyanovsk-Avia" (Ulyanovsk Region), Shipbuilding cluster (Arkhangelsk region).
2.	Information technology and electronics	"Zelenograd" (Moscow), RIC "SibAcademSoft" (Novosibirsk Region), "IT and Electronics" (Tomsk Region), IT-cluster (St.Petersburg), Radiation Technologies (St.Petersburg), Efficient Lighting (Mordovia), Radio Electronics (St.Petersburg)
3.	Nuclear and radiation technologies	"Dubna" (Moscow Region), Innovation of Sarov (Nizhny Novgorod Region), ZATOZheleznogorsk (Krasnoyarsk Territory), Nuclear cluster (Ulyanovsk Region).
4.	Pharmaceuticals, biotechnology and medical industries	Pharmaceutical and Medical Industry (St.Petersburg), Pharmaceuticals and Medical Engineering (Tomsk Region), Biopharmaceutical cluster (Novosibirsk Region), Pharmaceuticals, Biotechnologies and Biomedicine (Kaluga Region), Biotechnology cluster (Moscow Region), Biopharmaceutical cluster (Altai Territory)
5.	Chemicals and petrochemicals	Automotive Industry and Petrochemicals (Nizhny Novgorod Region), "Kamskiy" cluster (Tatarstan), Petrochemical cluster (Bashkortostan), Integrated Processing of Coal (Kemerovo Region)
6.	Advanced materials	Phystech XXI" (Moscow Region), Troitsk (Moscow), Titanium cluster (Sverdlovsk Region)

The availability of powerful production capacity is one of the decisive factors determining the competitiveness of regional innovation clusters and their development prospects. The financial stability of cluster participants is determined by their ability to attract resources for the implementation of large-scale research, infrastructure and commercial projects.

The volume of total revenues from sales of non-resource products in the domestic and foreign markets is accepted as a key indicator for assessing the productive capacity of regional innovation cluster. The aggregate value of this indicator with regard to operating clusters ranges from 2 to 4 trillion rubles annually. Most of the companies involved in innovation clusters, are increasing significantly their total sales. The dynamics of industrial production on the territory of innovation clusters may exceed the similar indicator for a whole country by more than 1.8 times.

Scientific and technological potential of clusters is largely determined by R&D expenditures of cluster member companies. Regional innovation clusters of Russia are characterized by high level of this indicator. For example, according to information provided by 25 clusters, total R&D expenditure for five years, amounted to 1.1 trillion rubles (about 222 bln rubles per year). The R&D expenditures of the cluster member companies for a specified period amounted approximately to 43% of the relevant total expenditures in the country.



We can distinguish several types of regional innovation clusters depending on the level of their intercompany affairs at various stages of development (Guseva, 2010). Distinguishing the specific structure of clusters, based on the degree of their development, will allow specifying the role of the specific region when analyzing the results of cluster policy and cluster initiatives.

According to the degree of development, regional innovation clusters can be classified as follows:

- latent clusters (powerful unifying centers with yet not established system of communication links);
- potential clusters (divisions of various enterprises effectively and intensively developing production technology);
- sustainable clusters (sustainably developing enterprises, reaching maximum production capacity through the use of the benefits from the merger of enterprises);
- strong clusters (enterprises having sustainable competitive advantages, covering the most important stages of the production cycle and cooperating with each other).

The regional innovation clusters of Russia are characterized by the transition from the latent clusters to potential and sustainable ones. Implementation of effective cluster policy in Russia will contribute to the formation of a strong regional innovation clusters.

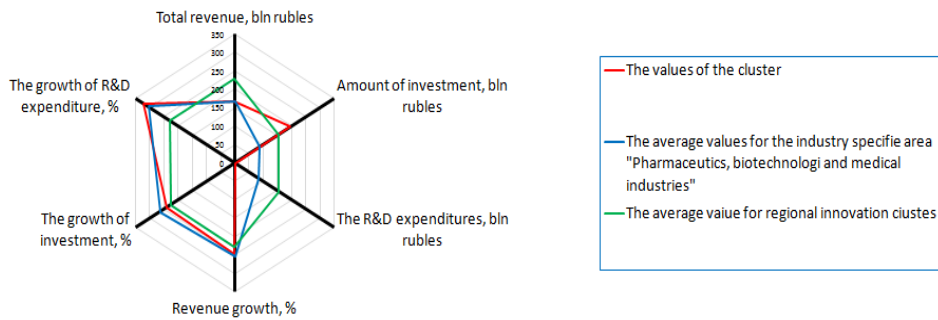
For illustrative purposes, consider a few efficient regional innovation clusters.

Medical, pharmaceutical industry and radiation technology cluster (which became part of the pilot innovation clusters), has been created in St. Petersburg. The residents of this cluster are domestic and foreign companies. Resident companies of St. Petersburg cluster initiated investment projects on creation of laboratory facilities, research centers and pharmaceutical productions (Kazantsev, 2012) with a total investment of more than 29.0bln rubles.

The main areas of implemented technologies and the range of products manufactured (Gokhberg, Shadrin, 2013) by St.Petersburg cluster include the following:

- pharmaceutical products, diagnostic equipment, laboratory equipment, surgical facilities, medical devices, and medical applications;
- environmental equipment;
- software technologies (software and data bases medical institutions);
- nuclear medicine: radiopharmaceuticals and isotope sources;
- radiopharmaceuticals production equipment, diagnostic medical equipment, and therapeutic medical equipment;
- radiation monitoring systems;
- radiation technology for environmental security.

The following scientific and educational organizations are involved in St.Petersburg cluster (Gokhberg, Shadrin, 2013): Saint-Petersburg State Chemical Pharmaceutical Academy, Saint-Petersburg State Medical University; Saint-Petersburg State Polytechnic University; North-Western Medical University, Saint-Petersburg State Institute of Technology, Krylov State Research Center, Saint-Petersburg Nuclear Physics Institute, RDE "Kurchatov Institute", "Rosatom" Corporation, Russian Scientific Center of Radiology and Surgical Technologies, etc. Some of the sustainable development indicators of St. Petersburg cluster in the area of "Medical and pharmaceutical industry" are shown in Fig. 3.



**Fig. 3: The basic development indicators of Saint-Petersburg regional innovation cluster of medical, pharmaceutical industry and radiation technologies**

A powerful innovation cluster in Nizhny Novgorod is another good example of an efficient regional innovation cluster (Shuleshko, 2010). It consists basically of small innovative enterprises. Spinoff companies are formed mainly an research and development establishment, while continuous flow of start-ups is provided due to the implementation in the Nizhny Novgorod Region of the program supported by the Fund for the Promotion of the Development of the Sphere of Science and Technology. The core of the cluster consists of large industrial enterprises engaged in innovation activities. The innovation chain of the cluster includes 7 scientific institutes of the Russian Academy of Sciences, 32 R&D establishments, 36 design and technological organizations, 12 design offices, and 16 higher education institutions. In the region, there are a number of business associations, and a well-developed supporting infrastructure ("Nizhny Novgorod Innovation Business Incubator", private technoparks, information technology centers, technology transfer centers, and organizations providing specialized consulting services, etc.). The innovation cluster has a multi-channel financing carried out at the expense of the state, enterprises of business angels and their associations, venture capital fund, and informal investors.

The formation and development of regional innovation clusters is an effective mechanism of attracting direct foreign investment into regions and activating external-economic integration. The integration of domestic clusters into the global chain allows raising significantly the level of national technological base, and increasing the pace and quality of economic growth by improving the international competitiveness of cluster enterprises. This can be achieved through: acquisition and implementation of critical technologies and the advanced equipment by the cluster companies; gaining access to modern management practices and expertise, and obtaining effective opportunities to enter highly competitive international markets.

## Conclusion

Regional innovation clusters serve as the basis of the innovative products and technologies output only in case if cluster elements effectively interact with each other, while resources are allocated in a rational way. The availability of a specialized organizational support and the appropriate cluster infrastructure, the scale of budget spending on science and innovation, the elaboration of regional normative and legal framework in the field of cluster determine the quality level of the regional innovation policy.

Clusters represent developing systems. Therefore, the problems of their monitoring and performance evaluation are of primary concern, since they are quite important for laying the information basis for subsequent adjustments of the list of participants to receive state support, as well as the extent and directions of such support.

In our opinion, promising areas for further research include the monitoring of key performance indicators of regional innovation clusters, as well as challenges for the improvement of innovation clusters support and development programs.

## References

- Bunchuk, M. (2010). *National innovative systems: basic concepts and applications*. Moscow.
- Bykovo, A.A. (2009). Problem of forming of innovative clusters. *Innovations*, 8(30): 39-45.
- Doroshenko, S.V. (2004). Mechanisms of adaptation of regional socioeconomic system: theoretical aspect. *Messenger URFA. Series: Economy and management*, 4: 88-95.
- Doroshenko, S.V. (2010). Strategic adaptation as imperative of innovative development of regional social and economic system. *Region economy*, 3: 69-77.
- Dreving, S.R. (2009). Cluster concept of sustainable development of economy. Saint-Peterburg: SpbSU.
- Dynkina, A.A., Ivanov, N.I. (2004). *Innovative economy*. Moscow: Science.
- Evseev, O.S., Konovalova, M.E. (2012). Development of innovative infrastructure in the conditions of upgrade of national economy. *Basic Researches*, 9: 220-224.
- Gokhberg, L.M., Shadrin, A.E. (2013). *Pilot innovative territorial clusters in the Russian Federation*. Moscow: National research university "The higher school economies".
- Grodskaya, G.N. (2008). Algorithm of integrated assessment of innovative development at themesolevel. *Bulletin of Samara State Economic University*, 12(50).
- Guseva, M.S. (2010). *Innovative territorial clusters as catalyst of regional development*. Samara.
- Guseva, M.S. (2012). A zone of the advancing economic development as the instrument of spatial cauterization of economy. *Bulletin of Samara State Economic University*, 10(96): 60-64.
- Kazantsev, A.K. (2012). *Innovative clusters in regional strategy*. Moscow.
- Kotov, D.V. (2010). *Problem of management of innovative development of economy: state, region, cluster. Oil and gas case*. Moscow.
- Makarova, I.V., Petrov, A.P., Averina, L.M. (2012). *Theory and practice of forming of cluster policy of the region*. Yekaterinburg: Institute of economy RAS.
- Markov, L.S., Yagolnitsa, M.A. (2006). *Clusters: formalization of interrelations in unformalized production structures*. Novosibirsk: IEOPP of the Siberian Branch of the Russian Academy of Science.
- Morgunov, E.V., Snegirev, G.V. (2004). National (state) innovative system: essence and content. *Property and market*, 7: 10-21.
- Nefedev, A.D. (2011). Innovative infrastructure. *Creative Economy*, 10(58): 42-48.
- Novitsky, M.N. (2008). *Development of innovative and investment clusters in processing industry of Russia*. PhD thesis. Moscow: Institute of economy of RAS.
- Porter, M. (1998). *The Competitive Advantage of Nations*. US, Free Press.
- Shuleshko, A.V. (2010). Urgent problems of development of regional innovative clusters. *Bulletin of BELSU. Series: History. Political science. Economy. Informatics*, 14(1(1)).

## When Secondary Cost Becomes an Element of the Primary Cost - Perception of the Importance of Service Purchase Costs

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### Abstract

Cost reflects what is given up to acquire a service, both monetary and non-monetary sacrifices. Costs issue is relevant due to the essence of customer perceived value that is the concept of give and take aspects. The main aim of the study was to investigate what is the perception of costs in service buying process in the multichannel sales context. Based on the literature 12 cost components were taken into analysis.

The study was conducted in 2015 on a group of 1103 respondents, the research sample was determined by quota-random method, quotas due to age and gender and the nature of the place of residence. CAPI (*computer assisted personal interview*) method was used with a standardized questionnaire. Based on the factor analysis that refers perceived importance for customers each of 12 identified costs throughout the entire process of service purchasing, three components essential to consumer at the service purchase stage were identified. Identification two of these factors were not surprising – effort and emotions are distinguished in the literature as a separate components of marketing channel using costs. However components referring to perceived time and the service price were located in the same cost factor (the third cost components). Perceived service price and perceived waiting time as equally important play an equivalent role in marketing channel selection. In author's opinion this research result creates a new challenge for service providers. Furthermore, it is of great importance for service companies that operate in a multichannel environment.

**Keywords:** cost perception, perceived time, emotions, effort, marketing channel, service buying process

### Introduction

People often make spending decisions (Saini and Monga, 2008). No matter on which phase of service buying process (search for information, purchase, after-sale service, resignation) consumers are obliged to spend some resources – their time, emotions, money or some mixture of these. As is stated in literature, cost reflects what is given up to acquire a service, both monetary and non-monetary sacrifices (Cronin et al., 2000). Costs issue is relevant due to the essence of customer perceived value that is the concept of give (e.g. payment, effort) and take (e.g. quality) aspects (Carlson et al., 2015). Fernández-Sabiote and Román (2012) claim that multichannel customers place special emphasis on price when assessing perceived value. In their research model, cost had a stronger impact on perceived service value than service quality (in both offline and online channel). For this reason, in multi- or even omnichannel environment it is worth taking closer look at a typical classification of purchase costs. Konus, Neslin, and Verhoef (2014) and Verhoef, Neslin, and Vroomen (2007) pay attention to such shopping costs as risk, emotion, adjustment, effort. The main question that author dares to ask is whether each of these costs is treated by buyers separately? Due to characteristics and competitive advantage of online (price) and offline (time) marketing channel author's biggest curiosity refers to potential link between price and waiting time.

Some prior research note that time should be treated in a similar manner than money – as just another scarce resource that people spend in order to achieve a certain goal. By analogy to money Becker (1965) used such terms as “time budgets” and “expenditure of time”. However Saini and Monga (2008, 2009) claim that time and money are often treated differently by consumers. These authors

pay attention to the nature of spent resource in spending decision. Time and money are seen as economically equivalent but are psychologically different (Saini and Monga, 2008). To some extent author's findings seem to be consistent with the prior research according to which perceived waiting time and perceived price as one important cost component. Author's idea was that waiting time and money (price) are the two components of "new currency" (time + money). Unlike Monga and Saini's (2009) research where the emphasis was put on search stage, author's findings refer to the entire process of service purchase.

The paper proceeds as follows: the next section discusses the importance and role of perceived price as well as perceived waiting time in the context of service buying process with the emphasis on multichannel sales context. The sections that follow, present research sample and methodology, the research questions and some findings. The article ends with some conclusions, limitations and suggestions for future research.

## **Theoretical Approach and the Research Questions**

### ***Perceived Price Importance***

Price is not seen as the only sacrifice consumers make to obtain product or service (Zeithaml, 1988; Kumar and Reinartz, 2016). There are others types of costs connected with perceived time as well as emotions that directly or indirectly influence customer purchase decisions. In Bender's (1964) concept purchase costs are divided into two groups – primary cost (price) and secondary cost that the total purchase cost consists of. All these costs, both monetary and nonmonetary, excluding the price directly paid for the service, required to effect the purchaser's acquisition of the target service have been labeled secondary purchase costs (Bender, 1964, p. 2). Among these specific types of costs there are both crucial costs and unimportant one for buyer.

However, price is still an important aspect of each buying decision. In the context of switching online behavior price can be considered as risk factor (de Haan et al., 2018). The perceived price component is presumably the most important component of the sacrifice construct and serves as a critical element in the service marketing-mix (Nejad et al., 2009). A growing body of research is dedicated to understand the notion of price fairness perception and its influence on shoppers behavior (see inter alia, Choi and Mattila, 2009; Rondan-Cataluna and Martin-Ruiz, 2011; Lombart et al., 2016; Xia and Monore, 2010). In the context of multichannel sales price issue is becoming even more vital. As indicated by Vogel and Paul (2015), every multichannel retailer must decide whether and how to apply channel-based price differentiation. Fassnacht and Unterhuber (2016) recommend the price differentiation with higher offline prices as an option for multi-channel retailers to increase profits without destroying consumers' fairness perceptions. Cuellar and Brunamonti (2014) note that retail channel is used as an effective means of price discrimination. Choi and Mattila (2009) observe that one of the most prominent changes in the retail environment is the multiplication of channels through which consumers can seek information about and purchase goods and services. According to some researchers, price transparency leads to higher consumer price sensitivity and lower prices, to the benefit of consumers, however others note that it can increase prices (Zhang and Jiang, 2014). It is argued that one of the most popular reasons for online shopping is the possibility to efficiently compare offers (Drechsler and Natter, 2011). One of the expectations for the internet channel was substantial reduction in price dispersion due to reduced search costs and cost transparency (Kamakura and Moon, 2009). Price dispersion refers to the distribution of prices of an item with the same measured characteristics across sellers of the item at a given point in time. It is important from the perspectives of consumers, sellers, and the market as a whole (Pan et al., 2004). In today online environment one of the goal is to create positive perceptions of retail prices among online customers (Yun Kyung, 2014). The reason for special attention devoted to price is also its influence on consumers' pre-purchase perception of quality (Grewal et al., 2000).

In multichannel environment price can also play an important role of incentive to migrate customers from offline channel to online channel. According to Trampe et al. (2014), incentive-based strategies can be regarded as reinforced strategies and they are likely to have a different impact on customers

than forced or voluntary e-channel migration strategies. However, as is indicated by these authors, an important aspect is level of particular client's loyalty towards service provider. Neslin et al. (2006) note that marketing channels proliferation has created a challenge for firms to manage this environment effectively. One of the big concern for multichannel service suppliers refers to right-channeling. As it stated in Blattberg et al. (2008, p. 667), right-channeling means making sure that the right customers utilize the right channels. In order to achieve that goal service provider can use a variety of incentives. In the context of key issues in multichannel customer management Neslin and Shankar (2009, p.75) ask question: should customers be "right channeled?" If so, how? Comparing multichanneling and omnichanneling it is absolutely clear that the key characteristic of the latter is channels integration with goal of creating the an overall retail customer experience (Verhoef et al., 2015). In other words omnichanneling service providers are aiming at enhancing the consumer multi-channel experience (Saghiri et al., 2017). In such a marketing channels system the role of price has changed dramatically. When marketing channels are independent elements in distribution system price can play an important role as a source of competitive advantage – usually online channel that generates lower operating cost can offer to customers more attractive prices. Due to increase in-channel and cross-channel competition retail appropriate pricing tactics are needful (Gelbrich, 2011). When service provider operates multiple distribution channels with its varying degrees of functionality and perceived value an opportunity to apply differential prices in these different contexts is visible (Wolk and Ebling, 2010).

### ***Perceived Time Importance***

From a customer's viewpoint, money is the primary object sacrificed in return for a product (Lin et al., 2015). However, Teller et al. (2012) note that logistics-related time spent by consumers has a significant positive influence on store-based shopping costs. According to Graham (1981), understanding consumers' perceptions of time is basic to understanding their behavior. However, the author warns against the trap of assuming that just because some consumers define a specific time perception for a particular product, they will exhibit the same time perception for a different product. For instance, Lin et al.'s, (2015) results indicate that perceived time value increased as time pressure increased in the form of post-experiment appointments. In the same research, these authors find that perceived values of time during transactions were conditioned by expectations of how long it would take to complete them. What is more, time perception can be influenced by the perceived convenience of store-based shopping – that is, customers associate waiting time with shopping costs. Other significant sacrifices include explicit and implicit time spent searching, trying different options, and waiting during transactions (Ingene, 1984).

The same as Okada and Hoch (2004), it is author's belief that time is another form of currency. For this reason author assumes that during service purchase stage perceived waiting time and price of service can shape one common form of cost and it is the temporal-monetary cost. In academics, there is no consensus among researchers in treatment by consumers time and money in the same fashion (Duxbury et al., 2005; Leclerc, Schmitt and Dube, 1999; Monga and Saini, 2009). According to Okada and Hoch (2004), there are differences between time and money due to the form of opportunity cost – in relation to money this cost easy to assess, whereas the opportunity cost of time is more ambiguous. Opportunity costs are the costs of foregone gains, missed income or missed opportunities (Verhallen and van Raaij, 1986), refer to the concept of the next best use for a resource. Okada and Hoch (2004, p. 322) provide quite reasonable explanation of treatment time as a resource – if time were not a resource, the concept of being busy would not exist. Lin et al. (2015) pay attention to one vital characteristic of time – individuals tend to view time as less substituent as money.

Based on literature the following research questions are proposed:

RQ1: Are individual cost components of service purchase perceived by consumers separately?

RQ2: What are the results from that cost identification made by service buyers?

## Methodology and Research Results

### Research Methodology

The study was conducted in September-November 2015 on a group of 1103 respondents (Polish consumers) including 357 from a Baby boomers generation, 390 from the X generation and 356 from the Y generation. The research sample was determined by quota-random method, quotas due to age and gender and the nature of the place of residence (city provincial, city other than provincial, village) – the structure of sample was preserved at the regional level. CAPI (computer assisted personal interview) method was used with a standardized questionnaire.

Based on the literature 12 cost components were taken into analysis (see table 1).

### Analysis and Results

In order to find the answers to research questions, factor analysis was used (see Table 1). It refers perceived importance for customers each of 12 identified costs throughout the entire process of service purchasing. Based on the factor analysis, three components essential to consumer at the service purchase stage were identified. Identification two of these factors is not surprising, effort and emotions are distinguished in the literature as a separate components of marketing channel using costs (Konus, Neslin, and Verhoef, 2014; Verhoef, Neslin, and Vroomen, 2007). It is worth mentioning that time issue and the service price are located in the same cost factor. It author opinion it means that, in service buying process, time issue and service price are considered jointly by consumer. These costs create another wider cost component.

**Table 1: Rotated factor analysis**

	Factors		
	1	2	3
The waiting time for customer service in a given channel	.861		
The waiting time for feedback in a given channel	.846		
The waiting time for service activation	.845		
Concerns about the safety of the services purchase transaction <sup>1</sup>	.837		
Price of the service in a given channel	.831		
The duration of the explaining problems procedure	.826		
Waste of time because of the need to contact about the same issue due to the lack of any solution in the channel during the first contact	.726		
Emotions related to the necessity of contact with other consumers or the lack of such a contact		.889	
Emotions related to the necessity of contact with the staff (personal/voice/lack of contact)		.864	
Concerns about the opinions of other people about the purchases of services in a given channel <sup>2</sup>		.805	
The effort to change the agreement terms using a particular channel			.764
The effort to move to offline store/make a phone call/Internet connection			.734

Note: <sup>1</sup> In author's opinion concerns about the transaction can have a purely financial dimension (fear of losing money paid for the service)

<sup>2</sup> In author's opinion concerns about the opinions of other people about the purchases of services in a given channel cannot have such a strong financial dimension.

Total variance explained: 76%.

Extraction method: Principal Axis Factoring.

Rotation method: Varimax with Kaiser Normalization.

Rotation converged in 5 iterations.

Kaiser-Meyer-Olkin Measure of Sampling adequacy = .928; Barlett's test of Sphericity: Approx. Chi-square 9000.420; df = 66; Sig. = .000.

## **Conclusions and Managerial Implications**

Undoubtedly service price and different aspects of time are very important factors for consumers in cost of marketing channels evaluations. These two cost components form a common factor in exploratory factor analysis, alongside the emotions and efforts of the consumer in the service purchase process. Perceived price and perceived waiting time as equally important play an equivalent role in marketing channel selection. Both elements of cost perception indicate that the higher service price is justified by low time costs and the low price is associated with the high perceived cost of various aspects of time. In author's opinion this research result creates a new challenge for service providers. Furthermore, it is of great importance for service companies that operate in a multichannel environment.

An online channel generates cost advantages for both the service provider (lower operating cost) and the buyer (lower perceived price). So there is nothing to prevent this channel from being used even more intensively at the purchase stage. All the more if it was identified how important for consumers is perceived time and price. Online channel typically provides lower prices for services, but greater attention should be paid to the issue of perceived time in this marketing channel. Author formulates the following managerial suggestion – the greater focus should be put on managing the perceived time and consumer safety in each marketing channel. It seems that times of pure price advantage of online channel has ended. Nowadays consumers tend to be more focused not only on price aspects but also on time aspects. Such a finding is consistent with the actual consumer behaviour trend. Nevertheless it is quite obvious that the total elimination of waiting time during the entire service buying process is impossible. Therefore service suppliers should put an emphasis on their customer's perception of time. The time perceptible and experienced by consumers is of great importance, not the objectively estimated time that passes by.

Concluding from the results of the study, service price along with perceived time should stand a key issue for service supplier. Taking into account the new "currency" (perceived time + money), no marketing channel has a clear advantage over another. Service provider should not encourage customers to use time saving argument at the expense of their money – it will not work. Usually short time of task fulfillment is achieved at the cost of a higher price (offline channel) or vice versa (remote channels). If so, there is a clear challenge for service provider, that is the need for click and brick experience for customer without separation each of marketing channels. That is the great essence of omnichanneling (Verhoef et al., 2015; Saghiri et al., 2017; Berman and Thelen, 2018). It seems that an important goal for service providers is to be perceived by their clients as a whole (as one company offering multiple marketing channels) and not separately through the prism of each shared channel / touch points. Seamless integration of online as well as offline touchpoints is seen as the most common challenge for multichannel companies (Simon et al., 2016). There is no doubt that it would also require a change in the research approach to consumer behavior in a multi-channel environment.

## **Limitations and Suggestions for Future Research**

Although the results of this study have useful implications, some limitations must be considered. First, the analysis method, to confirm the obtained results a different research approach should be used. The second limitations refers to the cost components – way of defining each of cost element as well as the number of these costs. In this study some aspects of the cost were not reflected. For instance adjustment costs – an effort in thinking and adapting to new marketing channel (Konus, Neslin, and Verhoef, 2014).



Author believes that these limitations also suggest directions for further research.

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## References

- Becker, Gary S. (1965). A Theory of the Allocation of Time. *Economic Journal*, Vol.75 (299), 493–517.
- Bender, W. C (1964). Consumer Purchase-Costs--Do Retailers Recognize Them?. *Journal of Retailing*, Vol. 40, No. 1, 1-9.
- Berman, B. and Thelen, S. (2018) Planning and implementing an effective omnichannel marketing program, *International Journal of Retail and Distribution Management*, Vol. 46, No. 7, 598-614.
- Blattberg, R.C., Kim, B.-D. and Neslin, S.A. (2008) Database marketing: analyzing and managing customers, Springer, New York.
- Carlson J., O’Cass A., Ahrholdt D., 2015, Assessing customers’ perceived value of the online channel of multichannel retailers: A two country examination, *Journal of Retailing and Consumer Services*, Vol. 27, 90-102
- Choi, S. and Mattila, A.S. (2009). Perceived fairness of price differences across channels: the moderating role of price frame and norm perceptions. *Journal of Marketing Theory and Practice*, Vol. 17, No. 1, 37–47.
- Cronin, J. J., Brady, M. K., and Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing*, Vol. 76, No. 2, 193–218.
- Cuellar, S.S. and Brunamonti, M. (2014). Retail channel price discrimination. *Journal of Retailing and Consumer Services*, Vol. 21, 339–346.
- Drechsler, W. and Natter, M. (2011). Do Price Charts Provided by Online Shopbots Influence Price Expectations and Purchase Timing Decisions? *Journal of Interactive Marketing*, Vol. 25, 95–109.
- Duxbury, D., Keasey, K., Zhang, H., and Chow, S.L. (2005). Mental accounting and decision making: Evidence under reverse conditions where money is spent for time saved, *Journal of Economic Psychology*, 26(4), 567-580.
- Fassnacht, M. and Unterhuber, S. (2016). Consumer response to online/offline price differentiation. *Journal of Retailing and Consumer Services*, 28, 137–148.
- Fernández-Sabiote, E. and Román, S. (2012). Adding clicks to bricks: A study of the consequences on customer loyalty in a service context. *Electronic Commerce Research and Applications*, Vol. 11 36–48.
- Gelbrich, K. (2011). I Have Paid Less Than You! The Emotional and Behavioral Consequences of Advantaged Price Inequality. *Journal of Retailing*, Vol. 87, No. 2, 207–224.
- Graham, R.J. (1981). The Role of Perception of Time in Consumer Research. *Journal Of Consumer Research*, Vol. 7, 335-342.
- Grewal, D., Gotlieb, J. and Marmorstein, H. (2000). The Moderating Effect of the Service Context on the Relationship Between Price and Post-Consumption Perceptions of Service Quality. *Journal of Business and Psychology*, Vol. 14, No. 4, 579-591.
- de Haan, E., Kannan, P.K., Verhoef, P.C. and Wiesel, T. (2018). Device Switching in Online Purchasing: Examining the Strategic Contingencies. *Journal of Marketing*, Vol. 82, 1–19.
- Ingene, C.A. (1984). Productivity and functional shifting in spatial retailing: private and social perspectives. *Journal of Retailing and Consumer Services*, Vol. 60, No. 3, 15–26.
- Kamakura, A.A. and Moon, S. (2009). Quality-adjusted price comparison of non-homogeneous products across Internet retailers. *International Journal of Research in Marketing*, Vol. 26, 189–196.
- Konus, U., Neslin, S. A. and Verhoef, P. C. (2014). The effect of search channel elimination on purchase incidence, order size and channel choice. *International Journal of Research in Marketing*, 31(1), 49–64.
- Kumar, V. and Reinartz, W. (2016). Creating Enduring Customer Value. *Journal of Marketing*, Vol. 80, 36–68.
- Leclerc, F., Schmitt, B.H. and Dube, L. (1999). Waiting Time and Decision Making: Is Time like Money?, *Journal of Consumer Research*, 22(1), 110-119.

- Lin, Y.-T., Xia, K.-N. and Bei, L.-T. (2015). Customer's perceived value of waiting time for service events. *Journal of Consumer Behaviour*, Vol. 14, 28–40.
- Lombart C., Louis D., Labbé-Pinlon B. (2016), Price image consequences. *Journal of Retailing and Consumer Services*, Vol. 28, 107-116.
- Monga A., Saini R. (2009), Currency of Search: How Spending Time on Search is Not the Same as Spending Money, *Journal of Retailing*, Vol. 85, No. 3, 245–257.
- Nejad, M.G., Evans Jr., R.D., and Babakus, E. (2009). Alternative Measures of Price Perceptions: Implications for Service Evaluation Models. *Services Marketing Quarterly*, Vol. 30, 397–417.
- Neslin, S.A., Greval, D., Langhorn, R., Shankar, V., Teerling, M.L., Thomas, J.S. and Verhoef, P.C. (2006) 'Challenges and opportunities in multichannel customer management', *Journal of Service Research*, Vol. 9 No 2, 95-112.
- Neslin, S.A. and Shankar, V. (2009) 'Key Issues in Multichannel Customer Management: Current Knowledge and Future Directions', *Journal of Interactive Marketing*, Vol. 23, pp.70-81.
- Okada, E.M. and Hoch, S.J. (2004), "Spending Time Versus Spending Money," *Journal of Consumer Research*, 31, 313–23.
- Pan, X., Ratchford, B.T. and Venkatesh S. (2004). Price dispersion on the internet: a review and directions for future research. *Journal of Interactive Marketing*, Vol. 18, No. 4, 116-135.
- Rondan-Cataluna, F.J. and Martin-Ruiz, D. (2011). Moderating effects in consumers' perceptions of price unfairness. *Journal of Consumer Behaviour*, Vol. 10, 245–254.
- Saini, R. and Monga, A. (2008). How I Decide Depends on What I Spend: Use of Heuristics is Greater for Time than for Money, *Journal of Consumer Research*, Vol. 34, No. 6, 914–22.
- Saghiri, S., Wilding, R., Mena, C. and Bourlakis, M. (2017). Toward a three-dimensional framework for omni-channel. *Journal of Business Research*, Vol. 77, pp. 53–67.
- Simon, M., van den Driest, F., Wilms, T. (2016). Driving Customer-Centric Growth: A Practical Roadmap The Pivotal Role of Insights and Analytics In the Customer-Centric Organization. *Journal of Advertising Research*, Vol. 56, No. 2, pp. 159-168.
- Teller, C., Kotzab, H. and Grant, D.B. (2012). The relevance of shopper logistics for consumers of store-based retail formats. *Journal of Retailing and Consumer Services*, Vol. 19, No. 1, 59–66.
- Trampe, D., Konuş, U. and Verhoef, P.C. (2014), 'Customer Responses to Channel Migration Strategies Toward the E-channel', *Journal of Interactive Marketing*, Vol. 28, 257–270.
- Verhallen, T. M. M., and van Raaij, W. F. (1986). How consumers trade off behavioural costs and benefits. *European Journal of Marketing*, 20(3/4), 19-34.
- Verhoef, P. C., Neslin, S. A. and Vroomen, B. (2007). Multi-channel customer management: Understanding the research shopper phenomenon, *International Journal of Research in Marketing*, 24( 2), 129-148.
- Verhoef, P.C., Kannan, P.K., and Inman, J.J. (2015). From multi-channel retailing to omnichannel retailing: Introduction to the special issue on multi-channel retailing. *Journal of Retailing*, Vol. 91 No. 2, pp.174–181.
- Vogel, J. and Paul, M. (2015). One firm, one product, two prices: Channel-based price differentiation and customer retention. *Journal of Retailing and Consumer Services*, 27, 126–139.
- Wolk, A. and Ebling, C. (2010) 'Multi-channel price differentiation: an empirical investigation of existence and causes', *International Journal of Research in Marketing*, Vol. 27 No. 2, pp.142-150.
- Xia, L. and Monore, K.B. (2010). Is a good deal always fair? Examining the concepts of transaction value and price fairness. *Journal of Economic Psychology*, Vol. 31, 884–894.
- Yun Kyung, Ch. (2014). Service Quality and Price Perceptions by Internet Retail Customers: Linking the Three Stages of Service Interaction. *Journal of Service Research*. Vol. 17, No.4, 432-445.
- Zeithaml, V. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing*, Vol. 52, 2-22.
- Zhang, X. and Jiang, B. (2014). Increasing Price Transparency: Implications of Consumer Price Posting for Consumers' Hagglng Behavior and a Seller's Pricing Strategies. *Journal of Interactive Marketing*, Vol. 28, 68–85.

## Revisiting the Nexus of FDI and DDI: Evidence from Tourism (Hotel and Restaurant) sector in Indonesia

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### Abstract

This study analyzed the influence of FDI (Foreign Direct Investment) and DDI (Domestic Direct Investment) in Hotel and Restaurant in Indonesia. The results of this study indicate a one-way relationship between FDI and DDI. The data used in this study are secondary data obtained from related institutions. That is, data realization Foreign Direct Investment (FDI) and Direct Investment (DI) obtained from the Investment Coordinating Board (BKPM). This is evident from the results of the analysis using VECM that FDI provides a positive short-term and long-term impact on DDI, as well as showing strong influence. However, the DDI variable does not affect the FDI either short or long term. Therefore, the government needs to add strategies to improve FDI in the field of Hotels and Restaurants in Indonesia, especially in areas that have potential in terms of tourism.

**JEL Classification:** F21, F23, E22, Z32

### Introduction

Tourism is a very important part in helping to improve the economy of a State especially in developing countries. Tourism has become one of the most significant export sectors in many developing countries (Samimi, 2011). Where now countries, both developed and developing countries increase promotion in the field of tourism. Which aims to improve the competitiveness of local businesses, open up opportunities for foreign investment and investment from domestic to develop its human resources. The examples of countries that are growing rapidly because the tourism sector obtained from the World Travel and Tourism Council data is Iceland, Japan, Mexico, New Zealand, Qatar, Saudi Arabia, Thailand, and Uganda ( money.cnn.com ). These countries are on average able to increase the growth in the tourism sector above 5 percent to tens of percent per year after running a promotional program of tourism. In this case the Indonesia's tourism sector has contributed about 4% of the total economy in 2017. By 2019, the Government of Indonesia wants to increase this figure to double to 8% of GDP, an enormous target and should be implemented within the next 4 years. (www.indonesia-investments.com)

One of the ways to improve the tourism industry in Indonesia is by improving infrastructure like Qatar, the Qatari government has made investment in infrastructure as a way to continue developing the tourism industry ( [www.wttc.org](http://www.wttc.org) ). Infrastructure becomes the key of any country's tourism industry (www.bkpm.go.id), The lack of a viable infrastructure in Indonesia is a major and sustained problem for the Government in improving the tourism industry, not just making logistics costs increase, making the investment climate less attractive but also reduces the smooth journey and comfort for both domestic and foreign tourists.

Looking back Infrastructure in Bali, Lombok, Yogyakarta, and especially in Jakarta infrastructure is very remarkable, but outside the area most of the infrastructure is still very less feasible, especially in eastern

Indonesia due to lack of airports, ports, roads, restaurants and hotels and facilities other support. The lack of connectivity between regions or between islands makes a large number of areas in Indonesia with good tourism potentials difficult to reach. For that reason the role of government is needed in the development of infrastructure areas that have tourism potential

Infrastructure development cannot be carried out by the government independently, because in building large capital required and it cannot be fully done by the government. The spirit of government in improving the tourism sector in Indonesia has received support from businessmen in Indonesia and foreign. Investors will invest as long as their investment is guaranteed and protected by the government. Therefore, the task of government and society today to work together to make tourist locations in Indonesia become more attractive and liked tourists.

Basically investment is the formation of capital that makes the role of private sector in helping the government run the economy. According to Harrod-Domar (M.Todaro, 2006), in support of economic growth, new investments are needed as capital stocks such as domestic investment (PMDN / DI) and foreign investment (PMA / FDI). For that the Government always increases the capital for the development can be done well.

Of the largest FDI available, most investment is still mostly done for the development of star hotels, which is about 57%. And then followed the investment in consulting, management, restaurants, and water tourism. The biggest investment is in Jakarta as the gateway of Great Jakarta. Then the second Bali, followed by West Java, North Sulawesi, and West Nusa Tenggara. The amount of FDI on

The hotel and restaurant services sector is due to the full commitment that makes tourism into tourism sector a priority sector. ([www.beritasatu.com](http://www.beritasatu.com)). The amount of FDI can be caused because the investor is indeed seeing the potential of tourism areas, especially for the services of hotels and restaurants or already exist DI first develop new foreign investors glance at the area. Or on the contrary, there are already foreign investors who invest in the area that makes domestic investors interested to also invest in the area, because from year to year FDI and DI tend to always rise.

Currently, Indonesia has liberalized the Tourism Sector, especially the Hotel and Restaurant fields by allowing maximum capital ownership of 65%. It is expected as a solution to get capital for Indonesia's development. The consequence of this entry into foreign capital or FDI is the potential to generate competition with domestic investment and vice versa where the entry of FDI may also encourage DI.

This Paper emphasizes the importance of foreign direct investment and domestic direct investment for Tourism in Indonesia using VECM approach. The rest of this paper is organized as follows: Section 2 reviews the Literature and relevant empirical studies. Section 3 describes the data and methodology. The next section presents the empirical results. Finally, the paper concludes.

**Literature:** Analysis of investment in the Tourism sector becomes interesting thing to do considering Tourism become supporting aspect of the economy. The research related to this research is Samimi, Sadeghi & Sadeghi (2011), which discuss about the causality relationship between FDI with the number of foreign tourist arrivals by the method of vector error correction model (VECM) in 20 developing countries with period 1995-2008. In this study confirmed that the arrival of tourists strongly encourages economic growth both in the short and long term. For that the tourism sector proved to play a big role in increase economy. In terms of investment Cok Istri Sinta Regina Trisnur (2014), examines the influence of PMDN and PMA to GRDP in Bali Province with the method of multiple linear regression with the period 1990-2012. In the analysis results PMDN and PMA simultaneously have a significant effect and

partially have a positive and significant impact on GRDP and efficiency level of investment implementation classified as very efficient. Sacred Safitriani (2016) examines the effects of international trade flows and FDI in Indonesia by using time series analysis of VECM. In this study, holy indicates that FDI has a positive long-term impact on exports, while in the short run, FDI has a negative impact on exports. However, in imports, it was found that FDI had a positive impact although not statistically significant. From both research above, Cok Istri (2014) and Suci (2016), said that the investment, both FDI and DDI will bring very good impact for Indonesia which is a developing country.

However, there are several studies that suggest different findings in terms of FDI that are not in line with DDI which always has a positive impact. As in Lee, H., and Dominique (2001) research, the host country may not benefit from FDI if there is still a distortion of economic policy occurring in domestic policy. It is also supported by Naya (1990) indicates that FDI liberalization can reduce economic welfare of the State with a protected economy. This is because protection in the host country will encourage foreign investors to make foreign direct investment decisions that are not optimal. However, a positive influence was shown in Fry's (1993) study that found that FDI inflows contributed significantly to economic growth in developing countries, especially East Asia where there were still domestic distortions, such as trade controls and relatively low financial arrangements. What distinguishes this research is that previous research only looked at the effect of investment with other things such as international trade, economic growth, and see how important the role of tourism sector in a country. And in this research, the researcher want to know that actually the Investment it is whether to influence each other and whether the positive or negative influence, especially in the tourism sector, because interested parties must know which should take precedence whether to increase FDI or DDI in developing the Tourism sector.

### The Empirical Model and Analysis Method

The data used in this study are secondary data obtained from related institutions. That is, data realization Foreign Direct Investment (FDI) and Direct Investment (DI) obtained from the Investment Coordinating Board (BKPM).

### Vector Error Correction Model (VECM)

a) The causal relationship between FDI and DI in tourism sector.

The entry of foreign investment is one form of government to raise capital to build the tourism industry, especially the field of hotels and restaurants in Indonesia. The entry of foreign investment in Indonesia measured in this research is through foreign direct investment (FDI). The entry of FDI will affect other investment in this case that is domestic investment (PMDN) or domestic investment (DI). The relationship between the two variables (FDI and DI) will be tested using the Panel-VECM-Granger model shown in equation (1) and equation (2) as follows.

$$\Delta FDI_{i,t} = \alpha_{1,i} + \varphi_{1,i} ECT_{i,t-1} + \sum_{j=1}^k \gamma_{1,j,i} \Delta FDI_{i,t-j} + \sum_{j=1}^k \theta_{1,j,i} \Delta DI_{i,t-j} + \varepsilon_{1,i,t} \dots\dots\dots(1)$$

$$\Delta DI_{i,t} = \alpha_{2,i} + \varphi_{2,i} ECT_{i,t-1} + \sum_{j=2}^k \gamma_{2,j,i} \Delta FDI_{i,t-j} + \sum_{j=2}^k \theta_{2,j,i} \Delta DI_{i,t-j} + \varepsilon_{2,i,t} \dots\dots\dots(2)$$

Where *i* is the province, *t* (period), and *j* is the optimum lag. As for  $\Delta$  is the difference between operators, ECT is a lagged error-correction term obtained from long-term co-integration relations,  $\varphi_1$  and  $\varphi_2$  are coefficients and  $\varepsilon_{1, i, t}$  and  $\varepsilon_{2, i, t}$ . The stages in this research are stationery test, co-integration test, lag length criteria, Granger causality test with VECM Panel. Non-stationarity testing uses Im, Pesaran and

Shin (IPS) unit root test. The first test is done at the level, if the data have not been stationer it will be continued on the first difference. The test is performed on each variable until the same order is found in both with the assumption that both variables (FDI and DI) are integrated in the same order.

The co-integration test for panel data in this study used the approach proposed by Pedroni (1999). This test aims to determine the need for control over long-run equilibrium relationships between variables in the econometric specification (Samimi, et.al., 2011).

Furthermore, lag testing aimed to measure the optimum lag length used in subsequent tests (Safitriani, 2014). The lag test in this study was measured using Schwarz information criterion (SC) and Hannan-Quinn information criterion. After the testing process, the final test is the Granger Kasalitas test of the VECM Granger Panel Model.

Some stages in this research are stationary testing and then co-integration testing, then lag length criteria testing of Granger causality with VECM Panel. The explanation of each stage of the tests is as follows: (1) Unit Test root data panel, ie Non-stationary testing using I'm, Pesaran and Shin (IPS) unit root test. Because this test uses Eviews 8 program, then hypothesis testing done on the root unit will be done at level and first difference. (2) Co-integration test, ie Cointegration Test for panel data in this study using the approach proposed by Pedroni (1999). This test aims to determine the need for control over long-run equilibrium relationships between variables in the econometric specification (Samimi, et.al., 2011). (3) The Length Criteria Test The purpose of this purpose is to measure the optimum lag length used in subsequent tests (Safitriani, 2014). The lag test in this study was measured using Schwarz information criterion (SC) and Hannan-Quinn information criterion. (4) Causality Test with VECM-Granger Panel, Granger Causality Testing using VECM Granger Panel. This test is conducted to test the relationship of long-term, short-term causality and combination between the two. The short-term causality test uses F-statistics from the Wald Test results on the coefficient  $\Theta_1$  or coefficient  $\gamma_2$ .

## **Empirical Result**

In nominal terms, FDI in Indonesia, especially in Hotel and Restaurant areas always increase from year to year, especially in big cities like DKI Jakarta, Bali and Daerah Istimewa Yogyakarta. In addition, in other areas such as North Sumatra, Riau Islands, West Java, Central Java, East Java, Banten and West Nusa Tenggara, although the increase in FDI is not as high as 3 big cities above.

As with DDI, the investment value in Hotel and Restaurant field in Indonesia is not as big as FDI for this field or other field. The entry of DDI in this field can be said to have occurred only in 2009, although previous years already exist, but only seen graphically (graph 1.1) occurred in 2009 in the major cities of the Special Capital Region of Jakarta, Central Java, West Java, and Bali. For other cities significant increase in investment value occurred in 2012. It is as shown in graph 1.1 below.

Prior to the estimation through VECM must first perform the initial test of stationary test. The output resulting from the test performed as follows:

**Table 1.1: Stasionerity Testing at Level and First Difference**

Variable	Testing Method	Probabilities (Level)	Probabilities (1 <sup>st</sup> Difference)
DDI	Levin, Lin & Chu t*	0.0448	0,0000
	Im, Pesaran and Shin W-stat	0.0001	0.0000
	ADF - Fisher Chi-square	0.0002	0.0000
	PP - Fisher Chi-square	0.0000	0.0000
FDI	Levin, Lin & Chu t*	0.1749	0.0000
	Im, Pesaran and Shin W-stat	0.0004	0.0000
	ADF - Fisher Chi-square	0.0001	0.0000
	PP - Fisher Chi-square	0.0000	0.0000

Source: Analysis Results

Description: Maximum 5 percent significance level.

Based on the stationary test results in Table 1.1, the statistical probability of the FDI variable has been smaller than the 5 percent significance level for some tests, but there is still one test that has a probability greater than 5 percent. This indicates that the FDI variable is not stationary at the level, but stationary at first difference. After passing the stationary test, in VECM testing, it has been determined that both variables have long-term relationships. To test for a long-term relationship, a co-integration test is conducted. Co-integration test results obtained by forming the residual obtained by way of regression independent variable to the dependent variable with the results shown in table 1.2 as follows

**Table 1.2: Co-integration Testing Results with Pedroni**

Mehod	Statistic	Nilai Probabilitas
Panel rho-Statistic	-10.99541	0.0000
Panel PP-Statistic	-9.561090	0.0000
Panel ADF-Statistic	-4.329518	0.0000
Group rho-Statistic	-6.188155	0.0000
Group PP-Statistic	-7.964258	0.0000
Group ADF-Statistic	-5.036133	0.0000

Source: Analysis Results

Description: Maximum 5 percent significance level.

Based on the results of co-integration testing in Table 1.2, it can be seen that the value of statistical probability is lower than 5 percent and 1 percent. This indicates that the FDI and DDI variables have long-term relationships at the 99 percent confidence level. Given the very close co-integration relationship at this 1 percent significance level, both variables can be estimated using VECM.

### VECM Estimates with DDI Tied Variables

The first rarity of the equation is to test the short-term, long-term coefficients of the effect of FDI on DDI in lag 1 as well as the strength of the relationship between FDI and DDI. The results of the coefficient test are presented in Table 1.3 as follows.

**Table 1.3: Short Term, Long Term Granger Causality Relationships, and relationship strengths for DDI bound variables**

Test Statistic	Short term			Long term			causality		
	Value	df	Probability	Value	df	Probability	Value	df	Probability
t-statistic	-3.976798	224	0.0001	-7.021056	224	0.0000			
F-statistic	15.81492	(1, 224)	0.0001	49.29523	(1, 224)	0.0000	24.98945	(2, 224)	0.0000
Chi-square	15.81492	1	0.0001	49.29523	1	0.0000	49.97889	2	0.0000

Source: Analysis results

Description: Maximum 5 percent significance level.

Table 1.3 shows that the short-term, long-term probability, and strength of the relationship with the dependent variable DDI gives results that have been less than 5 percent, for short- and long-term Granger causality indicates that the inclusion of FDI encourages domestic investment in Indonesia. Furthermore, to see the strength of FDI's influence on DDI, a joint test of Long Term Granger Causality and short-term Causality is performed. The relationship of Granger causality to the dependent variable DDI shows that the probability is less than 5 percent. This means that a strong FDI variable affects DDI at a 5 percent level. Thus, the entry of investors in the field of hotel services and foreign restaurants encourages domestic investors to invest in the same field.

### VECM Estimates with FDI Tied Variables

**Table 1.4: Short Term Granger Causality Relationships for FDI bound Variables**

Test Statistic	Short Term			Long Term			variables Bound		
	Value	df	Probability	Value	df	Probability	Value	df	Probability
t-statistic	-1.799794	224	0.0732	1.564445	224	0.1191			
F-statistic	3.239260	(1, 224)	0.0732	2.447488	(1, 224)	0.1191	1.704605	(2 224)	0.1842
Chi-square	3.239260	1	0.0719	2.447488	1	0.1177	3.409210	2	0.1818

Source: Analysis results

Description: Maximum 5 percent significance level.

In Table 1.4 shows that the probability value is greater than 5 percent in the Short Run. This means that the DDI variable does not affect the FDI variable in the short run. Furthermore, long term causality relationships show that the probability value is greater than the 5 percent level of significance. This means that the DDI variable does not affect the FDI variable in the long run. Although in the short or long term DDI variable does not affect the FDI variable. Thus, the inclusion or increase of domestic investors in the field of hotels and restaurants in Indonesia will not encourage foreign investors to invest in the same field.

Short-term and long-term Granger causality indicates that the inclusion of FDI encourages domestic investment in Indonesia. When viewed from the strength of the influence of FDI on DDI, then conducted a joint test between Long Term Granger Causality and Short Term. Shows that strong FDI variable affects DDI at the 5 percent level. Thus, the entry of investors in the field of hotel services and foreign restaurants encourages domestic investors to invest in the same field. But different things are shown from the results for DDI. Although in the short or long term DDI variable does not affect the FDI variable. Which means, the entry or increase of domestic investors in the field of hotels and restaurants in Indonesia will not encourage foreign investors to invest in the same field. But that does not mean the Indonesian government does not increase the DDI for the Tourism sector. Because although it does not have an impact on tourism FDI but can give Multiflier an effect on other things.



## References

### Online Journal and website

- Acar, S., Eris, B., & Tekce, M. (2012). The effect of foreign direct investment on domestic investment: Evidence from MENA countries. European Trade study Group 14<sup>th</sup> Annual Conference, 13-15 September 2012, Leuven, Belgium.
- Antoni, (2008). Foreign Direct Investment (FDI) and Trade: Evidence Emprising in Indonesia. *Journal of Business and Cooperative Economics*. Vol. 10 No.2, October 2008.
- Bayar, Y. (2014). Effects of fdi inflows and domestic investment on economic growth : Evidence from turkey. *International Journal of Economics and Finance*; Vol. 6, No. 4; 2014. <http://dx.doi.org/10.5539/ijef.v6n4p69>
- Chang. S.C. (2010). Estimating relationships among FDI inflow, domestic capital, and economic growth using the threshold error correction approach. *Emerging Markets Finance & Trade*, 46(1), 6-15. <http://dx.doi.org/10.2753/REE1540-496X460101>
- Chowdhary, R., & Kushwaha, V. (2013). Domestic Investment, foreign direct investment and economic growth in India since economic reforms. *Journal of transformative Entrepreneurship*, 1(2), 74-82. <http://dx.doi.org/10.14239/JTE.2013.01201>
- Cok Istri, S (2014). Influence of PMDN and PMA on GRDP in Bali Province. *E-Jurnal EP. UNUD*. Vol.3(3)
- Fawaiq, M (2016). Relationship between Consumption Abroad (Moda 2) and Commercial Presence (Mode 3) in the Indonesian Tourism Services Sector. *Trade Research Scientific Bulletin*, Vol.10(1)
- Safitriani, S (2014). International Trade and Foreign Direct Investment (FDI) in Indonesia. *Trade Research Scientific Bulletin*, Vol.8 (1)
- Saglam, B. B., & Yalta, A. Y. (2011). Dynamic linkages among foreign direct investment, public investment and private investment: Evidence from Turkey. *Applied Econometrics and International Development*, 11(2), 71-82.
- Samimi, A. J., S. Sadeghi and Sadeghi (2013). The Relationship between Foreign Direct Investment and Tourism Development: Evidence from Developing Countries. *Institutions and Economies*. Vol.5(2)
- Tang, S., Selvanathan, E. A., & Selvanathan, S. (2008). Foreign direct investment, domestic investment and economic growth in China: A time series analysis. *World Economy*, 31(10), 1292-1309. <http://dx.doi.org/10.1111/j.1467-9701.2008.01129.x>
- Todaro, Michael P. 2006. *Economic Development in the Third World*. Issue 9, Volume 1. Jakarta: PT. Erlangga.
- Ullah, I., Mahmood, S., & Farid, UK. (2014). Domestic Investment, Foreign direct investment, and Economic Growth Nexus: A Case of Pakistan. *Economic Research Corporation*. Vol. 2014, Article ID 592719, pages 5. <http://dx.doi.org/10.1155/2014/592719>
- Wang, M. (2008) Foreign direct investment and domestic investment in the host country. Evidence from panel study. *Applied Economics*, iFirst.
- World Tourism Organization (WTO), 1999, *International Tourism A Global Perspective*, Madrid, Spain.

### Books

- Agosin, M. R. and Machado, R. (2005). Foreign Investment in Developing countries: does it crowd in domestic investment? *Oxford Development Studies*, 33(2). Pp.149-162.
- Cooper, C and J.Fletcher (1993), *Tourism, Principles & Practic*. Logman Group Limited, Essex
- Fry, Maxwell J. (1993). *Foreign Direct Investment in Southeast Asia: Differential Impacts*. Singapore: Institute of Southeast Asian Studies.

Hooi, Lean., & Tan Bee Wah. (2010). Linkages between foreign direct investment, direct investment and economic growth in Malaysia. *Prosiding Perkem V*, jilid 2 (2010) 48-57.

Lean, H. H., & Tan, B.W. (2011). Linkages between foreign direct investment, domestic investment and economic growth in Malaysia. *Journal of Economic Cooperation and Development*, 32(4), 75-96.

Naya, Seiji (1990). "Direct Foreign Investment and Trade in East and Southeast Asia," in R.W. Jones and A.O. Krueger, eds., *The Political Economy of International Trade: Essays in Honor of Robert Baldwin*. New York: Basil Blackwell.

## **Emerging Financial Markets: Essence, Features and the Role of Public Companies**

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### **Abstract**

Our paper is devoted to the phenomenon of the emerging financial market. The research relevance corresponds the fact that the most positive effect of financial development is associated with countries with emerging financial markets. This preposition determined the direction, purpose and structure of our research. We reveal and explain the essence of the emerging financial market and systemize its defining features. In particular, the research shows that some special features of the emerging market concern the role of public companies. Besides, we discuss the prospects of emerging financial markets in the context of responsible investment development.

**Keywords:** financial market, emerging financial market, financial system, financial development, public companies, investment, responsible investment.

### **Introduction**

The term "emerging market" was introduced into professional and scientific use in the early 1980s. (Van Agtmael, 2007). Initially, it was used to refer to investment-attractive countries that are not in the group of developed ones, but gradually it began to acquire a broader meaning, including social, technological and economic components. Since the investment attractiveness of a country can be assessed in relation to the different types of investment (in particular, real and financial; direct and portfolio, etc.), the category of the emerging market has received ambiguous content, which, as the literature analysis shows, requires clarification.

In the framework of this research, we turn to such an aspect of this problem as the systematization of ideas about the emerging financial market, considering it as an independent phenomenon of the financial world as well as one of the types of emerging markets. Considering research purpose, we a) analyze the main aspects of the methodology applying in the emerging financial markets analysis (see Part II); b) reveal controversial issues of emerging financial markets classification, identifying the defining features of the emerging financial systems, and argue the importance of public companies' characteristics as significant subjects of financial relations (Part III); c) discuss the prospects for the development of emerging financial markets, which, according to the authors, are primarily associated with institutions and instruments of responsible investment (Part IV).

It should be noted that the theoretical basis for the research on emerging financial markets is the theory of financial systems. The origins of scientific ideas in this area can be found in many early works. However, the most important contribution to its formation was made by empirical studies of the late 20<sup>th</sup> century, which confirmed the hypothesis of financial development primacy (or the "finance-lead economic growth" hypothesis). Thanks to the works of such authors as R. Levine and A. Demirgüç-Kunt, T. Beck, M. Čihák and E. Feyen, V. Maksimovic, D. Acemoglu, N. Loayza, R. McKinnon, etc., it was proved that well-functioning financial system creates the preconditions for

dynamic economic growth on the example of many countries over a long period of time (Lvova, 2016). An important aspect of this evidence is a positive assessment of the impact of the financial system on the stimulation of the most competitive companies and industries of the national economy (Popov, 2017).

To date, the hypothesis of financial development primacy remains a fundamental assumption used in the theory of financial systems, although it has been actively criticized. The objects of this criticism are the ambiguous impact of financial development on the distribution of human resources and the destructive consequences of financial instability (Popov, 2017), as well as not least the ambiguous nature of financial innovation (Laeven, Levine, Michalopoulos, 2015; Beck et al, 2016, etc.), the discussion of which raises questions about new threats to society.

Taking the assumption of financial development primacy in practice we assume that the positive dynamics of the financial depth of the economy, the complexity of the financial structure, the provision of a more diverse set of financial services, all other things being equal, are regarded positively. An example is the World Bank's (WB) Global Financial Development monitoring model (Čihák et al, 2012). In particular, an increase in financial depth indicators in this model is reflected in a higher comparative assessment of financial systems (GDFR, 2018). At the same time, some studies in recent years confirm that there is a certain limit of financial satiety, after which the development of the financial system ceases to have the expected positive impact on economic growth (Arcand, Berkes, Panizza, 2012; Sahay et al, 2015, etc.).

The “too much finance” hypothesis has been confirmed in the comparative assessment of countries with different levels of financial development (Sahay et al, 2015; Svirydzenka, 2016). It has been revealed that the most positive effect of financial development is obtained by countries with emerging financial markets, which determined the direction, purpose and structure of our research.

## **Methodology**

The starting point of our research was the assumption that not every emerging market country has an emerging financial market. This assumption is based on the so called country classifications, according to which the first group includes about 80 countries, while the second group usually consists of no more than 25. Country classifications by the level of financial development allows us to identify the defining features of the emerging financial market. They will be disclosed further. Formalized methodologies in this regard are used by financial information institutions that publish global stock indices (MSCI, FTSE Russell, S&P Dow Jones Indices, Bloomberg, etc.). According to these methodologies, financial markets, as a rule, are divided by level of development into three groups: developed, emerging and frontier markets. Besides, it is assumed that there is a fourth group of least developed financial markets. These group remains outside the classification.

Methodological approaches to assessing financial development and classify financial markets, in turn, correspond to the peculiarities of macro-financial analysis. The most important source of its methodology is the System of National Accounts (SNA 2008), which reveals the fundamental issues, without understanding of which, from our point of view, it is impossible to correctly comprehend and fill in the theoretical aspects of the problem. This applies primarily to the definitions of institutional unit, economic territory, financial services, financial corporation and financial sector.

For instance, we draw attention to the fact that in the analysis of national financial markets it is appropriate to talk about countries whose territory will not necessarily coincide with the territorial structure of states. In particular, mainland China and Taiwan are commonly considered as emerging financial markets, while Hong Kong is classified as developed, but together they are part of the People's Republic of China (PRC). Understanding this principle removes many of the challenging issues in the research area.

It is also significant that the assessment of the level of financial development is not usually limited to only one type of financial services or one group of financial institutions. Even the methodologies focused on the equity markets, in one way or another, involve the indicators of financial inclusion

and stability that are relevant to the entire sector of financial corporations. However, the methodological approaches used in this case have limited utilitarian specificity and are often characterized by fragmentation, which does not allow to identify the essence of the emerging financial market, which would be sufficiently consistent with the principles of macro-financial analysis.

Thus, we believe that the basis of theoretical ideas about the essence and features of the emerging financial market should be those principles that are used in international financial statistics. First, it will avoid conflicts with the interpretation of the basic categories. Secondly, it will provide the prerequisites for substantiating the key defining features of the emerging financial market, taking into account the shortcomings of utilitarian approaches. Third, it will provide an opportunity to improve the tools for assessing the development of the financial market with the methods and indicators that are used in the international monitoring of financial systems (first of all, the methodological recommendations of the Financial Stability Board, the World Bank, the International Monetary Fund).

We also assume that the starting point for the study of the emerging financial market phenomenon should be the category of financial services that are not limited to financial intermediation services, including "auxiliary" and "other" financial services. The broad definition of financial services draws us to the institutional interpretation of the financial system. In this sense, we are talking about a system of institutional units realizing the operation of direct and indirect financing mechanisms (financial markets and financial institutions correspondingly).

Consequently, we raise the problematic issue of the relationship between the categories of "financial system" and "financial market". Notable, the discussion on this subject is not reflected in detail in the System of National Accounts. On the one hand, the terms "financial system" and "financial market" (in this context also "financial services market") can be used as synonyms. On the other hand, financial markets are often seen as one of the main elements of the financial system and associated with implementation of direct financing mechanisms. Moreover, the concept of the financial market can be reduced to the capital market. Unsurprisingly, that the phenomenon of the emerging financial market is more associated with the market of direct access.

In practice, it is problematic to draw a clear line between financial markets and financial institutions, taking into account the financial mechanisms being implemented. However, this principle is traditionally used in theory. The principle of such separation of financial markets and financial institutions is the basis of numerous empirical research on financial structure of the economy and models of financial development (bank-based versus market-based models). Thus, in the context of our research, it is appropriate to consider not only the emerging financial market, but also the emerging financial system. Evidently, this system contains both emerging financial institutions and emerging financial markets.

## Results

Guided by the methodology of macro-financial analysis, we can argue that the characteristics of emerging financial systems should be based on the assessment of financial depth, efficiency, access, stability as well as the quality of financial services. Moreover, countries with emerging financial markets should occupy a special place that allows them to use the potential of catching-up development in relation to financially developed countries and at the same time be ahead of other economic territories. Candidates in the group of emerging financial markets are countries with "frontier" markets. Finally, the remaining countries have developing and least developed financial markets.

Note that the considered hierarchy of financial systems develops the principles of country classifications used for global stock indices. The group of financially developed countries in these classifications usually have common composition or contains minor discrepancies. It is also the most static group of countries, although there can be exceptions (for example, Greece after the debt crisis moved to the group of emerging markets). It is interesting that, as in the case of emerging markets,

not all economic developed countries are in the group of countries with developed financial markets (for example, this applies to the Baltic countries).

The group of emerging market countries for investment analysis is often identical (table 1).

**Table 1: the list of emerging financial markets**

#	Markets	MSCI	FTSE Russel	S&P Dow Jones Indices
1	Brazil	+	+	+
2	Chile	+	+	+
3	China	+	+	+
4	Colombia	+	+	+
5	Czech Republic	+	+	+
6	Egypt	+	+	+
7	Greece	+	+	+
8	Hungary	+	+	+
9	India	+	+	+
10	Indonesia	+	+	+
11	Malaysia	+	+	+
12	Mexico	+	+	+
13	Morocco	-	-	+
14	Pakistan	+	+	+
15	Peru	+	+	+
16	Philippines	+	+	+
17	Poland	+	+	+
18	Qatar	+	+	+
19	Russia	+	+	+
20	South Africa	+	+	+
21	South Korea	+	-	-
22	Taiwan	+	+	+
23	Thailand	+	+	+
24	Turkey	+	+	+
25	UAE	+	+	+

*Prepared by the authors.*

The sources used: MSCI emerging markets index brochure. Dec. 2017. URL: <https://support.msci.com/documents/1296102/1362201/MSCI-MIS-EM-May-2018.pdf/b1b05adf-4bf3-9acc-404c-9865da3e9997>; FTSE country classification process. March 2017. URL: [http://www.ftse.com/products/downloads/FTSE\\_Country\\_Classification\\_Paper.pdf](http://www.ftse.com/products/downloads/FTSE_Country_Classification_Paper.pdf); S&P Dow Jones Indices announces country classification consultation results. Aug. 2016. URL: <http://us.spindices.com/documents/index-news-and-announcements/20160602-spdji-country-classification-consultation.pdf>; S&P Dow Jones Indices announces country classification consultation results. Dec. 2016. URL: <http://us.spindices.com/documents/index-news-and-announcements/20161215-spdji-country-classification-consultation-results.pdf>;

However, the essence and features of the emerging financial market are understood ambiguously. The analysis of the approaches used reveals the following defining features: *first*, dynamic development (high growth rates of financial depth, volumes and types of financial services provided), which, as a rule, is not accompanied by signs of financial exuberance; *second*, institutional imperfections (as a result, relatively low informational and financial efficiency, limited financial availability, increased financial fragility) (Darushin et al, 2016; Lvova et al, 2016).

Other features of the emerging financial market include: functioning in conditions of low or medium level of financial well-being (however, it does not apply to the United Arab Emirates and Qatar,

representing the Middle East region), as well as a sufficient level of liberalization (which is primarily associated with capital account liberalization, but does not fully reflect the specifics of the neo-continental financial systems, including the Russian Federation, with their high level of state participation).

The list the emerging financial market features, in our opinion, should be supplemented by an assessment of the public companies since they implicitly have a significant role in assessing of financial development. Thus, the total capitalization of these companies is used in the assessment of absolute and relative volumes of the financial market, information about the structure of capitalization is considered in the assessment of financial access, data on the volume and dynamics of trades are involved in the analysis of financial stability and efficiency.

Therefore, we generalize and systematize the defining features of the emerging financial market related to the functioning of public companies. To do this, we use an approach that appeals to the peculiarities of the emerging financial system. This approach let us take into account the specifics of public companies in relation to the major financial services provided by financial markets and financial institutions. As the basic structure of the financial system assessment, we apply the matrix methodology of the world Bank (the 4\*2 Matrix Methodology) used in the global monitoring of financial development (table 2).

**Table 2: key features of the emerging financial market associated with the functioning of public companies**

	Financial institutions	Financial Markets
Depth	Relatively low capitalization of public financial companies, which is reflected in their potential to attract financing for large investment projects	Relatively low capitalization of public companies in general, which is reflected in the indicators of the financial depth in case of different segments of the financial market
Access	Insufficient availability of financial resources provided by financial intermediaries, which is most acute for companies that do not have special preferences and (or) high capitalization	Increased concentration of the financial market, limiting the possibility of direct financing for medium and small capitalization companies and at the same time distorting the investment assessment of market leaders
Efficiency	Relatively low efficiency of public financial companies due to the lack of competition and market failures	The lack of financial market liquidity, coupled with the low ability to absorb price shocks
Stability	Increased financial fragility of financial institutions, including public financial companies, which increases the role of non-market financial mechanisms	Increased financial market volatility associated with increased investment risks associated with public companies

*Prepared by the authors*

It should be noted that the financial systems assessment matrix can be used not only in the analysis of financial development (in general) and signs of the emerging financial market (in particular), but also in corporate health diagnostics. Moreover, financial diagnostics of public companies requires an in-depth approach to assessing the specifics of financial market, taking into account the results of macro-financial analysis.

## Discussion

Finally, we turn to the issue of the prospects for the development of emerging financial markets, which are obviously ambiguous. Without seeking a comprehensive assessment of this issue, we have focused on the potential of implementing institutions and instruments for responsible investment. The significance of this development path is explained by the fact that the competitive advantages of emerging financial markets in the field of traditional financial services at the global level are generally rather limited. Developed countries continue to maintain their leadership in the volume and quality of such services, and in the medium term, the balance of power, in our view, is unlikely to change significantly. However, institutions and instruments of responsible investment can become a new driver of financial development, and emerging financial markets can have a great future in the new field.

In this regard, it should be noted that countries with emerging financial market express interest in the implementation of infrastructure projects on the principles of responsible investment. The leader in this process is China. In addition, among the countries of this group there are large exporters of raw materials, for which the instruments of responsible investment can become an effective tool for environmental risk management. We should not forget that corporate social responsibility becomes an important factor of capitalization, which is increasingly reflected in corporate practice, and companies from emerging markets interested in successful integration in international financial markets do not stand aside these processes. This applies to both financial and non-financial corporations, although the process has so far mainly affected major international companies.

In general, the realization of the financial potential for any national economy is becoming increasingly dependent on both investment and social activity of population. So that, responsible investments acquire special sense and importance. Investment behavior of the modern society is caused by a completely new motivation with its sources originating in the ethical sphere. It requires attention to social, environmental, religious, gender and other aspects of investment. Therefore, it seems that the development of institutions and instruments of responsible investment will help to overcome the path dependence effect and let realize the hidden financial potential of emerging financial markets constrained by institutional imperfections. First of all, it concerns the mobilization of savings, since nowadays population demonstrates low tolerance to formal financial institutions in many emerging financial markets (Voronova, Miroshnichenko, 2018), which is largely due to the devastating effects of financial crises and not always effective public policy.

## Conclusions

Summarizing the research, we should note that the theoretical understanding of the emerging financial market phenomenon requires a systematic approach, which is not used in practice consistently. Analysis of literature and methodological recommendations in this area showed that the assessment of emerging financial markets is dominated by rather eclectic instruments. The main focus usually concerns the characteristics of financial markets (in a narrow sense). At the same time, general terms and characteristics of financial development are taken into account. In many cases, an emerging financial market is understood as an emerging financial system (or emerging market for financial services). However, the nature of the relationship between the categories of the financial market and the financial system is not revealed.

In our view, the essence of the emerging financial market should be analyzed through the prism of the institutional interpretation of the financial system. The use of this interpretation makes it possible to systematize the key features of the emerging financial market associated with its most important characteristics: depth, efficiency, availability and stability. A consistent approach to the research methodology of emerging financial markets creates the prospect for further scientific research, which is expected to improve the achieved results in two directions: a) will suggest a more detailed description of the emerging financial system; b) within the framework of this characteristic, provide signs of financial markets and financial institutions as the main segments of the financial services market.



We also believe that the analysis of emerging financial markets should be supplemented by the analysis of public companies, the specifics of which, despite the importance of related indicators, are given undeservedly little attention. The research showed that public companies operating in the emerging financial market have access to a relatively limited set of financial services, facing the threat of increased fragility of the financial sector, which limits their possibility of stable financial development. It should also be noted that emerging financial markets are less efficient or at least more prone to macroeconomic inefficiencies. Consequently, in the period of stock booms, public companies are more engaged in financial speculation hampering their core activities, which also does not contribute to their healthy and harmonious financial development.

The discussion on the importance of institutions and instruments for responsible investment in the development of emerging financial markets goes beyond the traditional theory of financial systems to the issue of sustainable development. We suppose that further research in this direction should be based on the theory of sustainable financial development. The results of corresponding research will be presented in our following articles.

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### **References**

- Arcand, J-L, Berkes, E. and Panizza, U. (2012), 'Too much finance?' *IMF Working Paper* 12/161.
- Beck, T., Chen, T., Lin, C. and Song, F. (2016), 'Financial innovation: The bright and the dark sides'. *Journal of Banking & Finance* 72: 28-51.
- Čihák, M., Demirgüç-Kunt, A., Feyen, E. and Levine, R. (2012), 'Benchmarking financial systems around the world'. *Policy Research Working Paper* 6175.
- Darushin, I.A., Lvova, N.A., Ivanov, V.V. and Voronova, N.S. (2016), 'The Russian stock market: is it still efficient?' *Proceedings of the 27th International Business Information Management Association Conference – Innovation Management and Education Excellence Vision 2020: From Regional Development Sustainability to Global Economic Growth*. P. 818 – 828.
- Lvova, N., Pokrovskaia, N., Voronova, N., Ivanov, V. (2016), 'The concept of financial paradoxes: origins, essence, potential for development'. *Proceedings of the 28th International Business Information Management Association Conference – Vision 2020: Innovation Management, Development Sustainability, and Competitive Economic Growth*. P. 671-680.
- Global financial development report 2017-2018: bankers without borders (2018). Washington, DC: *The World Bank*.
- Laeven, L., Levine, R. and Michalopoulos, S. (2015), 'Financial innovation and endogenous growth'. *Journal of Financial Intermediation* 24(1): 1-24.
- Lvova, N.A. (2016), 'The concept of financial systems' comparative evaluation'. *Actual problems of economics*. Vol. 179. 5. P. 308 – 316.
- Popov, A. (2017), 'Evidence on finance and economic growth'. *Working Paper Series of European Central Bank* no. 2115. Dec.
- Reuttner, I. and Glass, T. (2012), 'The financial development index 2012: stalled recovery – in search of growth'. *Financial Development Report 2012*. Geneva: World Economic Forum: 3-38.

Sahay, R., Cihák, M., N'Diaye, P., Barajas, A., Bi, R., Ayala, D., Gao, Y., Kyobe, A., Nguyen, L., Saborowski, C., Svirydzenka, K. and Yousefi, S.R. (2015), 'Rethinking financial deepening: stability and growth in emerging markets'. *IMF Staff Discussion Note* 15/08. May.

Svirydzenka, K. (2016), 'Introducing a new broad-based index of financial development'. *IMF Working Paper* № WP/16/5.

System of National Accounts 2008 (SNA 2008), NY.: *United Nations, European Commission, International Monetary Fund, Organisation for Economic Cooperation and Development, and World Bank*, 2009.

Van Agtmael, A. (2007), 'The emerging markets century: how a new breed of world-class companies is overtaking the world'. N.Y. *Scribner*.

Voronova, N.S. and Miroshnichenko, O.S. (2018), 'People's incomes as a potential for development of bank lending: comparative analysis of Russian regions'. *Economic and Social Changes: Facts, Trends, Forecast*, vol. 11, no. 4, pp. 144–159. DOI: 10.15838/esc.2018.4.58.9

## **Building the Bayesian Network Model of Digital Images Portfolio**

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### **Abstract**

The main idea of this work is to rebuilding the intellectual assets portfolio model taking into account strong heterogeneity of its structural components. Our research shows that more than 40% of assets may be not saleable at all and thus not influence to overall earnings and portfolio risk metrics (EaR). There are asset groups doing very small financial returns also. Together with not saleable group they may occupy up to 90% of total portfolio. At last, the sales leader's groups, doing main return, may present just 6-10% of total assets number, but bring more than 80% of total portfolio return. Thus the structure of portfolio may be very heterogeneous, which probably is explaining sufficient asymmetry of earnings random variable distribution about normal in daily horizon. We offer more sophisticated probabilistic portfolio model, which allow us to take into account not only sufficient quantitative heterogeneity, but also causal relations between asset groups, mapped on the principle of comparable demand. We prove that there is the process of permanent overflowing of assets in the direction of sales leader's group, and with this flow the risk parameters of portfolio are changing.

**Keywords:** bayesian network, intellectual assets portfolio, conditional probability.

### **Introduction**

In our previous work we tried to integrated risk evaluation of the intellectual assets portfolio based on VaR (EaR) methodology (Voronov et al, 2016 b). The research shows that VaR (EaR) method gives much averaged values because it is not takes into account complex internal structure of portfolio. In particular, our research showed that asset structure is highly heterogeneous relatively to demand and correspondingly to the sales return. In fact, more than 40% of assets may be not saleable at all and not influence neither overall earning, nor portfolio risk metrics, assessed based on the sales. Also there are asset groups doing very small financial returns. Together with not saleable group they may occupy up to 90% of total portfolio assets number. At last, the sales leader's groups, doing main return, may present just 6-10% of total assets number, but bring with it even more than 80% of total portfolio return (Voronov et al, 2017).

Thus the structure of portfolio may be very heterogeneous, which probably is explaining sufficient asymmetry of earnings random variable distribution about normal in daily horizon. Our trial to define more optimal horizon for evaluations resulted only in averaging the daily data, which is especially clearly seen i.e. in weekly horizons. In connection with this we offer more sophisticated probabilistic portfolio model based on Bayesian approach. This model allows us to take into account not only sufficient quantitative heterogeneity, but also causal relations between asset groups, mapped on the principle of comparable demand. Our last work proves that assets in portfolio are permanently overflowing from one sales group to another in the direction of sales leader's group. More of that, with this overflowing the risk parameters of total portfolio are changing too.

During this work we've experimentally confirmed the normality of random earnings distribution for asset class of interest preferably in long periods. But the same experiments prove that receiving of

more detailed data with required accuracy is quite difficult. The same evidence was also proved by the authors of component VaR methodology for the securities portfolios (Garman, 1997).

In fact there were no comparable researches for intellectual assets of that class. For this reason we believe the structural analysis, taking in account causal relations between portfolio components and between different states of these components is highly actual. In our research we try to define this problem with the help of so called Bayesian approach (Mittal and Kassim, 2007). As the methodology of Bayesian Network models is very flexible, we've got a chance to reuse our previous research data and calculations of EaR metrics as the input parameters in more sophisticated probabilistic model of portfolio.

## The Data

In our previous works we presented the certain author's digital images portfolio, included in the collection of Shutterstock – one of the biggest photostock companies nowadays. The whole current structure and quantitative listing of such portfolios are permanently changing. For this reason the data in Table 1 now is fixed to the certain month. As we seen before, the portfolio return from intellectual assets of that class is subjected to very specific risk factors. These factors also belong to the market ones, but the market in this case is an intellectual property one. First of all the demand depends on image themes within portfolio thematic categories, then on physical and electronic format, quality, seasonal demand for specific images, fashion, and even on floating clients attitude towards microphotostock companies.

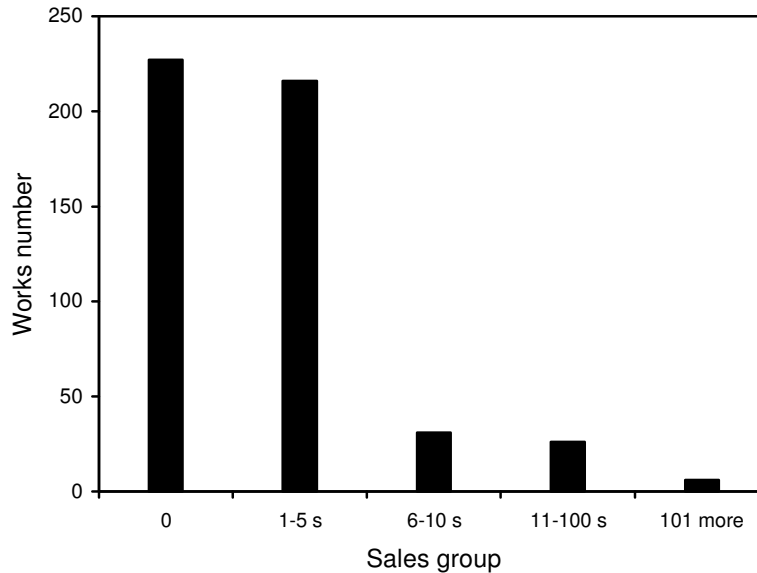
Sale of rights (RF-licenses) for using copyright assets of this class engages absolutely different market mechanism (if compared with securities or patents). The most important feature here is that one and the same asset can be sold numerous times, and every sale bringing a fixed amount of profit. However, the profit amount per sale depends in its turn on such factors as:

- price bracket of digital image (subscription, on demand, single purchase etc.);
- type of license required (standard, expanded, editorial etc.);
- physical dimension of image, directly corresponding with its quality;
- electronic format, i.e. vector based image or bit map image that are used for different purposes.

Crucial risk factor of income volatility in this sales mechanism is defined not by floating market price quotation but by the sales amount per time unit (sales frequency) of assets. For sure income always depends on demand, but it is the sales amount that is affected by demand, not the market price (Voronov and Ivanov, 2016 a).

The first earnings distribution for our portfolio was received by historical simulation method. Scenario table was filled by statistical observation data with daily horizon and retrospective depth of 500 days. This evidence, in spite of the first approximation, was very useful in defining preliminary EaR metrics of portfolio overall random earnings. But the next serious task is to assess more detailed component risk metrics. For this reason the second stage of research was devoted to the weighted sales structure analysis.

In our approach to decomposition of risk factors every single sale is considered as unit positive cash flow. Overall sales observations for the long temporal period are sorted to five sales groups (Figure 1). In its turn, every group presents the certain assets quantity, having the sales frequencies marked in corresponding bins on the X axis. Therefore, the assets (images) collected in one and the same group, are subjected to nearly equal demand, i.e. they are subjected to nearly equal risk.



**Figure 1: Distribution of sales numbers across the portfolio sales groups.**

**Table 1: Sales distribution across the portfolio (by August 2018)**

No	Sales group	Works number	% of total	Sales, \$	Sales, %
1.	No sales	227	44,86	-	-
2.	Sold 1 - 5 times	216	42,69	174,66	11,92
3.	Sold 6 - 10 times	31	6,13	90,88	6,20
4.	Sold 11 - 100 times	26	5,14	346,79	<b>23,67</b>
5.	Sold 101 and more times	6	1,19	853,07	<b>58,21</b>
	Total:	506	100,00	1465,40	100,00

The whole portfolio assets array is conditionally represented by five sales groups, reflecting the most specific risk factors, maximally affecting the overall portfolio risk. Every sales group, as a matter of fact, represents independent data sampling, integrating unit cash flows corresponding with every sale of every asset, included to one and the same group. We know precisely the random earnings expected values and standard deviations in every separate group. Having these parameters, it is not a big problem in principle to evaluate the risk metrics and earnings covariances for every separate sales group. However, the substitution of weighted components of risk found with this algorithm, does not give the reliable answer in correspondence with previously found overall portfolio risk metrics. For this reason in further we use different approach.

The diagram, presented in Figure 1, in fact is the analogue of portfolio cash flow map. Based on our empirical skills we may affirm, that similarly distributed structure of sales groups with insufficient corrections may be applied to any digital images portfolio, as well as to similar class of assets, like digital video, audio or literary assets, tradable on principles of stock art market. To our opinion, the distinction may only be in weight (width) of the first and, respectively, last leader sales groups.

**The Model**

We continue to build our model for solving the problems of (1) necessary earning level maintenance and (2) revealing the risk factors of its possible sloping down. As a matter of fact, the overall main problem is providing the successive portfolio management. The main risk factors which we consider in the key of this problem are:

- authors creative productivity, affecting on the quantitative dimension of portfolio. This factor is subjective and conditional probability for it may be set initially discrete;
- demand for authors digital images. It is external factor, strictly depending on current trends, fashion, and market position of certain photostock company;

Overall portfolio risk depends on state levels of both described risk factors affecting to portfolio components. We examine the portfolio model across the mapped before sales groups of assets, graphically described in horizontal subsequence from left to right. In this chain the internal factors, related with authors productivity, preferably are affecting the groups, situated at left, and external factors, respectively, the groups at right end of the chain. As physically these groups are united to the whole portfolio, then inside the portfolio itself, by the force of causal relations, overall risk is distributed between all portfolio components. From this point of view we may conditionally consider “overflowing” of risk between sales groups by the force of existing relation in between.

Disadvantage of popular risk assessment methods, such as VaR (EaR) is that they don't reveal the causal relations between portfolio components as well as relations between their statements.

We compared the cash flow components and marked before sales groups (bins) inside our digital images portfolio. As was meant above, the first or “zero” group of assets surely exists in any portfolio, but don't give any cash flow, and for the first mind, can not be the source of financial risk. Just as the asset from this group is sold, it will automatically shift to the next group nr 1-5. This group, in force of pricing specifics, can not generate significant cash flow. Comparably small cash flows from this and next group nr 6-10 probably says us that separation of these groups is not necessary at all. The next group nr 11-100 yet gives more sufficient return. At last, the last group of leader sales, every asset in which was sold more than 100 times, produces the biggest return. To say true, the most interest for analysis presents both last groups, which unites together just little over 6% of total images number in portfolio, but their sales gives more than 80% of total return in monetary representation.

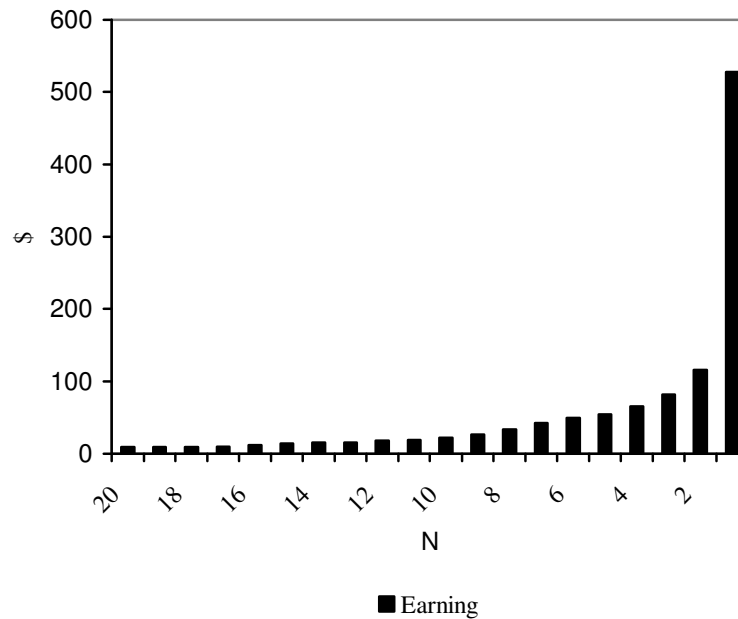
If we could to conditionally except so called “useless” (at first glance) zero group of images, then formally the overall portfolio risk could not be changed, because this group don't generate a monetary flow. But at the same time, all new assets coming into portfolio, initially supplying namely this group. The photostock company, after inspector's approval, setting them to the exhibited online collection for sale in respective thematic categories (Voronov and Ivanov, 2016 a). Just after these procedures customers can see them while searching required images independently of what authors or sales groups they belong.

Thus the intuition gives us a hint that zero group can not be irresponsible for affecting the overall financial risk of portfolio. For example, based on general theory of probability, the more the quantity of assets in this group, the higher the probability that one or more of them will be sold. As the images quantity in portfolio is limited only by the author's productivity, we can easily suppose a few thousands (in fact we know the authors having tens of thousands images in portfolios). Correspondingly to this quantity the probability of successful sales is also arises linearly or not. More of that, skillful authors making professional steps to steadily increasing this probability (Voronov et al, 2017). For example, the analysis of self and other's leaders of sales dynamics gives authors excellent ideas how to refill the portfolio with the leader's analogues, having more probably high demand in its thematic categories.

All suggestions above approve (we hope) that quantitative dimensions of zero group can not be irresponsible for the portfolio return as well as risk in spite of empty dash for the sales revenue in Table 1. The more argument worth it is that hypothetically exception of this group may totally interrupt the refilling of next group nr 1-5 with fresh assets sold at first time. So we can see that group nr 1-5 is also transitive as it receives fresh assets from the zero group and resents further the assets, successively overcoming to the next group nr 6-10 and further on. We can precisely assess EaR components of all these groups because we know every sales revenue in historical retrospective.

Thus we can summarize that, from the one hand, the more is the zero group quantitatively, the higher is the probability of sales. From the other hand, the zero and next behind group can not be examined independently each from other. The contradiction here lies in fact that we can not separately to assessing the groups, which risk can not be assessed with one and the same method, for example, VaR (EaR).

While examining the right end of our model chain we can see that two very small groups of leader sales are depending from zero group very weakly, but contrary, are maximally depending from market demand as they generating 80% of total portfolio return. For this reason their affect to overall portfolio risk is very strong.



**Figure 2: Leader sales revenue diagram, reversed in the direction of assets flowing in probabilistic model (by August 2018).**

To demonstrate the degree of portfolio heterogeneity we intentionally modified the diagram of leader sales and 20 close assets revenues (see Figure 2). To symmetrically graphic perception with our model the diagram plotted in reverse, i.e. it is plotted sloping up in direction to overcoming (overfilling) the assets in our probability model. The diagram is clearly show that even in the boundaries of the first 20 leader assets the dynamic range of sales revenue may reach up to few tens of times. To say, for namely examined portfolio this dynamic range between the 1<sup>st</sup> and 30<sup>th</sup> asset already is more than 100 times.

### Conclusion and Further Research

Stage of our research described above is devoted to modeling the intellectual assets portfolio based on Bayesian Approach. Applying to the process of portfolio management the principal risk factors were identified. The main variables we offer to assess include (1) the author’s creative productivity and (2) the market demand for her digital images. Conditional probabilities for these variables are addressed as discrete.

The object of real world subjected to risk observations is the intellectual assets portfolio. In our earlier simplified (VaR) approach this portfolio was examined as a black box. After the detailed analysis we represent it now as the system of interrelated components, sorted by the degree of market

demand. In this model the risk factors, represented by main variables, affecting to distinct portfolio components, and the degree of this affect is also distinct. In this connection, the node of Bayesian Network, corresponding to the portfolio, may be described:

- as the node, having continuous probability distribution;
- as the cluster (chain) of nodes, which states are described by discrete probabilities.

For the single node case continuous probability distribution will be modeled based on sorted leader sales distribution represented on Figure 2. The cluster of nodes presents more complex problem for analysis.

Worth note, that solving the problem of our portfolio management is facilitating with the use of data, received in our previous work. Namely this is overall portfolio random earnings distribution in long temporal horizon, supported for preliminary EaR evaluation. This distribution will be normalized and used for continuous or discrete representation of managed variable in Bayesian model. Perspective model expansion, the probabilities updating and distinct inferences in the model based on described preliminary data is the subject of our further research.

## References

- Garman, M.B. (1997), 'Taking VaR to Pieces' *Risk Magazine*, Vol.10, no. 10/October, pp. 70-71.
- Mittal, A., and Kassim, A. (2007), *Bayesian network technologies: application and graphical models*. NY: IGI Publishing.
- Voronov, V., and Ivanov, V. (2016 a), 'The Rise of Cyber Market for Stock Art: Assets Aggregation and the Wealth of Mass Creativity'. Proceedings of the 27<sup>th</sup> International Business Information Management Association (IBIMA), ISBN: 978-0-9860419-6-9, 4-5 May 2016, Milan, Italy, 537-545.
- Voronov, V., Ivanov, V., and Darushin, I. (2016 b), 'The Risk of Creativity: EaR for the Intellectual Assets Portfolio'. Proceedings of the 28<sup>th</sup> International Business Information Management Association (IBIMA), ISBN: 978-0-9860419-8-3. 9-10 November 2016, Seville, Spain, 2088-2097.
- Voronov, V., Kazansky, A., and Darushin, I. (2017), 'Information Approach to the Risk Evaluation of the Intellectual Assets Portfolio'. Proceedings of the 30<sup>th</sup> International Business Information Management Association (IBIMA), ISBN: 978-0-9860419-9-0, 8-9 November 2017, Madrid, Spain, 2473-2480.



## **Factors that Impact Job Satisfaction and Performance among Employees in the Jordanian Industrial Sector**

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### **Abstract**

In order to help the Jordanian industrial sector to minimize the amount of time and money currently spent on recruiting and training new employees due to the rapid employee turnover rate, this study aims to identify the factors which encourage employees to remain in their jobs long-term as opposed to those that create negative sentiments thus leading employees to quit. The factors under focus are wages, organizational culture, benefits, job satisfaction, stress, training and development, promotion prospects, and job security. The study measures the impact of each factor on employee satisfaction. The research population is the body of employees in Jordan's industrial sector, with a random sample of industrial employees representing the population. The quantitative method is used to examine the research question. The study found that Jordanian employees care the most about their salaries and position more than any other factors. Therefore, we recommend that Jordanian manufactures consider studying the range of salary for each position, so they do not miss out on talented people or lose a good employee.

**Keywords:** Job Satisfaction; Employee Performance, Employee Satisfaction; Employee Turnover.

### **Introduction**

While most people would agree that a job or occupation is an essential part of life, individuals view work differently. Some people consider their job simply as a means to monetary compensation, while others consider it to be what defines their social status. We spend much of our time in the workplace, thus we hope to find some personal interest and job satisfaction there, bringing the happiness and peace of mind necessary to balance our personal lives, affecting family and social relationships. From an employer's standpoint, it is in their interests to create a work environment where employees feel motivated and encouraged to apply their full energies.

The focus of this study is to identify the factors that influence employee satisfaction and performance, with a view to helping business managers to attract, motivate and retain their employees in the long term. The term 'employee satisfaction' describes the way an individual feels, thinks, and perceives his/her job, encompassing the positive and negative sentiments that influence the way an employee performs his/her work tasks. Employee satisfaction has direct bearing on behavior in the workplace, with a good level of employee satisfaction improving the retention rate of employees and minimizing recruiting and training expenses. Satisfied employees perform their tasks better, and long-term employees usually have a greater level of skill and expertise, both of which lead to increased performance. Since high employee satisfaction can be seen to lead to smooth operations in the workplace and result in higher profits, it is crucial for managers to understand the key factors that increase employee satisfaction and therefore

performance. This study will potentially assist human resources departments and top management in Jordanian industry to focus their efforts on the factors that most influence employee satisfaction, directly impacting job retention and employee turnover. By studying the factors of wages, organizational culture, benefits, stress, training and development, promotion system, and job security, we will be able to deduce the percentage of influence for each factor. A survey has been carried out among Jordanian industrial employees to pinpoint the reality behind job satisfaction and high performance, also taking into account how the employee's age, education level, job position, and type of job affect attitudes toward work.

## **Literature Review**

### ***Wages***

Previous studies by Frye (2004) shows that there is a positive relationship between wages and employee performance and that income is the major factor of employee satisfaction. A survey by Nguyen et al. (2003) also showed that job satisfaction is affected positively by wages. These findings have been corroborated by numerous researchers (Cappelli & Sherer, 1988, Brown et al., 2008). Kathawala, Moore & Elmuti (1990) concluded that the salary system is the sole motivating factor for employees in the automobile industry. They also state that compensation and reward are important tools to control employee turnover rate. Hamermesh (2001) found that an increase in salary has only temporary effects on employee satisfaction. In the other hand, According to Wang & Seifert (2017), wages cut can affect employees' moral. Also, employees' performances tend to go to the wrong direction. Therefore, most of the companies during recession tend to lay off people instead of cutting pay.

The roots of the pay for performance idea stems from reinforcement theory that suggests payment can be linked to employee performance. Heneman (1992) suggested that managers set target goals and reward employees who meet them with a scheme of bonuses for achievement, consequently raising overall performance.

### ***Organizational culture***

Organizational culture can be defined as the set of characteristics that makes a company unique and distinguishes it from other companies, or as the way that employees within a company interact and the work environment that interaction creates. Researchers have expanded the definition of organizational culture, with Lee & Yu (2004) stating that it is the unique quality and organization style of a given workplace, while Abu-Jarad, Yusof, & Nikbin (2010) defined it as how things are done and dealt within an organization, as well as being a way for new employees to gauge how to interact with colleagues. Alvesson & Spicer (2012) affirmed that culture encompasses a shared set of key values, understandings, assumptions, and norms among a company's employees. Organizational culture can be viewed as the normative binding that holds the entire organization together (Tichy, 1982).

Organizational culture can have either a positive or negative impact on employee motivation and performance. Previous studies had determined the relationship between culture and commitment. Yildirim et al. (2016) found that positive culture increased the commitment of the employees. Also, marketing culture can influence the performance of the employees (Al- Mohammad, 2014). A successful culture encourages employees to perform their work tasks with energy and enthusiasm. The more encouraging and positive the culture, the greater the job satisfaction, the level of commitment and the consequent efforts expended by employees. When employees consider themselves crucial to company growth, they take responsibility for the organization's overall well-being. Overt recognition and appreciation of good performance leads employees to perform better in order to achieve their personal work goals and those of the company. In addition, innovative culture and effective working environment can promote effective changes and generate high quality service and product. Also, strong culture can attract talented employees and reduce turnover rate (Kim et al., 2017).

On the other hand, in a culture where managers fail to empower their employees, anxiety and distrust become the norm. Employees don't feel involved in the overall company operation, don't perceive their role as important to the company, and thus tend to have low interest and satisfaction, negatively impacting their performance. A weak organizational culture that doesn't value team work and unity may suffer from a lack of cooperation, and possibly conflict, between individuals and departments, thus greatly damaging the overall health of the company. Since organizational culture is clearly a factor effecting satisfaction and performance in the workplace, Jordanian industry needs to focus on eliminating negative factors that hinder employee performance and concentrate on the factors that ameliorate satisfaction.

The ideal culture is one in which employees hold similar ethical values, communicate well and form a cohesive team. Jordanian companies need to be aware of the benefits of enhancing their organizational culture, shaping the work environment to one where company goals can be achieved, where employees know their tasks and responsibilities and understand assessment procedures, enabling them to reap the rewards of their skills and productivity.

### ***Job Satisfaction***

Job satisfaction is an individual's subjective viewpoint encompassing the way he/she feel about his/her job and the employing organization. Moreover, job satisfaction is the pleasurable emotional state that results from achievement of job values (Courtney & Younkyoung, 2017). Each individual has different criteria for measuring job satisfaction. Influencing factors are pay, working hours, schedule, benefits, level of stress, and flexibility. Job satisfaction has been linked to productivity, motivation, performance, and life satisfaction (Landy, 1978), while Locke (1976, p.1304) defined it as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences". Research suggests that job satisfaction has emotional and behavioral components. The emotional components are the feelings of happiness, anxiety, boredom, and excitement evoked by the job. The behavioral components include early arrival, tardiness, working late, or faking illness in order to avoid work (Bernstein & Nash, 2008).

Mueller & Kim (2008) identified two types of job satisfaction; firstly the overall feeling about the job, and secondly, feelings about aspects of the job, such as benefits, salary, position, growth opportunities, work environment, and the relationships among employees. The considerable time spent by employees at the work place makes job satisfaction a significant factor since dissatisfaction can have an adverse impact on the individual's personal life. Saari & Judge (2004) indicate that the relationship between job satisfaction and performance is more important for those doing difficult jobs than for those in less demanding jobs.

### ***Stress***

Employees who find themselves subject to greater demands and responsibilities than they are capable of handling suffer raised stress levels which can be detrimental to an employee's emotional and physical responses, thus causing challenges for both the employee and the organization (Leong, Furnham, & Cooper, 1996). Research has linked work stress to role ambiguity and role conflict (Chang, 2008) and indicated that certain factors, such as work overload and poor working conditions often result in negative mental and physical health consequences for employees (Murphy, Cooper, & Payne, 1988).

According to Schabracq & Cooper (2000), stress is a key factor in low motivation and morale which lead to low performance, high turnover, low job satisfaction, increased absenteeism, and low quality products and service. Since stress can directly affect organizational efficiency, Jordanian companies need to identify the root cause of job stress and find ways of controlling stress factors that impact employees' satisfaction and performance.

### ***Training and Development***

With globalization, technology, and leadership style bringing increased competition among businesses worldwide, companies must attract and retain talented employees in order to survive in the market (Allen, 2010). Employee roles should be clear-cut in order for them to perform well and contribute to company success. Thus, human resource management should focus on training and development, so that employees can keep pace with new technologies and the current market. Employees should receive up-dated knowledge in the field to be aware of the company's mission and goals. Garner (2012) states that training and development are basic needs to increase employee role accuracy, reduce role conflicts among employees, and enhance the on- going learning process so that employees can adapt to changes in company practice.

Armstrong (2009) distinguishes between the concepts of training and development, identifying development as the new skills and knowledge that an employee gains from his/her company that help to fit and progress into a future position. Training helps employees to practice their current skills to a better standard, thus increasing performance and helping them to advance in the workplace. Training and development serve to enhance the confidence of employees and can consequently improve their general attitude toward the company. Adequate knowledge and information about their roles and the products or services they are providing helps employees perform better on the job, thus making them better equipped to assist customers. Furthermore, training and development can spur employees to think creatively.

According to Gusdorf (2009), a change in business environment and practices has led to an increase in training and development and talent inventory management. The appropriate training can alleviate many workplace challenges, such as team work, employee conflict, innovation, and organizational culture. Training and development sessions not only prepare employees for the next step on the promotional ladder, they can strengthen employer-employee bonds, enabling the employer to distinguish employee performance and talent (Qayyum et al., 2012). Vemic (2007) points out that when employees possess adequate knowledge and experience, they feel confident enough to become part of the decision-making process. Moreover, when top management promotes strong organizational learning culture, employees expand on their knowledge and skills through training (Malik & Kanwal, 2016).

Saleem et al. (2011) identify some of the benefits of training and development as tools to improve human capital, enhance skills, increase employee knowledge and work efficiency, reduce non-productive work time such as sick days, and reduce absenteeism, as well as increasing quality by reducing employee error and the resulting wastage. According to Obisi (2011), training should aim to enhance employees' skills and performance in the workplace. The strength and capabilities of the company derive from those of its employees. Each employee's performance contributes to the company's success, so the stronger the employees' performance the more likely the company is to achieve its goals. Also, In order to promote learning culture, top management needs to be involved in the training program (Tom & Harris, 2017).

### ***Promotion***

Promotion can be defined as internal mobility within the company by changing position vertically. Many employees find that holding the same position and repeating the same daily tasks for many years is tedious, but that can be avoided if the employee has the expectation of gaining promotion to a higher position with new tasks and responsibilities. As Prasad (2010) points out, it is rare to see an employee remain in one position for twenty years. He/she either gains promotion, or seeks new challenges elsewhere. Moreover, promotion brings higher status and better pay, as well as the feeling that hard work and loyalty are recognized and rewarded.

Company promotion policies and procedures play a big role in employee satisfaction. Some companies have a policy of internal promotion, while other companies prefer to recruit new employees to vacant positions. Successful companies reward their best employees with promotion, since obvious appreciation

and reward from management encourage the employee to maximize his/her efforts and thus increase productivity. Naturally, an employee who enjoys high self-esteem will perform tasks confidently and efficiently, which is beneficial to the organization as a whole. A pro-active employee will seek advancement through education, training and development programs, thus enhancing their skills and experience in order to be recognized by management as somebody worthy of promotion (Gupta, 2011).

According to Armstrong (2009), companies looking to increase stability and retain long-term employees should strengthen employer-employee relationships by creating trust and loyalty through a policy of internal promotion. Employee trust and loyalty can help the company to achieve its goals and gain long-term market success. Some companies use promotion on merit as a means of motivating employees. Merit policy is a fair method that encourages employees to work harder and stay loyal to the company because they know that ultimately the reward will be promotion to a higher position, leading to higher wages and greater status. The result is increased job satisfaction, better performance and further advancement.

Human resources departments can play an important role in making employees more motivated and engaged by implementing programs that can enhance performance and the desire to accept promotional challenges which allow employees to exercise higher level skills and responsibility in the new position.

### ***Job Security***

Job security refers to the length of time employees can expect to remain in their job. In general, employees prefer to find a job that they can occupy in the long term, which works to the benefit of the company. Some companies offer lengthy contracts which protect employees from job termination. According to Shi (2017), job security is positively related to social safety. Employees with vulnerable position will increase their performance in order to maintain their high social status. Other studies have shown that job insecurity reduces employee commitment, satisfaction and performance (Ashford et al. 1989). Rosow & Zager (1985), however, found no relationship between job insecurity and job performance.

According to Iverson (1996), job security leads to increased employee commitment, with long-term employees showing a stronger sense of loyalty. Lifetime employment and seniority changes employee performance and creates a sense of leadership. Personal factors, such as the age of the employee, level of education, number of children, position level, and income combine to encourage employees to remain in the job. As an employee gets older and has greater personal responsibilities, the need for job security increases. A long-term employee often has greater skill levels, which means they perform tasks to a higher standard and are more productive. In contrast, a company that cannot ensure job security will find that its employees quickly seek more stable employment with less risk, causing that company to suffer from high turnover rate which will affect it negatively. Low productivity and increased outlay on training new staff can result in higher prices passed on to customers and provoke customer dissatisfaction. When a company loses its customers trust, it will inevitably lose business and revenue.

### **Methodology**

Here, we discuss the research design and provide a detailed outline of the approach used, and highlight the elements of the study. We employed the quantitative approach, focusing on two sources of information: we benefitted from past findings by examining previous academic literature, and made new findings through a survey of industrial sector employees. The sources both carry their advantages and disadvantages, but do serve to complement each other to provide a full picture of the factors that most impact employee performance and satisfaction in the Jordanian industrial sector.

### ***Research Design***

The study seeks to understand the factors that impact employee satisfaction and performance among

workers in Jordan's industrial sector, with a view to helping Jordanian companies to utilize those factors to maximize their efforts in increasing employee satisfaction. When Jordanian companies understand the degree of influence brought by the factors of wages, organizational culture, job satisfaction, work stress, training and development, promotion, and job security have on performance, they can use that knowledge to control and minimize turnover rate. Moreover, the study will offer recommendations on how to meet that purpose by positively impacting employee satisfaction.

According to Creswell (2009), a research design is a plan on how to conduct a research project. The primary method of data collection is a survey distributed to workers in Jordan's industrial sector designed to measure the factors that most heavily impact employee performance and satisfaction. 147 valid responses were received and the data was converted into numbers, to allow analysis of these numbers through statistical procedures, thus revealing the relationship between the determined variables. The variables of the study are contained in five hypotheses, as follows:

- H1: There is a positive relationship between the level of wages and employee satisfaction. H2: There is a negative relationship between stress and employee performance.  
H3: Training and development has a positive impact on employee satisfaction. H4: Job security has a significant negative impact on turnover rate.  
H5: Employee satisfaction has a positive impact on employee performance.

### ***Sampling***

The research population is employees in the industrial sector in Jordan. Random sampling was used to increase the probability of fair selection among members of the population. To take a random sample, a procedure must be formulated to make sure that each member of the population has equal probability of being selected and this must be done prior to selecting members to make sure bias sampling does not occur (Davies, 2007). An unbiased sample helps the researcher to achieve accurate data, gives a better generalization about the entire population, and saves time and money. Validity is important to accurately reflect the research concept under examination. Reliability focuses on the accuracy of the measuring procedure.

## **Survey Analysis – Data Processing and Results**

### ***Introduction***

Here, we will describe the study sample in terms of gender, age, monthly income, and we will discuss descriptive analysis of the variables in the study. To test the hypotheses of the study, we need to find out averages and standard deviations among variables by using one sample T- test.

### ***Descriptive Analysis of Sample***

The study sample consisted of 147 valid responses to a survey that was distributed randomly among Jordanian industrial factory employees. The sample consisted of 76.9% males, and 23.1% females. 58.5% of respondents were aged 25 - 34, 34.19% were between 18 and 24, and 17 % were aged between 35 and 44 years. 61.2% had a monthly income of between 200 - 400JD, 25.9% earned between 401 - 600JD, 8.8% earned 601 - 999JD, and 5.4% earned more than 999JD. 93.9% of sample members worked over 40 hours a week. 49.7% of the sample was married and 49.7 % was single. 27.2% of sample members held a Bachelor's degree, and 55.8% were high school graduates. 51.7% were working in manufacturing. These analyses are expressed in the table below:

**Table 1: Distribution of the study sample according to their personal variables**

		Frequency	Percent
Gender	Female	34	23.1
	Male	113	76.9
Age	18-24	28	19
	25-34	86	58.5
	35-44	25	17
	45-above	8	5.4
Employment Status	Part-time employee ( 1-35 hours per week)	9	6.1
	Full-time employee ( 40+ hours per week)	138	93.9
Monthly Income	200JD - 400JD	90	61.2
	401JD - 600JD	38	25.9
	601JD - 999JD	13	8.8
	1000JD and above	6	4.1
Education	High school certificate	82	55.8
	Some college or Associate	23	15.6
	Bachelor's degree	40	27.2
	Graduate degree	2	1.4
Marital Status	Single	73	49.7
	Married	73	49.7
	Widowed	1	0.7
Department	Manufacturing	76	51.7
	Administrative	22	15
	Operations	26	17.7
	Customer service	1	0.7
	Others	22	15
	Total	147	100

We tested the stability of the study tool using Cronbach Alpha measurement. It reached 0.83, which is valid for study purposes.

### **Answering the Study Questions**

#### ***Which of the factors has the most impact on employee satisfaction?***

The factor with the greatest impact on employee satisfaction is 'Wages' with a percentage of 50.3%,

followed by 'Job satisfaction' with 16.3%, then "Job security" with 12.9%, followed by "Training and development" with 7.5%. Therefore, Jordanian employees consider wages the most important factor impacting their job satisfaction.

***Which is the most important factor regarding job satisfaction?***

Companies that offer comparatively higher salaries than other competitors in the same industry are attractive to employees, who also care about job security. Examining Table 2 we see that 'Salary' is the most important factor regarding job satisfaction with a percentage of 48.3%, followed by 'Job security' with 23.8%, then "Benefits" with 12.9%, and then 'Faster promotion' with 8.8%. 'Stress levels' is the least important factor with 6.1%.

**Table 2: Factors affecting job satisfaction**

	Frequency	Percent
Salary	71	48.3
Benefits	19	12.9
Job security	35	23.8
Stress levels	9	6.1
Faster promotion	13	8.8

***Which of the following factors most influence your decision to leave your job?***

Table 3 shows the factors that affect an employee's decision to leave a job. It is clear that the highest factors 'Low salary with a percentage of 48.3%, then 'Negative environment' with

10.2%, then 'Bad work conditions' with 9.5%. 'Poor management' and 'Job security' were of low importance, each taking 8.8%. 'High level of stress' and 'Low career growth' were of least importance in the opinion of our respondents.

**Table 3: Factors influencing decision to leave the job**

	Frequency	Percent
Low salary	71	48.3
Bad work conditions	14	9.5
Negative environment	15	10.2
Job security	13	8.8
Low career growth	9	6.1
Poor management	13	8.8
High level of stress	12	8.2



***Analysis of Hypotheses***

Averages were distributed to members of the study sample responses as follows:

-High degree of approval: includes paragraphs that got the mean averages greater than (3.66) and the largest percentage (73.2%).

-Moderate degree of approval: includes a set paragraphs with a mean ranging between (2.34- 3.66) and percentage between 46.8% and 73.2%.

-Low degree of approval: includes paragraphs with mean averages of less than (2.34) and a percentage of less than 46.8%.

We have used the length category of Likert scale:  $(5-1)/3=1.33$

***H1: There is a positive relationship between high wages and employee satisfaction.***

As shown in Table 4, the first hypothesis was tested using a one sample T-test.

**Table 4: (One sample T-test) to test first hypothesis**

	Mean	Std. Deviation	Degree	%
I am satisfied with my overall compensation	3.08	1.101	Medium	61.6
Calculated T	6.899			
Df	146			
Sig. (2-tailed)	0.036*			
Tabulated T	3			

It is clear from the above table that the degree of approval was moderate. We note that the value of calculated T is more than the tabulated T at the significant value less than (0.05), which means that there is a positive relationship between high wages and employee satisfaction. We conclude that Jordanian employees care more about monetary compensation than any other factor.

***H2: There is a negative relationship between stress and employee performance.***

As shown in Table 5, the second hypothesis was tested using a one sample T-test.

**Table 5: (One sample T-test) to test second hypothesis**

	Mean	Std. Deviation	Degree	%
I could usually do a much better job if I were given more time.	4.07	0.915	High	81.4
My goals at my job are very challenging.	3.46	1.055	Medium	69.2
I seldom receive adequate acknowledgement or appreciation when my work is really good.	3.33	1.143	Medium	66.6
Average	3.62	0.664	Medium	72.472
Calculated T	11.394			
df	146			
Sig. (2-tailed)	0.000*			
Tabulated T	3			

It is clear from the above table that the degree of approval was moderate for all paragraphs, except the paragraph "I could usually do a much better job if I were given more time" which got a high approval, with the overall rate of 3.62%. The average of 72.5% represents a medium approval. We also note that the value of calculated T is greater than the tabulated T at the significant value less than (0.05), so we accepted the hypothesis that there is a negative relationship between stress and employee performance. The more stress an employee faces, the lower their performance will be.

***H3: Training and development has a positive impact on employee satisfaction.***

As shown in Table 6, the third hypothesis was tested using a one sample T-test.

**Table 6: (One sample T-test) to test third hypothesis**

	Mean	Std. Deviation	Degree	%
I am satisfied with the investment my organization makes in education.	3.84	1.025	High	76.8
I am satisfied with the job-related training my organization offers.	3.59	1.193	Medium	71.8
Average	3.71	0.944	High	74.286
Calculated T	9.178			
df	146			
Sig. (2-tailed)	0.000*			
Tabulated T	3			

It is clear from the above table that the paragraph "I am satisfied with the job-related training my organization offers" received medium approval, and the paragraph "I am satisfied with the investment my organization makes in education" received high approval. The overall rate (3.71) with a percentage of 74.3% represents a high approval. We also note that the value of calculated T is more than tabulated T at the significant value less than (0.05), which indicates that training and development has a positive impact on employee satisfaction. This means that the levels of training and education employees receive is linked directly to their satisfaction levels. Employees require the tools to do their job, even when those tools take the form of knowledge and experience through training.

***H4: Job Security has a significant negative impact on turnover rate.***

As shown in Table 7, the fourth hypothesis was tested using a one sample T-test.

**Table 7: (One sample T-test) to test fourth hypothesis**

	Mean	Std. Deviation	Degree	%
I am satisfied with my overall job security.	3.8	0.986	High	76
I am pleased with the career advancement opportunities available to me.	3.7	1.043	High	74
Average	3.74	0.867	High	74.802
Calculated T	10.526			
df	146			
Sig. (2-tailed)	0.000*			
Tabulated T	3			

The table shows that the degree of approval came high for all paragraphs, with the overall rate at (3.74) with a percentage of 74.8%. We note that the value of calculated T is more than tabulated T at the significant value of less than (0.05), which means that Job security has a significant negative impact on turnover rate. When employees are assured of job security, they will perform better and remain in the job, thus reducing turnover rate.

***H5: Employee satisfaction has a positive impact on employee performance.***

As shown in Table 8, the fourth hypothesis was tested using a one sample T-test.

**Table 8: (One sample T-test) to test fifth hypothesis**

	Mean	Std. Deviation	Degree	%
I am determined to give my best effort at work each day.	4.44	0.723	High	88.8
I feel completely involved in my work.	4.29	0.787	High	85.8
I am satisfied with the culture of my workplace.	3.94	0.885	High	78.8
I am inspired to meet my goals at work.	3.81	0.989	High	76.2
I am happy with organizational culture and work environment.	3.78	0.969	High	75.6
Employees in my organization willingly accept changes.	3.68	1.092	High	73.6
Management within my organization recognizes strong job performance.	3.46	1.166	Medium	69.2
I am satisfied with my total benefit package.	2.76	1.368	Medium	55.2
Average	3.77	0.625	High	75.408
Calculated T	14.941			
Df	146			
Sig. (2-tailed)	0.000*			
Tabulated T	3			

The above table shows that the degree of approval came high for all paragraphs, except the paragraphs "Management within my organization recognizes strong job performance" and "I am satisfied with my total benefit package" which both received medium approval. We noted that the value of calculated T is more than tabulated T at the significant value less than (0.05), which means that employee satisfaction has a positive impact on employee performance.

***Relationship between (Gender, Age, Education, Income) and "How long have you been working in the same job?"***

From Table 9, we observe the relationship between gender and the question "How long have you been working in the same job?" where the P-value is less than (0.05). We note that male respondents remained in the same job longer than females.

**Relationship between (Gender) and "How long have you been working in the same job?"**

**Table 9: Gender with "How long have you been working in the same job?"**

			Gender		Total	
			Female	Male		
How long have you been working in the same job?	Less than 6 month	Count	7	7	14	
		% of Total	4.80%	4.80%	9.50%	
	6months- 1 year	Count	5	5	10	
		% of Total	3.40%	3.40%	6.80%	
	3 years - 6 years	Count	10	34	44	
		% of Total	6.80%	23.10%	29.90%	
	3 years - 6 years	Count	7	23	30	
		% of Total	4.80%	15.60%	20.40%	
	6 years and above	Count	5	44	49	
		% of Total	3.40%	29.90%	33.30%	
	Total		Count	34	113	147
			% of Total	23.10%	76.90%	100.00%
P-Value			0.006*			

**Relationship between (Income) and "How long have you been working in the same job?"**

Table 10 shows no relationship between income and "How long have you been working in the same job?" where the P-value is more than (0.05).

**Table 10: Income with "How long have you been working in the same job?"**

			Monthly Income				Total
			200JD-400JD	401JD-600JD	601JD-999JD	1000JD and above	
How long have you been working in the same job?	Less than 6 month	Count	11	2	1	0	14
		% of Total	7.50%	1.40%	0.70%	0.00%	9.50%
	6 months -1 year	Count	10	0	0	0	10
		% of Total	6.80%	0.00%	0.00%	0.00%	6.80%
	3 years - 6 years	Count	28	13	2	1	44
		% of Total	19.00%	8.80%	1.40%	0.70%	29.90%
	3 years - 6 years	Count	19	8	3	0	30
		% of Total	12.90%	5.40%	2.00%	0.00%	20.40%
	6 years	Count	22	15	7	5	49

	above	% of Total	15.00%	10.20%	4.80%	3.40%	33.30%
Total		Count	90	38	13	6	147
		% of Total	61.20%	25.90%	8.80%	4.10%	100.00%
P-Value		0.069					

**Relationship between (Education) and "How long have you been working in the same job?"**

Table 11 shows no relationship between education and "How long have you been working in the same job?" where the P-value is more than (0.05).

**Table 11: Education with "How long have you been working in the same job?"**

		Educational Qualification					Total
		Less than high school degree	Some college or Associate	Bachelor degree	Graduate degree		
Howlong have you been working in the same job?	Less than 6 month	Count	10	3	1	0	14
		% of Total	6.80%	2.00%	0.70%	0.00%	9.50%
	6months- 1 year	Count	5	3	2	0	10
		% of Total	3.40%	2.00%	1.40%	0.00%	6.80%
	3 year-6 years	Count	22	5	15	2	44
		% of Total	15.00%	3.40%	10.20%	1.40%	29.90%
	3 years-6 years	Count	20	3	7	0	30
		% of Total	13.60%	2.00%	4.80%	0.00%	20.40%
	6 years above	Count	25	9	15	0	49
		% of Total	17.00%	6.10%	10.20%	0.00%	33.30%
	Total	Count	82	23	40	2	147
		% of Total	55.80%	15.60%	27.20%	1.40%	100.00%
P-Value		0.381					

**Relationship between (Gender, Age, Education, Income) and "How many times have you been promoted at your current workplace?"**

**Relationship between (Gender) and "How many times have you been promoted at your current workplace?"**

Table 12 shows no relationship between Gender and "How many times have you been promoted at your current workplace?" where the P-value is more than (0.05).

**Table 12: Gender with "How many times have you been promoted at your current workplace?"**

			Gender		Total
			Female	Male	
How many times have you been promoted at your current workplace?	1	Count	26	83	109
		% of Total	17.70%	56.50%	74.10%
	2	Count	6	14	20
		% of Total	4.10%	9.50%	13.60%
	3	Count	2	9	11
		% of Total	1.40%	6.10%	7.50%
	4	Count	0	5	5
		% of Total	0.00%	3.40%	3.40%
	5	Count	0	2	2
		% of Total	0.00%	1.40%	1.40%
Total		Count	34	113	147
		% of Total	23.10%	76.90%	100.00%
P-Value			0.588		

***Relationship between (Age) and "How many times have you been promoted at your current workplace?"***

Table 13 shows no relationship between Age and "How many times have you been promoted at your current workplace?" where the P-value is more than (0.05).

**Table 13. Age with "How many times have you been promoted at your current workplace?"**

			Age				Total
			18-24	25-34	35-44	45-above	
How many times have you been promoted at your current workplace?	1	Count	23	64	16	6	109
		% of Total	15.60%	43.50%	10.90%	4.10%	74.10%
	2	Count	3	13	2	2	20
		% of Total	2.00%	8.80%	1.40%	1.40%	13.60%
	3	Count	2	4	5	0	11
		% of Total	1.40%	2.70%	3.40%	0.00%	7.50%
	4	Count	0	3	2	0	5
		% of Total	0.00%	2.00%	1.40%	0.00%	3.40%
	5	Count	0	2	0	0	2
		% of Total	0.00%	1.40%	0.00%	0.00%	1.40%
Total		Count	28	86	25	8	147
		% of Total	19.00%	58.50%	17.00%	5.40%	100.00%
P-Value			0.354				

***Relationship between (Income) and "How many times have you been promoted at your current workplace?"***

Table 14 shows no relationship between Income and "How many times have you been promoted at your current workplace?" where the P-value is more than (0.05).

**Table 14: Income with "How many times have you been promoted at your current workplace?"**

		Monthly Income				Total		
		200JD-400JD	401JD-600JD	601JD-999JD	1000JD and above			
How many times have you been promoted at your current workplace?	1	Count	70	29	8	2	109	
		% of Total	47.60%	19.70%	5.40%	1.40%	74.10%	
	2	Count	12	4	2	2	20	
		% of Total	8.20%	2.70%	1.40%	1.40%	13.60%	
	3	Count	5	2	2	2	11	
		% of Total	3.40%	1.40%	1.40%	1.40%	7.50%	
	4	Count	1	3	1	0	5	
		% of Total	0.70%	2.00%	0.70%	0.00%	3.40%	
	5	Count	2	0	0	0	2	
		% of Total	1.40%	0.00%	0.00%	0.00%	1.40%	
	Total		Count	90	38	13	6	147
			% of Total	61.20%	25.90%	8.80%	4.10%	100.00%
P-Value		0.158						

**Relationship between (Gender, Age, Education, Income) and 'Factors which most influence your decision to leave the job'**

***Relationship between 'Gender' and 'Factors which most influence your decision to leave the job'***

Table 15 shows the relationship between 'Gender' and 'Factors which most influence your decision to leave the job', where the P-value is less than (0.05). Clearly, male employees see low salary as a greater factor in their decision to leave the job than female employees.



**Table 15: ‘Gender’ with ‘Factors which most influence your decision to leave the job’**

		Gender			Total
		Female	Male		
Factors which most influence your decision to leave the job	Low salary	Count	8	63	71
		% of Total	5.40%	42.90%	48.30%
	Bad work condition	Count	5	9	14
		% of Total	3.40%	6.10%	9.50%
	Negative environment	Count	5	10	15
		% of Total	3.40%	6.80%	10.20%
	Job security	Count	3	10	13
		% of Total	2.00%	6.80%	8.80%
	Low career growth	Count	1	8	9
		% of Total	0.70%	5.40%	6.10%
	Poor management	Count	5	8	13
		% of Total	3.40%	5.40%	8.80%
	High level of stress	Count	7	5	12
		% of Total	4.80%	3.40%	8.20%
Total		Count	34	113	147
		% of Total	23.10%	76.90%	100.00%
P-Value			0.005*		

***Relationship between ‘Age’ and ‘Factors which most influence your decision to leave the job’***

Table 16 shows no relationship between ‘Age’ and ‘Factors which most influence your decision to leave the job’, where the P-value is more than (0.05).

**Table 16: ‘Age’ with ‘Factors which most influence your decision to leave the job’**

		Age				Total	
		18-24	25-34	35-44	45-above		
Factors which most influence your decision to leave the job	Low salary	Count	13	44	11	3	71
		% of Total	8.80%	29.90%	7.50%	2.00%	48.30%
	Bad work conditions	Count	4	8	1	1	14
		% of Total	2.70%	5.40%	0.70%	0.70%	9.50%
	Negative environment	Count	3	7	4	1	15
		% of Total	2.00%	4.80%	2.70%	0.70%	10.20%
	Job security	Count	3	7	1	2	13
		% of Total	2.00%	4.80%	0.70%	1.40%	8.80%
	Low career	Count	0	7	2	0	9

growth	% of Total	0.00%	4.80%	1.40%	0.00%	6.10%
	Count	3	8	2	0	13
Poor management	% of Total	2.00%	5.40%	1.40%	0.00%	8.80%
	Count	2	5	4	1	12
High level of stress	% of Total	1.40%	3.40%	2.70%	0.70%	8.20%
	Count	28	86	25	8	147
Total	% of Total	19.00%	58.50%	17.00%	5.40%	100.00%
	Count					
P-Value		0.799				

***Relationship between ‘Education’ and ‘Factors which most influence your decision to leave the job’***

Table 17 shows no relationship between ‘Education’ and ‘Factors which most influence your decision to leave the job’, where the P-value is more than (0.05).

**Table 17: ‘Education’ with ‘Factors which most influence your decision to leave the job’**

		Level of Education				Total	
		Less than high school degree	Some college or Associate	Bachelor degree	Graduate degree		
Factors which most influence your decision to leave the job	Low salary	Count	42	12	17	0	71
		%of Total	28.60%	8.20%	11.60%	0.00%	48.30%
	Bad work conditions	Count	9	1	4	0	14
		%of Total	6.10%	0.70%	2.70%	0.00%	9.50%
	Negative environment	Count	5	3	6	1	15
		%of Total	3.40%	2.00%	4.10%	0.70%	10.20%
	Job security	Count	8	2	3	0	13
		%of Total	5.40%	1.40%	2.00%	0.00%	8.80%
	Low career growth	Count	5	3	0	1	9
		%of Total	3.40%	2.00%	0.00%	0.70%	6.10%
	Poor management	Count	7	0	6	0	13
		%of Total	4.80%	0.00%	4.10%	0.00%	8.80%
	High level of stress	Count	6	2	4	0	12
		%of Total	4.10%	1.40%	2.70%	0.00%	8.20%

Total	Count	82	23	40	2	147
	%of Total	55.80%	15.60%	27.20%	1.40%	100.00%
P-Value		0.181				

## Conclusion

This study has focused on the main factors that can influence employee satisfaction and performance, with the results highlighting the factors with the biggest impact. The most important factor has been proven to be 'Wages', with 50.3% of our population seeing wages as very important for Jordanian employees in view of the country's high cost of living. The nature of the job itself was considered the second most important factor, with a weighting of 16.3%. Our study shows that Jordanian people care about their positions, and the levels of challenge and excitement offered by their job. The survey indicated that Jordanian employees were prepared to leave their job in case of finding a job with a higher salary elsewhere. Based on the study result, it is evident that the two major factors that lead to employees leaving their jobs is low salary and a negative organizational culture, which together represent 58.5%.

Based on the apparent positive relationship between wages and employee satisfaction, we recommend that Jordanian companies, where possible, raise wages to exceed the industry average in order to attract and retain higher quality employees. In response to the second hypothesis, we discovered that there is a negative relationship between stress and employee performance. We noticed that influences such as an aggressive supervisor, poor communication, inadequate training, role ambiguity, and role conflict can raise the level of work-related stress. Overwhelming stress levels will naturally lead to reduced performance. On the other hand, we noticed that training and development increase employees' skills and raise their confidence in their ability to do the job, indicating a positive relationship between training and satisfaction. Increased training helps employees feel more comfortable to perform tasks and brings about greater proficiency, which in turn gives employees internal motivation and high self-esteem.

Addressing the fourth hypothesis, we found that job security has a significant impact on turnover rate. When employees feel that their job is secure in the long term, they will remain and perform better, thus markedly reducing turnover rate. Job security can motivate employees to develop long term plans in their personal lives; thus, they feel contented at work, which leads to an increase in job performance. On the other hand, employees who feel their job is under threat will quickly start to look for alternative employment.

## References

- Abu-Jarad, I.Y., Yusof, N.A. and Nikbin, D., 2010. A review paper on organizational culture and organizational performance. *International Journal of Business and Social Science*, 1(3).
- Al-Mohammad, S., Akroush, M. and Lutfi Odetallah, A., 2014. Marketing culture and business performance: Re-examination of Webster's marketing culture measurement scale. *Marketing Intelligence & Planning*, 32(7), pp.794-822.
- Allen, M., 2010. Corporate universities 2010: Globalization and greater sophistication. *The Journal of International Management Studies*, 5(1), pp.48-53.
- Alvesson, M. and Spicer, A., 2012. A stupidity-based theory of organizations. *Journal of management studies*, 49(7), pp.1194-1220.

- Armstrong, M. and Taylor, S., 2014. *Armstrong's handbook of human resource management practice*. Kogan Page Publishers.
- Ashford, S.J., Lee, C. and Bobko, P., 1989. Content, cause, and consequences of job insecurity: A theory-based measure and substantive test. *Academy of Management journal*, 32(4), pp.803-829.
- Bernstein, D.A., and Nash, P.W. (2008) *Essentials of Psychology*, 4th ed., Boston: Cengage Learning.
- Brown, G.D., Gardner, J., Oswald, A.J. and Qian, J., 2008. Does wage rank affect employees' well-being?. *Industrial Relations: A Journal of Economy and Society*, 47(3), pp.355-389.
- Cappelli, P. and Sherer, P.D., 1988. Satisfaction, market wages, & labor relations: an airline study. *Industrial Relations: A Journal of Economy and Society*, 27(1), pp.56-73.
- Cronley, C. and Kim, Y.K., 2017. Intentions to turnover: Testing the moderated effects of organizational culture, as mediated by job satisfaction, within the Salvation Army. *Leadership & Organization Development Journal*, 38(2), pp.194-209.
- Creswell, J.W., 2009. *Research design: Qualitative, quantitative, and mixed methods approaches (Vol. 4)*. Thousand Oaks, CA: Sage.
- Davies, G. and Dwyer, C., 2007. Qualitative methods: are you enchanted or are you alienated?. *Progress in Human Geography*, 31(2), pp.257-266.
- Frye, M.B., 2004. Equity-based compensation for employees: firm performance and determinants. *Journal of Financial Research*, 27(1), pp.31-54.
- Garner, E., 2012. *Training skills: How to improve the skills and performance of your employees*. Bookboon. com.
- Gupta, C.B. (2011) *Human Resource Management 19th Ed.*, New Delhi: Sultan Chad and Sons.
- Gusdorf, M.L. (2009) 'Training Design, Development, & Implementation', *Society for Human Resource Management (SHRM)*, 1-34.
- Heneman, R.L., 1992. *Merit pay: Linking pay increases to performance ratings*. Addison-Wesley/Addison Wesley Longman.
- Hamermesh, D. (2001) 'The Changing Distribution of Job Satisfaction', *Journal of Human Resources*, 36(1), 1-30.
- Iverson, R.D., 1996. Employee acceptance of organizational change: the role of organizational commitment. *International Journal of Human Resource Management*, 7(1), pp.122-149.
- Kathawala, Y., Moore, K.J. and Elmuti, D., 1990. Preference between salary or job security increase. *International Journal of Manpower*, 11(7), pp.25-31.
- Kim, W.H., Ra, Y.A., Park, J.G. and Kwon, B., 2017. Role of burnout on job level, job satisfaction, and task performance. *Leadership & Organization Development Journal*, 38(5), pp.630-645.
- Landy, F.J., 1978. An opponent process theory of job satisfaction. *Journal of Applied Psychology*, 63(5), p.533.
- Kim Jean Lee, S. and Yu, K., 2004. Corporate culture and organizational performance. *Journal of managerial psychology*, 19(4), pp.340-359.
- Leong, C.S., Furnham, A. and Cooper, C.L., 1996. The moderating effect of organizational commitment on the occupational stress outcome relationship. *Human relations*, 49(10), pp.1345-1363.

- Locke, E.A. and Dunnette, M.D., 1976. Handbook of industrial and organizational psychology. The nature and causes of job satisfaction, pp.1297-1349.
- Malik, M., and Kanwal, M. ( 2016). Impacts of Organizational Knowledge Sharing Practices on Employees' Job Satisfaction: Mediating Roles of Learning Commitment and Interpersonal Adaptability. *Journal of Workplace Learning*.
- Mueller, C.W. and Kim, S.W., 2008. The contented female worker: Still a paradox?. In *Justice* (pp. 117-149). Emerald Group Publishing Limited.
- Nguyen, A., Taylor, J. and Bradley, S., 2003. Relative pay and job satisfaction: some new evidence.
- Obisi, C., 2011. Employee training and development in Nigerian organisations: Some observations and agenda for research. *Australian Journal of Business and Management Research*, 1(9), p.82.
- Prasad, L.M. (2010) *Human Resource Management*, Sultan Chand and Sons.
- Qayyum, A., Sharif, M.T., Ahmad, A. and Khan, M.S., 2012. Training & development practices in National Bank of Pakistan. *Information Management and Business Review*, 4(1), p.8.
- Rosow, J. M., and Zager, R. (1985), 'The Case for Employment Security', *Across the Board*, 22(1), 34–41.
- Saari, L.M. and Judge, T.A., 2004. Employee attitudes and job satisfaction. *Human Resource Management: Published in Cooperation with the School of Business Administration, The University of Michigan and in alliance with the Society of Human Resources Management*, 43(4), pp.395-407.
- Saleem, Q., Shahid, M. and Naseem, A., 2011. Degree of influence of training and development on employee's behavior. *International Journal of Computing and Business Research*, 2(3), pp.2229-6166.
- Schabracq, M.J. and Cooper, C.L., 2000. The changing nature of work and stress. *Journal of Managerial Psychology*, 15(3), pp.227-241.
- Shi, B., 2017, August. An exploratory study of job insecurity in relation to household registration, employment contract, and job satisfaction in Chinese state-owned enterprises. In *Evidence-based HRM: A Global Forum for Empirical Scholarship* (Vol. 5, No. 2, pp. 151-165). Emerald Publishing Limited.
- Short, T. and Harris, R.M., 2017. Harmonising training and development across an industry: the case of Australian rail. *European Journal of Training and Development*, 41(4), pp.373-387.
- Tichy, N.M., 1982. Managing change strategically: The technical, political, and cultural keys. *Organizational dynamics*, 11(2), pp.59-80.
- Vemić, J., 2007. Employee training and development and the learning organization. *FACTA UNIVERSITATIS Series: Economics and Organization*, 4(2), pp.209-216.
- Wang, W. and Seifert, R., 2017. Pay reductions and work attitudes: the moderating effect of employee involvement practices. *Employee Relations*, 39(7), pp.935-950.
- Yildirim, S., Acaray, A. and Candan, B., 2016. The relationship between marketing culture and organizational commitment: An empirical study in Turkey. *World Journal of Entrepreneurship, Management and Sustainable Development*, 12(1), pp.66-80.

## Case Study of Romanian Consumers Regarding Organic Products

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### Abstract

More than 50% of the world's population now lives in cities; the number of people migrating from small communities to cities is growing on a daily basis. Cities represent both centers of technological and social innovation in sustainable lifestyles – in theory; but most of metropolises stand on an unsustainable living. One of the most discussed topics is **Sustainable Production and Consumption** (SPC), which is “both a policy area and a multidisciplinary and interdisciplinary research agenda that seeks to address society's transformation to environmental sustainability and social sustainability” (Welch, D. & Warde, A., 2015). This issue has been subjected to development throughout the years by many scientists who are trying to include various conceptual frameworks for consumption and production systems. From the vast information of different authors, we are trying to have a theoretical and accurate literature review as well as the research objectives and methodology used in this article. The purpose of this research is to show how motivated are the people from Romania to buy sustainable products and what stimulates them to do so or discourage them in purchasing such goods.

**Keywords:** sustainable development; sustainable production and consumption; environmental sustainability; social sustainability

### Introduction

Through this paper we intend to summarize important key facts about sustainable consumption and production practices. We believe it's important to show the motivation of buying organic products in Romania and the results from our survey conducted specifically on this topic. There were 180 individuals questioned with 3 separate sections. We had a hypothesis at the beginning of this study which was: How much are the Romanian consumers interested in the organic products? Are they willing to spend more on bio produce than on conventional ones? How much they care about the manufacturing of products and the negative externalities resulted from these? We had an independent variable based from the first section of the questionnaire which was the level of education of people questioned and dependent variables such as wage, spending money on different products and interest of Romanian consumers in bio products. It can be seen in the Results section of this paper how it is approached the subject of sustainable consumption.

In Europe, the concern for socio-economic problems related to environmental issues was materialized by the adoption in 2001 by the European Council in Göteborg of the Sustainable Development Strategy of the European Union. This document indicates that sustainable development must be a primary focus of the European Union. However, the assessment of the progress made since 2001 has revealed the persistence of many unsustainable production and consumption practices that have led to a worsening of climate change, public health, poverty and social exclusion, exploitation of natural resources, and loss of biodiversity. As a result, in 2006, the Council of the European Union adopted the Renewed Sustainable Development Strategy for an enlarged Europe, whose overall objective is “to continually improve the quality of life for present and future generations [...]” (PNUD, 2008, p. 11). This strategy contains some

action measures to pursue cleaner production, to promote smarter consumption by retailers, through value added tax, through EU eco-labeling, green advertising and green certificates, etc. (WBCSD, 2008).

The European Union has taken important steps to achieve its goals of growth and job creation. The Lisbon Strategy has achieved significant results. More than six million jobs have been created over the past few years, and unemployment has declined significantly (<http://ec.europa.eu/transparency/regdoc/rep/1/2007/RO/1-2007-804-RO-F1-1.Pdf>). European industry is globally competitive and contributes substantially to economic growth and job creation. Through its industrial policy, the Commission has continued to establish the appropriate framework conditions for business in Europe. The challenge is now to integrate sustainable development in this context. Sustainable development aims to continuously improve the quality of life and the welfare of present and future generations (Strategia de dezvoltare durabilă a UE, revizuită, Consiliul UE, 10917/06). It is one of the key objectives of the European Union. However, this goal is affected by the ever-changing global changes, from melting ice caps to increasing demand for energy and resources. Challenges are directly related to our way of life. **The way we produce and consume contributes to global warming, pollution, the use of raw materials and the depletion of natural resources.**

The consequences of **consumption** in the EU are felt globally, as the EU depends on imports of energy and natural resources. In addition, a growing proportion of products consumed in Europe are manufactured elsewhere in the world. More than ever, the need to move towards more sustainable consumption and production patterns is a priority. Many measures can be taken to bring benefits to industry and European households.

Global pressure for more resource-efficient use and measures to improve sustainable development could become an important source of innovation and an important asset for the competitiveness of industry.

The Commission's strategy tries to support an integrated approach at EU and international level to **encourage sustainable consumption and production** and to promote its sustainable industrial policy. This strategy complements the current energy use policies, in particular the energy and climate change package adopted by the Commission in January 2008.

Sustainable consumption and production patterns relate to the promotion of resource and energy efficiency, sustainable infrastructure, and access to basic services, decent, sustainable jobs and a quality life for all of us. The implementation of these models contributes to the overall development plans, reducing economic, environmental and social costs, strengthening economic competitiveness and reducing poverty. (<http://sieg-dd.ro/obiectivul-12-asigurarea-unor-modele-durabile-de-consum-si-productie/>).

Essentially, sustainable consumption implies “the use of goods and services that meet basic needs and allow reaching a better quality of life, while minimizing the consumption of natural resources, the generation of toxic materials and the emission of waste and pollutants during life cycle so that there is no risk of being unable to meet the needs of future generations” (WBCSD, 2008).

Providing the same services or higher quality services that respond to the desirable needs of life and even the aspirations to improve the quality of life, while at the same time stopping the deterioration of the natural environment, raises not only the problem of **changing consumer patterns**, but also that of the decrease in the quantity of goods and services consumed, although the latter seems more difficult to accomplish. (<http://www.revistacalitateavietii.ro/2011/CV-2-2011/01.pdf>)

## Research Objectives and Methodology

The purpose of this paper is to highlight the opinion of the citizens of Bucharest on the concept of sustainable products (organic, bio, eco and green) in accordance with the reality in the city of Bucharest. More specifically, this research has looked at four areas that are directly linked to the main goal: how do citizens quote the quality of the products and services provided by sustainable production, how satisfied they are with the goods found in stores, what is the level of involvement in shaping an era of behavioral consumerism based on natural products and a few socio-economic factors that contribute at their decision in purchasing a certain product.

The proposed *research hypotheses* for this study are listed as follows:

- H1 There is a positive relationship between attitude and frequency of consumption of organic food;
- H2 There is a positive relationship between income and frequency of consumption of organic food;
- H3 There is a positive relationship between environmental concern and frequency of consumption of organic food;
- H4 There is a positive relationship between grade of education about organic food and organic food consumption frequency;
- H5 The 180 respondents in Bucharest are good representative part for all Romania.

To see these results, we chose the questionnaire method, the number of those surveyed being 180, with different education background and ages. We reckon that the implication of the study is reliable from a scientific outlook and that the answers of respondents and conclusions that were generated are representative for greatest part of population in Romania as from our point of view consumer behavior is influenced by the mentality of the people more than the specific zone where they live. Furthermore, another aspect that supports this statement is the correct distribution of the research sample, from a statistical point of view, taking into account multiple criteria: level of studies, employment status, wages and civil status. There is a limitation of the research from the point of view of the number of correspondents which completed the questionnaire.

## Perception of Romanian Customers Regarding Organic Products

- *Literature review*
- *Practice case (questionnaire of 180 respondents)*

In the last decade organic production and consumption have become a very important aspect for Romanian market in terms of customer demand and supply. Favorable natural conditions for production (soil, climate) and all the fiscal facilities (ex. reducing the VAT from 24% to 9% ) granted by the National Government and all the EU projects financed by European Commission contributed to the increase of this market segment with about 30% in 2016.

European Union Policy for Sustainable Agriculture has created a strong foundation of Romania's national policy for Sustainable Agriculture (EC, 2016b). The Common Agricultural Policy (CAP) is a common policy of all countries in EU funded from the resources of EU's budget. CAP allows farmers to fulfill their multiple functions in society, the first of which is to produce food, based on sustainable management of natural resources. According to the International Federation of Organic Agriculture Movement in 2012, total organic agricultural area in Romania was 288, 261 square hectares. The top selling organic products are: cereals, vegetables, honey and wine.

In Romania, in 2000, was issued the first national legislation of organic farming "The Emergency Ordinance of the Government O.U.G no. 34/2000. After this ordinance, following the next year was



issued the law 38/2001. The implementation of all these different regulations is aimed to be aligned to all EU standards of organic production in order to promote and sustain ecological farms, bio goods and eco-labeling. The Ministry of Agriculture and Rural Development in Romania (MADR) is the competent authority where all organic operators must register in order to receive organic certification which is renewed every year (according to the Order no. 895/2016). Two years before the company obtains this certificate, farms undergo a process of conversion from conventional production to organic production.

The trademark that organic producers in Romania obtain upon the process of certification it can be seen on the Ministry of Agriculture and Rural Development Romania website. This logo is mandatory for Romanian organic products together with: reference to organic production, name and code of the inspection and certification body which carried the inspection and issued the product certificate. The organic logo "AE" can be found along with the community logo for better and easier identification of the organic products. Consumers from Romania who buy products with national logo "AE" can be confident that at least 95% of the ingredients have been obtained according to the organic production method.

According to the USDA report (2017) elaborated for the Romanian market, customers lately had become cautious about the origin and ingredients of the products especially when it comes to families with children. According to the same report, once the customers started consuming organic products, they move to a new healthier lifestyle, such as buying organic cosmetics and detergents for kids, organic products for personal care, etc. It was demonstrated that consumers who tend to buy organic products tend to have higher education, higher income and are aged between 25-45 years old. Compared to men, women are predominant to purchase organic goods.

Polimeni, J.M. et al. (2018) in their study demonstrated that, for consumers, the location of buying bio products is essential for making the decision. Travelling longer distances until the point of sale of organic products do not motivates the organic buyers, as it is estimated that the travel and time cost is higher than the added value is obtained at the end. Interesting result indicated in the same study is that Romanians are proud of their agricultural heritage, so suppliers can use this aspect in order to promote local organic products. Consumers are interested of the origin of the products and they prefer to buy them at the "piata" (street market) and have higher education and higher income, same results as USDA (2017) report has demonstrated. Andrei, A.C & Andrei A.G (2012) study showed that most of the Romanian customers can afford to spend in the future between 51-200 RON (national currency) for organic products. About 53.6% of the respondents declared that they are prepared to pay more for organic products but not exceeding 25% of the price of the conventional products. Same study has shown that only 32.7% of the respondents tend to read organic food labels and most of them who read labels are women.

Petrescu, A.,et. al. (2017) suggested that individual's personal traits and different social factors can influence consumer behavior towards buying organic products. Romanian organic food producers should prioritize market segmentation in order to come closer to the target group. The efforts of lowering the price in order to raise the demand for such products, unfortunately are not solving the problem within the Romanian market, according to the same authors, instead of doing this, producers should provide more knowledge and education for higher health consciousness. Consumers that have higher concern for health and environment are the people with higher education and higher level of knowledge. This attitude of health care and care for the environment are good predictors for the purchase frequency of organic food products (Dumea, A. C., 2012).

Stan A.,et all. (2017) study, made for the Romanian food market, has shown that about 73% of the respondents spend at least 14 Euro/month for organic food products and the most frequent organic products are: fruits and vegetables, meat and eggs, then cereals and fish. For the better understanding of customer's motivation for buying organic products, the study asked the respondents to explain what it means for them organic and what it means conventional products. The results showed that organic product means: "healthier products, eco-friendly, for future, popular, cannot assess", compared with

conventional products which means: “more secure, more profitable, better conservation, cheaper than organic”.

According to the study made by Pocol C. B., et all. (2017), the findings are that the most important criterion of choosing an organic product when speaking about the choices of Romanian customers, they choose taste and nutritional qualities. Moreover, there is a positive relationship between frequency of purchase and the respondent’s level of education (those who have graduated a university tend to buy more often organic products, rather than those with high school education).

As most of the studies have shown, in order to increase the demand for organic products on Romanian market it is necessary to educate the customers, promote bio and natural goods more actively as a healthier lifestyle rather than conventional food, and highlight the nutritional value that these products can offer on a long run.

## Results

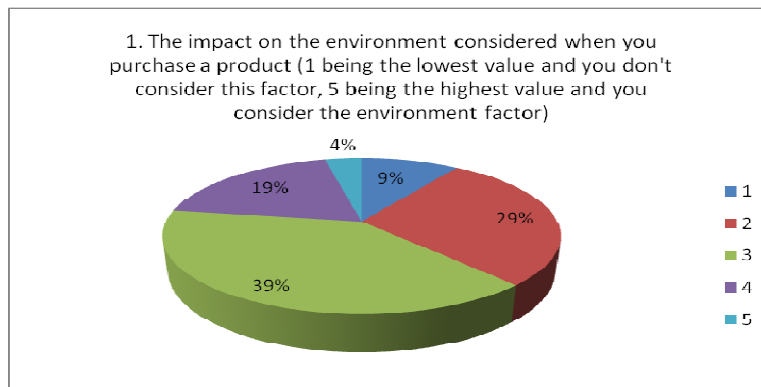
The first area to be analyzed within the current research refers to the sex of correspondents. This criterion is needed in order to see the perception of citizens compared between feminine and masculine people. From all the people questioned, the vast majority are feminine with 140 correspondents (77.77%), the second category being 40 masculine correspondents (22.22%). The marital status is 49 (27.22%) married people versus 131 (72.77%) unmarried people. The second section of the questionnaire and third section are the most relevant with the current research. The second section refers to the education of the respondents compared with their willingness to buy organic products. This showed us the differences in mentality scaling the level of knowledge. The third section was meant to convey the relation between income and willingness to buy organic products. We wanted to raise the question: How much are you willing to spend on an organic product that is similar to the one you usually purchase, but with free chemicals? Further, we analyzed the opinions of the correspondents over few important questions and compared the categories to see if there are differences or share the same mentalities. In the next table, we arranged the demographic details of respondents in order to have a progressive research study.

**Table 1: Demographic Profile of Respondents**

<b>Demographic Profile of Respondents</b>			
<b>Variable</b>		<b>Number of Respondents</b>	<b>Percentage</b>
<b>Gender</b>	Male	40	22.22%
	Female	140	77.77%
<b>Marital status</b>	Married	49	27.22%
	Single/Unmarried	131	72.77%
<b>Education (last degree graduated)</b>	High school	15	8.33%
	University degree	76	42.22%
	Master degree	79	43.88%
		4	2.22%

	PhD Degree		
	Post graduate studies	6	3.33%
<b>Income</b>	No income	8	4.44%
	1162-2900 RON (medium per economy)	84	46.66%
	>2900 RON (higher than average per capita income)	88	48.88%
<b>Employment</b>	Employed	167	92.77%
	Unemployed	13	7.22%

Source: own processing of collected data



**Chart 1: Environmental factor considered when purchasing a product**

Source: own processing of collected data

The results are related with the mentality of respondents. Because it was the first question asked in the second section after the demographic profile, we can reach the conclusion that most people have a neutral thinking towards the production of goods when it comes to accessibility (whether the product is in a certain store, shelve, etc), efficiency, ease of usage, etc. in terms of the whole consumerism. The results show a strong level of cohesion in how people approach sustainable products.

The table below is a summary of the chart 1 above. It shows how many respondents consider as important the environmental aspect when they purchase a product (e.g. 8 respondents don't take into account the environmental aspect when they purchase a product, so they have attributed a low value, in this case 1).

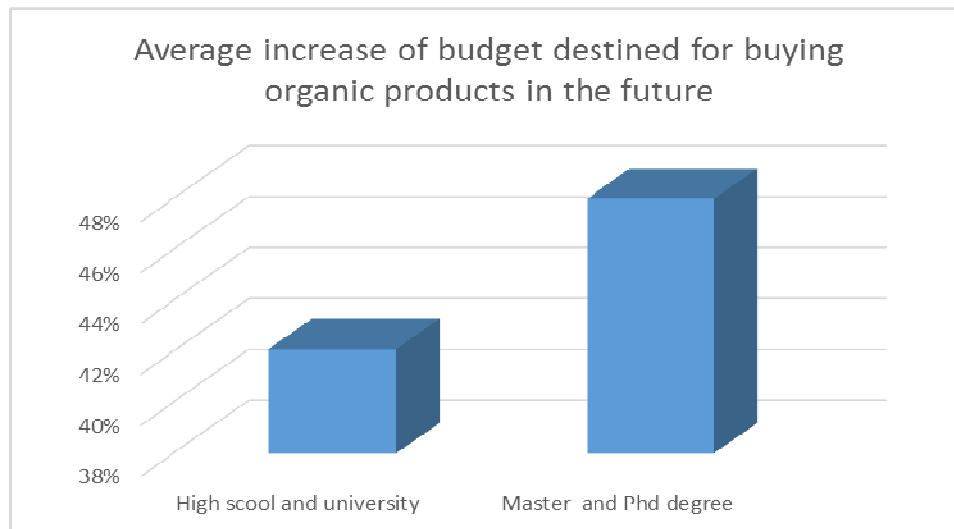
**Table 2: Summary of the chart 1 regarding the environmental aspect**

Scale (1 to 5)	Respondents
1	8
2	24
3	33
4	16
5	3

*Source: own processing of collected data*

We can see from the chart 1 and table 2 that more than half of the correspondents are not giving much thought on how the environment is put to danger by the production of the goods they buy. 17.7% of them are not taking into consideration this aspect (scale 1 and 2), 18.3% of them take into consideration this factor (scale 3) and 26.6% take strongly into consideration the impact on environment when they purchase a certain product.

Related with the grade of education we can only confirm what Pocol, C. B., et al. (2017); USDA (2017) (United States Department of Agriculture) report had demonstrated in their studies, that education has importance when buying organic products. As we can see from Chart 2, respondents with higher level of education (48%) tend to increase their budget more for buying organic products rather than those with lower grade of education (42%).

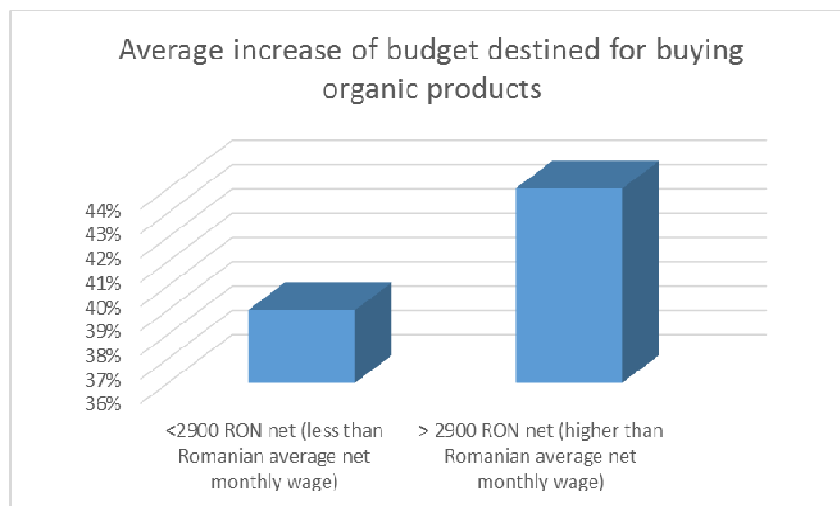


**Chart.2 : Education and willingness to buy organic products**

*Source: own processing of collected data*

Moreover, the results from our study had demonstrated (Chart 3) that income has significant importance when buying organic products. People who have less than the average per capita (39%) aren't willing to

buy bio products no matter the consequences of their production process over the environment compared with people who have more than the average per capita (44%) who consider the manufacturing process when they purchase organic products. According to the results on average the respondents who have income higher than the average per capita income are willing to dedicate higher amount of income in the future for buying organic products rather than those with lower wage. This situation of being reserved when buying organic products can be explained also due to the higher price that these products have in this moment in Romania. Same positive relation between income and willingness to buy organic products was demonstrated in USDA (2017) study.



**Chart 3: Relation between income and willingness to buy organic products**

*Source: own processing of collected data*

## Conclusions

There is now a growing concern among citizens everywhere for economic, social and environmental issues. There are also some trends in consumer behavior to act to address these issues. The production phase (agriculture, food processing) has a significant impact on the environment, households influence the impact through diet and habits choices. Thus, the environment is affected by the energy consumed for the preparation of food and the generation of waste. Nowadays, food production contributes more to global warming than all cars, planes and trains combined; uses 70% of drinking water, but leads to a drastic decrease in water quality due to pesticides and the use of fertilizers; accelerates the loss of biodiversity and is one of the engines of deforestation and desertification (<https://www.eatresponsibly.eu/ro/i-learn/why-our-food-habits-matter/>). From our survey we found out that people from Bucharest are reserved on buying organic food because of the prices these certain products have. Although they are concerned about how the environment is affected by the product's manufacture, they are willing to buy more bio products if they would have more money in the future. Same positive relationship within this study was found between education and willingness to buy organic products. Respondents with higher level of education (master degree & PhD degree) are more likely to increase their budget for buying organic products (48%) compared with respondents who have a lower degree of education (42%).

The main contribution of this study to literature, and in the same time the main conclusion, is that consumer's behavior towards buying organic products is reserved and is mainly guided by their

mentality. Most of the Romanian consumers don't give much thought on how the products are being manufactured or how some companies affect through their activities (such as waste disposal) the environment. In this sense, we showed through our study case, that the level of education plays an important role – therefore, the NGOs, city council and other parties that are socially involved in educating people about the negative externalities of certain businesses, can achieve even a healthier population, boost the local economy by sustaining small farmers and people have access to a variety of locally grown produce.

## References

- Dumea, A., (2012), “*Factors Influencing Consumption Of Organic Food In Romania*”, University of Iasi, The USV Annals of Economics and Public Administration Volume 12, Issue 1(15)
- Dumea, A., and Andrei, A. G., (2012), “*Organic food consumer in Romania*”, Munich Personal RePEc Archive, available at <http://mpra.ub.uni-muenchen.de/36865/>, MPRA Paper No. 36865
- Ministry Of Agriculture And Rural Development – Romania, <http://www.madr.ro/>
- Petrescu, A.G., Oncioiu, I., Petrescu, M., (2017), “*Perception of Organic Food Consumption in Romania*”, MDPI, 6, 42; doi:10.3390/foods6060042 available at <https://www.mdpi.com/journal/foods>
- PNUD, Guvernul României, Ministerul Mediului și Dezvoltării Durabile, Centrul Național pentru Dezvoltare Durabilă, Strategia Națională pentru Dezvoltare Durabilă a României. Orizonturi 2013–2020–2030, București, 2008, disponibil online la <http://strategia.ncsd.ro>
- Pocol, C. B., Ședîk, P., Ristovski D., (2017) “*Tendencies And Characteristics Of Organic Food Consumption In Romania*”, GeographicaTimisiensis, vol. XXVI, nr. 1-2
- Polimeni, J. M., Iorgulescu, I. R., Mihnea, A., (2018), “*Understanding consumer motivations for buying sustainable agricultural products at Romanian farmers markets*”, Journal of Cleaner Production 184 (2018) 586e59
- Propunere de program comunitar de la Lisabona 2008 – 2010 – COM (2007) 804
- Stan. A., Dobrin. A., Zugravu M., Bezdadea-Catuneanu I., Iancu, A, Lagunovschi. L. V., Badulescu, L., (2017) “*Perception and preference of the Romanian consumers regarding organic vs. conventional products quality – survey study*”, Volume 21(3), 1- 7, Journal of Horticulture, Forestry and Biotechnology available at [www.journal-hfb.usab-tm.ro](http://www.journal-hfb.usab-tm.ro)
- Strategia de dezvoltare durabilă a UE, revizuită, Consiliul UE, 10917/06.
- USDA - Foreign Agricultural service report (2017), “*Organic production and market overview*”, GAIN report Number RO1702 , prepared by Monica Dobrescu
- Welch, D. and Warde, A. (2015) “*Theories of Practice and Sustainable Consumption*”, in Reisch, L. and Thøgersen, J. (eds.) Handbook of Research on Sustainable Consumption, Cheltenham, UK: Edward Elgar Publishing, pp.84-100. Available from: [https://www.researchgate.net/publication/298102903\\_Theories\\_of\\_practice\\_and\\_sustainable\\_consumption](https://www.researchgate.net/publication/298102903_Theories_of_practice_and_sustainable_consumption) [accessed Sep 27 2018].
- WBCSD (World Business Council for Sustainable Development), “*Sustainable Consumption. Facts and Trends*”, Atar Roto Presse SA, Switzerland, 2008, available online at <http://www.wbcsd.org>.
- <http://ec.europa.eu/transparency/regdoc/rep/1/2007/RO/1-2007-804-RO-F1-1.Pdf>
- <http://sieg-dd.ro/obiectivul-12-asigurarea-unor-modele-durabile-de-consum-si-productie/>
- <http://www.revistacalitateavietii.ro/2011/CV-2-2011/01.pdf>
- <https://www.eatresponsibly.eu/ro/i-learn/why-our-food-habits-matter/>

## Analysis of Agro-Tourism Concentration in Romania

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### Abstract

The paper analyzed the concentration in Romania's agro-tourism using the empirical data provided by the National Institute of Statistics for the period 2007-2016. Four main indicators characterizing agro-tourism were taken into consideration: number of guest houses, number of places, tourist arrivals and overnight stays. They have been analyzed in their dynamics at the national level and also in the territory in the 8 regions of development. Herfindhal-Hirschman Index (HHI), Gini-Struck Coefficient (GSC) and Concentration Coefficient (CC) were used to evaluate the concentration in Romania's agro-tourism. The results proved that HHI values ranged between 0.2 and 0.3 reflecting a "moderate concentration" of agro-tourism in terms of guest houses, places, tourist arrivals and overnight stays. GSC values were higher than 0.3 and in a few cases over 0.4, confirming a "relative concentration" of agro-tourism. CC values exceeded 0.3 and in few cases 0.4, reflecting a "relative concentration". As a conclusion, there is a moderate to relative concentration of agro-tourism in Romania. There are differences among the eight regions of development, the Central, North East and North West regions concentrating over 71 % of the number of guest houses and places, and over 74% of tourists and overnight stays. However, all the regions, of Romania make continuous efforts to develop agro-tourism for promoting the beauty of the landscapes, the historical and cultural heritage, for assuring the economic development of the local communities, for raising the living standard of the rural population and for better satisfying tourists' demand.

**Keywords:** agro-tourism, concentration, disparities, Romania

### Introduction

Tourism is an important economic activity which promotes the natural, historical and cultural heritage, contributes to the economic development of localities and regions, offers jobs and creates income flows for payment balance.

Rural tourism as a form of sustainable tourism destined to protect the natural environment and preserve biodiversity (Middleton & O'Keefe, 2003), to offer a renewable alternative (Berno & Bricker, 2001), to rationally utilize the socio-economic resources and promote the historical and cultural patrimony (Bennett, Roe, & Ashley, 1999), to strengthen the welfare of the local population and communities (Aronsson, 2000; Van Speier, 2006).

Agro-tourism is an alternative of rural tourism, more and more attractive for the urban population who desires to escape of the modern and stressing civilization and to spend holidays in the middle of nature, in beautiful and quiet places of the rural areas, as an opportunity for leisure and recover, for learning more about the beauty of scenery, folk music and dance, handicrafts, gastronomy, works in the household, farm and field, about the rural life style and to benefit of the locals hospitality as mentioned by Hawkins and Middleton (1998) and Matei (2006).

At the same time, agro-tourism offers an opportunity for farmers to increase their income from accommodation, board and other services, besides their basic job-agriculture, as affirmed Medlik (1993).

In Romania, agro-tourism has begun to develop after 1990. The first agro-tourist guest houses have appeared in the Bran-Moeciu area and then it was spread in other regions such as: Maramures, Apuseni, Bucovina, Harghita, Sibiu, the Danube Delta, the Black Sea etc, where many rural houses and settlements have been converted into villages with a tourist function.

In 1994, the development of agro-tourism was stimulated by the creation of the National Association of Rural, Ecological and Cultural Tourism of Romania (ANTREC), which is an Eurogite member and promotes the touristic potential of the rural zones, contributes to the training of the owners of agro-tourist guest houses, organizes meetings and workshops for exchange of ideas and experience with similar organizations from abroad, participates to the homologation of the guest houses and tourist villages and to the international tourism fairs as affirmed by Bran *et al.* (1997).

For Romania, agro-tourism is very important because 40 % of the population is living in the rural areas dealing mainly with agriculture as local industry and services are not so well developed. Therefore, being a family business, agro-tourism is an important supplementary income source for the local population (Glavan, 2003; Abargaonitei, 2010, Nistoreanu and Gheres, 2010).

The demand for agro-tourism services is continuously increasing. More and more Romanians, but also foreigners are interested to know more about the life in the country side.

The large variety of activities and experiences in the rural areas attracts more and more tourists. They could enjoy leisure, recreation and animation specific to the local community, staying to a farm, tasting delicious food prepared in a traditional manner, learning to drive a carriage, a sleigh or to ride a horse, making pilgrimage to well known churches and monasteries, visiting handicrafts workshops, taking part to various activities such as: holing, seeding, picking fruit, harvesting crops, gathering eggs, making plum brandy and wine, preparing canned fruit and vegetables, making meat and cheese preparations, feeding animals and playing with them, milking goats, sheep and cows, buying traditional food directly from the farm, watching the birds and the animals on the pasture, learning to paint the eggs, participating to various folk events, walking in the surroundings etc as specified by Abargaonitei (2010). And all these are offered at a convenient price/quality ratio as found by Candea *et al.* (2003) and Marian (2017).

Despite that many areas are more interested in developing agro-tourism, there are still disparities in Romania's territory.

In order to study the convergence, concentration and inequalities, the literature offers various methods such as: the variation coefficient, Gini-Struck coefficient, Lorenz Curve, Herfindhal-Hirschman Index, Robin Hood Coefficient, Theil Index etc as mentioned Pecican (2009).

As in Romania, agro-tourism has not been studied by any of this methods so far, the objectives of this paper are:

- (i) To analyze the concentration and inequalities in agro-tourism using Gini-Struck coefficient (Gini, 1912, 1921), Herfindhal-Hirschman Index (Hirschman, 1964), and Concentration Coefficient methods and the official statistical data for the period 2007-2016.
- (ii) To point out the differences of development of this form of rural tourism in the territory by region.
- (iii) To present a model on how agro-tourism concentration could be analyzed in its dynamics in terms of number of guest houses, places, tourist arrivals and overnight stays.

The structure of this paper consists of: *Introduction* which presents the different aspects concerning the importance of agro-tourism and literature results on this topic. *Materials and methods* present the study area, data sources, the main indicators (variables) taken into consideration, and the methodology applied in this research, *Results and Discussions* which shows the achieved results and the corresponding



comments and interpretations, and *Conclusions*, where there are briefly presented the main ideas derived from this research.

## Materials and Methods

*The study area* is represented by Romania, situated in the South Eastern Europe and having 238,400 square kilometers surface, being the 12th largest country on the continent. Romania has 19,577,704 inhabitants, meaning 3.8 % of the EU population and coming on the 7th position from this point of view on September 24, 2018. (Romania Population, 2018, Worldometers; Countries in the EU by Population (2018), Worldometers).

After Romania's access in January 2007 into the EU structure, agro-tourism has been stimulated to grow faster and to contribute more intensively to the development of many communities and areas.

### Data collection

The paper was set up based on the empirical data provided by the Tempo-Online Data Base of the National Institute of Statistics for the period of reference 2007-2016.

*The main indicators analyzed in this study* have been the following ones:

- tourism offer expressing the accommodation capacity in terms of the number of agro-tourist guest houses and the number of places;
  - tourism demand in terms of tourist arrivals and overnight stays.
- All these indicators were presented both at the national and regional level.

### Methodology

*Index method* allowed to study the indicators mentioned above in their dynamics in the period 2007-2016. It was used the Fixed basis Index, having the formula:  $I_{FB} = (X_i / X_0)100$ , where  $X_i$  is a the value of the variable (indicator) taken into consideration in the years  $i = 0, 1, 2, \dots$  and 10 years of the chronological series.

*The structure of each agro-tourist indicator* mentioned above by *micro-region of development* was determined using the formula:  $S\% = (X_i / X_{ij})100$ , where  $X_{ij}$  = the value of the  $j$  indicator in the region  $i$ .  
*The descriptive statistics* in terms of mean, standard deviation and coefficient of variation was established for each agro-tourism indicator using the Excel facilities.

The values of the variation coefficient ( $CV\%$ ) =  $(St. Dev / Mean)100$  have been interpreted as follows:  $CV < 10\%$  the values are homogenous,  $10\% > CV < 20\%$  the values are relatively homogenous,  $20\% > CV < 30\%$  the values are relatively heterogeneous, and  $CV > 30\%$  the values are heterogeneous (Bolboaca, 2012).

*Herfindhal-Hirschman Index (HHI)* was established as the sum of the squared shares of the micro-regions of development according to the formula:

$$HHI_j = \sum_{i=1}^n g_i^2 \quad (1)$$

where:

$HHI_j$  = the territorial concentration of the  $j$  variables and  $j = 1, 2, 3$ , and 4, representing the four indicators characterizing agro-tourism as mentioned above.

$g_i$  = the share of each region in the total  $j$  indicators taken into consideration at the national level. Here,  $i=1,2,3,\dots,8$ , as Romania has 8 regions of development as follows: North West (NW), Central (C), North East (NE), South East (SE), South Muntenia (S Munt), Bucharest Ilfov (Buc IF), South West Oltenia (SW Olt) and West (W).

$g_i$  was calculated based on the formula:

$$g_i = X_{ij}/X_j \quad (2)$$

where:

$X_{ij}$  is the value of the  $j$  indicator in the  $i$  region.

$X_j$  is the value of the indicator  $j$  at the country level, including the values for all the 8 regions.

The HHI values have been interpreted as follows:

HHI < 0.01 reflects a high uniformity for the  $j$  variable among regions;

HHI < 0.15 reflects an unconcentrated status of the  $j$  variable;

HHI between 0.15 and 0.25, that is:  $0.15 < \text{HHI} < 0.25$  reflects a moderate concentration of the  $j$  variable;

HHI > 0.5 reflects a high concentration, meaning large disparities among regions for the  $j$  variable (Hirschman, 1964; Popescu Agatha, 2012).

However, in this case, the HHI values vary between 0.125, when all the 8 regions have the same share and there are no inequalities in the territory among regions and HHI = 1, when the  $j$  indicator is supposed to be concentrated in only one region.

*Gini-Struck Coefficient (GSC)* was used to reflect the disparities among regions taking into consideration the HHI values and the number of regions according to the formula (Gini, 1921, Iosifescu *et al*, 1982):

$$\text{GSC}_j = \sqrt{\frac{n \sum_{i=1}^n g_i^2 - 1}{n-1}} \quad (3)$$

The GSC values vary between 0 and 1,  $\text{GSC} \in [0,1]$ .

The interpretation of the GSC values is the following one:

GSC = 0 shows that there are no differences among regions, that is, it is a perfect equity regarding the dispersion of the  $j$  indicator in the territory.

GSC > 0.3 means a relative concentration of the  $j$  indicator

GSC > 0.5 reflects a high concentration of the  $j$  indicator in the territory

GSC = 1 reflects a perfect inequality among regions.

*Concentration Coefficient (CC)* is an adjusted alternative for  $\text{GSC}_j$ , taking into account the number of regions, as shown by the formula:

$$\text{CC}_j = [n/(n-1)] \text{GSC}_j \quad (4)$$

The obtained results were tabled and then correspondingly interpreted.

## Results and Discussions

### *Evolution of the number of guest houses, places, tourist arrivals and overnight stays in Romania's agro-tourism.*

The number of guest houses registered an important dynamics, having an increasing trend from 1,292 units in the year 2007 to 2,028 units in 2016, meaning + 56.9 % in the analyzed period.

The explanation is the attractiveness of this business for people living in the rural space in order to get additional incomes. Also, important investments were made to modernize the rural houses and to build new guest houses to correspond to tourists' requirements and homologation criteria.

The increasing trend was continuous in the period 2007-2009, but in 2010 and 2011, agro-tourism was slightly affected by the economic crisis, but it restarted to grow since 2012 till present (Table 1).

The empirical data provided by the National Institute of Statistics reflect that the accommodation capacity in agro-tourism in terms of number of guest houses has continuously increased, except a few years after the economic crisis. But, agro-tourism phenomenon is much larger than the statistics shows, because in Romania there are rural boarding guest houses which offer their services to tourists, but they are not officially registered (Glavan, 2006; Antonescu and Antonescu, 2013).

*The number of places (beds)* in the agro-tourist guest houses has continuously increased from 15,448 places in 2007 to 37,394 places in 2016 (+142.06 %) and it has not been affected at all by the economic crisis (Table 1). Like in case of the number of guest houses, in agro-tourism there are more places to offer than officially registered.

*The number of tourist arrivals* in agro-tourist guest houses grew up from 288,508 in the year 2007 to 813,454 in the year 2016, meaning + 181.95 % and reflecting the demand growth for this form of tourism services in Romania.

However, the economic crisis affected the tourists' income with a consequence in a reduction of the number of arrivals in the year 2009 (-9% compared to 2008) and mainly in 2010 (-19 % compared to 2008 and -11 % compared to 2009) (Table 1).

The more and more increasing number of tourists is a proof of the continuous growth of their demand for agro-tourism, both from the side of Romanians and foreigners. This is justified in addition by the best ratio between price and service quality in agro-tourism. (Candea *et al.*, 2003; Marian, 2017).

However, the tourist demand for agro-tourism has seasonal variations due to different economic, social and organizational factors such as: the period when the holidays are planned, the facilities allotted for vacations, income level, family type (with and without children), tourists' age etc. The demand exists all over the year, but after a weak period in January, February and March, it increases from April to May, with a peak at Easter, then continues to grow in June and reach other peaks in July and August, therefore during the summer holidays. After a short decline in September, October and November, it ends the year with another peak in December at Christmas (Matei, 2015).

*The number of overnight stays* in agro-tourist guest houses increased by + 169.77 % from 592,327 overnight stays in 2007 to 1,597,939 overnight stays in 2016, with a negative inflexion in 2009 ( -10 % compared to 2008) and in 2010 (-11,2 % compared to 2009)(Table 1).

*The coefficient of variation* was 17.57 % for the number of guest houses, reflecting that the values are relatively homogeneous and the average value is representative for this indicator, (10 % < V% < 20 %). The variation coefficient for the number of places was 30.49 %, reflecting that the values are relatively homogeneous and the average is relatively representative. In case of the tourist arrivals, the CV % was 45.61%, the highest value, reflecting that the values are heterogeneous and the average is not representative. The same situation is for the number of overnight stays which recorded CV = 36.22% reflecting heterogeneous values (Table 1).

**Table 1: The dynamics of the number of guest houses, places, tourist arrivals and overnight stays in Romania's agro-tourism**

	No. of guest houses	No. of places	Tourist arrivals	Overnight stays
2007	1,292	15,448	288,508	592,327
2008	1,348	16,906	357,617	743,444
2009	1,412	19,783	325,686	673,188
2010	1,354	20,208	289,923	604,606
2011	1,210	20,683	360,696	741,350
2012	1,569	27,453	947,113	906,504
2013	1,598	28,775	501,746	996,425
2014	1,665	30,480	549,302	1,081,501
2015	1,918	35,188	672,756	1,368,992
2016	2,028	37,394	813,454	1,597,939
2016/2007 %	156.9 %	242.06 %	281.95%	269.77%
Mean 2007-2016	1,539.4	25,231.8	510,680.1	930,632.6
St. Dev.	270.617	7,693.705	232,953.634	337,148.945
CV%	17.57 %	30.49 %	45.61	36.22 %

Source: Own calculation based on the data provided by the National Institute of Statistics, 2018

### ***The Share of Agro-Tourism in Romania's Tourism***

*The share of the number of agro-tourist guest houses* in the total number of units with function for tourists' accommodation in the country increased from 27.5 % in 2007 to 29.1 % in 2016. This means that about one third of tourist units is represented by agro-tourist guest houses.

*The share of the number of places in agro-tourist guest houses* in the total number of places existing in Romania's tourism increased from 5.44 % in 2007 to 11.36 % in 2016, reflecting that it has doubled its level in the analyzed period due to the efforts made by owners to grow the accommodation capacity.

*The share of tourist arrivals in agro-tourist guest houses* increased from 4.13 % in 2007 to 7.39 % in 2016. Apparently, the level of this indicator does not look to be too high, because most of the tourists and especially the foreigners prefer hotels, but its high dynamics reflects that tourists pay more and more attention to this form of accommodation which is good and much cheaper, and in addition it allows to enjoy living in the middle of nature, keeping close contact with the life style in the rural space, local gastronomy and hospitality at a more convenient cost/stay.

*The share of the number of overnight stays in agro-tourist guest houses* in the total overnight stays registered in the Romanian tourism increased from 2.9 % in 2007 to 6.28 % in 2016, reflecting a double growth in the analyzed period for the same reason mentioned above for tourist arrivals (Table 2).

**Table 2: The share of the number of guest houses, places, tourist arrivals and overnight stays in agro-tourism in Romania's tourism (%)**

	Guest houses	Places	Tourist arrivals	Overnight stays
2007	27.5	5.44	4.13	2.90
2008	27.8	5.74	5.01	3.58
2009	27.7	6.51	5.30	3.88
2010	25.9	6.48	4.77	3.76
2011	24.1	7.42	5.12	4.12
2012	26.9	9.11	5.81	4.72
2013	26.5	9.41	6.31	5.14
2014	27.1	9.79	6.48	5.33
2015	28.1	10.71	6.78	5.82
2016	29.1	11.36	7.39	6.28

Source: Own calculation based on the data provided by the National Institute of Statistics, 2018

*The evolution of places, tourist arrivals and overnight stays per agro-tourist guest house* has definitely increased in the analyzed period by +54.2 %, +79.6 % and, respectively, by +70.4 %.

The number of places/guest house increased from 11.95 in 2007 to 18.43 in 2016, the number of tourist arrivals/guest house increased from 223.3 in 2007 to 401.1 in 2016 and the number of overnight stays/guest house increased from 462.3 in 2007 to 787.9 in 2016 (Table 3).

**Table 3: The dynamics of the places, tourist arrivals and overnights stays per guest house**

	Places/guest house	Tourist arrivals/ guest house	Overnight stays/ guest house
2007	11.95	223.3	462.3
2008	12.54	265.2	551.5
2009	14.01	230.6	476.7
2010	14.92	214.1	446.5
2011	17.09	298.1	612.6
2012	17.49	285.1	577.7
2013	18.00	313.9	623.5
2014	18.30	329.9	649.5
2015	18.34	350.7	713.7
2016	18.43	401.1	787.9
Mean 2007-2016	16.11	291.2	590.19
2016/2007 %	154.2 %	179.6%	170.4 %

Source: Own calculation based on the data provided by the National Institute of Statistics, 2018

### The Distribution of the Agro-Tourist Guest Houses in the Territory Of Romania by Region of Development

The number of agro-tourist guest houses is concentrated mainly in three regions, in the descending order being: the Central part keeping 40.6 % agro-tourist guest houses, North East region accounting for 17.3 % and North West with 14 %., all together summing 71.9 %.

Lower shares were registered for South Muntenia (10.4 %), West (7.4 %), South West Oltenia (5.9%), South East ( 4.3 %) and finally Bucharest Ilfov which is of less importance (0.1 %) (Table 4). The same hierarchy was found by Chirtoc and Barsan (2016) and Marin (2017) for other periods of analysis.

**Table 4: The evolution of the share of agro-tourist guest houses by region of development (%)**

	NW	C	NE	SE	S Munt	Buc IF	SW Olt	W
2007	15.5	45.1	15.2	8.0	7.5	0.7	3.8	4.2
2008	16.7	45.5	14.8	7.1	7.3	0.7	3.5	4.4
2009	18.3	38.4	17.1	6.8	8.3	0.7	4.9	5.5
2010	19.6	36.0	16.9	7.7	8.0	0.4	4.5	6.9
2011	17.0	35.1	18.4	5.9	10.3	0.2	6.1	7.0
2012	16.1	37.8	16.9	5.7	9.4	0.1	6.9	7.1
2013	14.5	38.2	17.7	5.4	10.4	0.2	6.4	7.2
2014	13.6	39.8	17.3	5.3	10.4	0.1	6.5	7.0
2015	12.8	42.4	16.7	4.2	10.6	0.1	5.5	7.7
2016	14.0	40.6	17.3	4.3	10.4	0.1	5.9	7.4

Source: Own calculation based on the data provided by the National Institute of Statistics, 2018

In the analyzed period, one may notice an increasing trend in North East, South Muntenia and West regions, a relatively constant situation with low variations in the Center and N West, and a decreasing trend in South East and Bucharest Ilfov.

### ***The Distribution of the Places in Agro-Tourist Guest Houses by Micro-Region***

The places offered by agro-tourist guest houses are mainly concentrated in the same three regions: Central part (39.4 %), North East (17.3 %) and North West (14.6%), totalizing 71.3 % of the total number of places. The other regions keep a lower weight in their offer of beds: South Muntenia (9.9%), West (8.2 %), South West Oltenia (5.6 %), South East (4.9%) and Bucharest Ilfov (0.1 %). (Table 5).

**Table 5: The dynamics of the share of the places in agro-tourist guest houses by development region (%)**

	NW	C	NE	SE	S Munt	Buc IF	SW Olt	W
2007	13.0	39.8	18.5	11.6	7.8	0.8	2.5	5.0
2008	13.6	41.0	18.2	10.3	7.5	0.8	3.4	5.2
2009	14.9	35.9	19.3	9.5	8.5	0.8	5.2	5.9
2010	16.0	33.7	18.8	10.4	8.2	0.5	5.1	7.3
2011	15.2	35.0	19.6	6.7	9.8	0.2	5.7	7.8
2012	15.8	36.7	17.6	7.5	8.5	0.2	6.2	7.5
2013	13.8	38.0	18.3	6.6	9.9	0.2	5.8	7.4
2014	13.7	38.8	17.7	6.3	10.0	0.2	5.9	7.4
2015	13.7	41.1	17.1	4.7	10.2	0.1	5.2	7.9
2016	14.6	39.4	17.3	4.9	9.9	0.1	5.6	8.2

Source: Own calculation based on the data provided by the National Institute of Statistics, 2018

In the analyzed period it was found a relatively constant share in the Central region and North West, a slight declining share in North East, a strong declining weight in South East and Bucharest Ilfov and an increasing share in South Muntenia, South West and West.

### ***The Distribution of Tourist Arrivals in Agro-Tourist Guest Houses in the Territory by Region (%)***

Tourist arrivals are also concentrated in the three regions where the accommodation offer is the highest: Center (37.4 %), North East (19.3%) and North West (17.5%). The other regions recorded the following results: South Muntenia (8.5 %), West ( 6.9%), South West Oltenia (6.7 %), South East (3.6 %) and Bucharest Ilfov (0.1 %).

In the analyzed period, it was noticed an increasing trend in the Center, South West Oltenia and West, but a descending trend in North West, North East, and Bucharest Ilfov ( Table 6).

**Table 6: The dynamics of the share of the tourist arrivals in agro-tourist guest houses by region (%)**

	NW	C	NE	SE	S Munt	Buc IF	SW Olt	W
2007	25.8	27.8	22.4	6.9	9.7	0.7	2.7	4.0
2008	28.1	29.8	20.9	6.3	7.9	0.6	3.1	3.3
2009	22.3	28.8	23.8	7.0	9.5	0.5	4.5	3.6
2010	18.0	29.6	25.3	6.7	9.5	0.3	4.1	6.5
2011	14.0	33.0	26.3	6.1	8.0	0.3	5.6	6.7
2012	15.1	34.4	23.0	5.1	8.2	0.3	6.5	7.4
2013	15.4	36.4	21.0	4.3	8.9	0.4	7.0	6.6
2014	15.9	36.4	20.5	5.0	9.5	0.2	6.1	6.4
2015	15.8	36.4	20.1	4.3	9.6	0.2	6.2	7.5
2016	17.5	37.4	19.3	3.6	8.5	0.1	6.7	6.9

Source: Own calculation based on the data provided by the National Institute of Statistics, 2018

### ***The Distribution of Overnight Stays in Agro-Tourist Guest Houses by Region***

About 74.7 % of the overnight stays are concentrated in the same three top regions in agro-tourism: 39.2 % in the Central part, 18.3 % in North East and 17.2 % in North West. The situation in the other regions is the following one: 7.8 % in South Muntenia, 7.2 % in West, 6.8 % in South West Oltenia, 3.4 % in South East and 0.1 % in Bucharest Ilfov.

The main tendencies regarding the overnight stays by region in the analyzed period are: an increase in the Central part of the country, West and South West Oltenia, a decline in North West, North East, South East, Bucharest Ilfov and a relatively constancy in South Muntenia (Table 7).

**Table 7: The dynamics of overnight stays in agro-tourist guest houses by region (%)**

	NW	C	NE	SE	S Munt	Buc IF	SW Olt	W
2007	24.1	32.3	19.8	6.8	8.2	0.9	2.9	4.0
2008	26.3	33.7	18.0	6.7	8.1	0.6	3.1	3.5
2009	20.9	33.4	21.0	7.0	8.2	0.5	5.3	3.7
2010	17.1	33.4	22.4	7.6	8.1	0.3	5.2	5.9
2011	13.9	35.9	23.9	5.5	7.4	0.3	6.4	6.7
2012	15.1	36.6	22.4	4.8	7.6	0.3	6.2	7.0
2013	14.9	39.5	19.4	4.5	8.1	0.3	6.4	6.9
2014	15.5	40.3	18.7	4.5	8.6	0.2	6.0	6.2
2015	16.2	39.5	17.1	3.8	8.6	0.1	5.8	8.9
2016	17.2	39.2	18.3	3.4	7.8	0.1	6.8	7.2

Source: Own calculation based on the data provided by the National Institute of Statistics, 2018

### ***The concentration of Romania's agro-tourism in terms of Herfindhal-Hirschman Index (HHI)***

The results for Herfindhal-Hirschman Index (HHI) for the four indicators: number of guest houses, number of places, tourist arrivals and overnight stays in Romania's agro-tourism are presented in Table 8. Looking at the HHI values, we can easily observe that all these indicators are characterized by a "moderate concentration" as long as HHI varied between 0.2002, the minimum value recorded for the number of places in the year 2010 and 0.2736, the maximum value, registered for the number of tourist arrivals in the year 2011.

Thus, HHI values for the number of guest houses increased from 0.2656 in the year 2007 to 0.2358 in the year 2016. HHI values for the number of places slightly declined from 0.2326 in 2007 to 0.2280 in 2016. HHI values for the number of tourist arrivals grew up from 0.2102 in 2007 to 0.2255 in 2016. In case of the number of overnight stays, HHI values varied between 0.2170 in 2007 and 0.2339 in the year 2016. Therefore, the general trend is a slight increasing one for these indicators, but mainly for the number of guest houses. The only exception is for the number of places where the trend is a descending one (Table 8).

**Table 8: The dynamics of the concentration of agro-tourism in terms of Herfindhal-Hirschman Index (HHI)**

	HHI for the number of guest houses	HHI for the number of places	HHI for the tourist arrivals	HHI for the number of overnight stays
2007	0.2656	0.2326	0.2102	0.2170
2008	0.2701	0.2396	0.2237	0.2285
2009	0.2268	0.2101	0.2063	0.2150
2010	0.2155	0.2002	0.2034	0.2107
2011	0.2085	0.2073	0.2736	0.2222
2012	0.2189	0.2126	0.2635	0.2209
2013	0.2212	0.2197	0.2191	0.2333
2014	0.2295	0.2237	0.2192	0.2384
2015	0.2450	0.2380	0.2184	0.2318
2016	0.2358	0.2280	0.2255	0.2339

Source: Own calculations.



***The concentration of Romania's agro-tourism in terms of Gini-Struck Coefficient (GSC)***

The values of Gini-Struck Coefficient presented in Table 9 reflect a "relative concentration" [GSC >0.3] in the territory for all the four agro-tourism indicators.

**Table 9: The dynamics of the concentration of agro-tourism in terms of Gini-Struck Coefficient (GSC)**

	GSC for the number of guest houses	GSC for the number of places	GSC for the tourist arrivals	GSC for the number of overnight stays
2007	0.4008	0.3506	0.3120	0.3242
2008	0.4072	0.3619	0.3358	0.3439
2009	0.3410	0.3118	0.3048	0.3207
2010	0.3216	0.2932	0.2993	0.3129
2011	0.3089	0.3066	0.4121	0.3333
2012	0.3275	0.3164	0.3978	0.3311
2013	0.3315	0.3289	0.3279	0.3518
2014	0.3455	0.3358	0.3281	0.3500
2015	0.3703	0.3593	0.3267	0.3494
2016	0.3558	0.3444	0.3389	0.3528

Source: Own calculations.

A few exceptions were recorded for the number of guest houses in 2007 and 2008 and for the number of tourist arrivals in 2011, where GSC is higher than 0.4. Also, in 2010, the number of places and the number of tourist arrivals recorded a GSC a little lower than 0.3.

The general trend is an increasing one for GSC values for tourist arrivals and overnight stays, and a slight decreasing one for the number of guest houses and the number of places.

The GSC values for the number of guest houses declined from 0.4008 in 2007 to 0.3558 in 2016. The GSC values for the number of places decreased from 0.3506 in 2007 to 0.3444 in 2016. The GSC values for the number of tourist arrivals increased from 0.3120 in 2007 to 0.3389 in 2016, and the GSC values for the number of overnight stays grew up from 0.3242 in 2007 to 0.3528 in 2016 (Table 9).

***The concentration of Romania's agro-tourism in terms of Concentration Coefficient***

The values of the Concentration Coefficients presented in Table 10 reflect a high concentration, CC >0.4 for the number of guest houses in the years 2007, 2008, 2015 and 2016, for the number of places in the years 2007, 2008 and 2015, for tourist arrivals in 2011 and for overnight stays in 2013, 2014 and 2016. But all the other CC values are ranging between 0.3351 for the number of places in 2010, the lowest value, and 0.3992 for overnight stays in 2015. Therefore, they reflect in general a moderate to high concentration of agro-tourism in Romania.

The CC values for the number of guest houses has registered a slight decrease from 0.4580 in 2007 to 0.4066 in 2016. The CC values for the number of places have slightly declined from 0.4006 in 2007 to 0.3935 in 2016. In case of the tourist arrivals, the CC values increased from 0.3565 in 2007 to 0.3872 in 2016 and in case of the number of overnight stays, the CC values increased from 0.3730 in 2007 to 0.4032 in 2016 (Table 10).

**Table 10: The dynamics of the concentration of agro-tourism in terms of Concentration Coefficient (CC)**

	CC for the number of guest houses	CC for the number of places	CC for the tourist arrivals	CC for the number of overnight stays
2007	0.4580	0.4006	0.3565	0.3730
2008	0.4653	0.4135	0.3837	0.3930
2009	0.3896	0.3563	0.3483	0.3664
2010	0.3675	0.3351	0.3420	0.3575
2011	0.3530	0.3503	0.4709	0.3808
2012	0.3743	0.3615	0.4546	0.3784
2013	0.3788	0.3758	0.3747	0.4020
2014	0.3848	0.3837	0.3749	0.4114
2015	0.4232	0.4106	0.3733	0.3992
2016	0.4066	0.3935	0.3872	0.4032

Source: Own calculations.

## Conclusions

Agro-tourism is a very important niche in Romania's tourism, as 40 % of the population is living in the rural areas. More rural families are interested to develop a business in agro-tourism to complete their income either from agriculture or other activities.

The offer of services of accommodation, board, and farm and nonfarm activities is larger and larger every year. In the analyzed period, the number of guest houses increased by 56.9 % and the number of places increased 2.4 times.

The territorial dispersion of the agro-tourism offer in terms of number of guest houses and places is not equal among the regions of development. About 71 % of the number of agro-tourist guest houses and places are concentrated in the Central region, North East and North West, of which about 40 % belongs only to the Central region.

South Muntenia region comes on the 4th position with about 10 % of the number of guest houses and places. On the 5th position comes the West region with about 8% guest houses and places, on the 6th position is situated the South West Oltenia with about 5.8 % of the number of guest houses and places and then on the 7th position is situated South East region with about 4.5 %. Bucharest Ilfov has the smallest offer just 0.1 %.

In the analyzed period, per agro-tourist guest house, the average number of places, tourist arrivals and overnight stays was 16.10, 291.2 and, respectively, 590,19.

The demand for agro-tourism services has continuously increased. In 2016 the number of tourists arrivals was 2.8 times higher and the number of overnight stays was 2.7 times higher than in 2007. In the territory there are some discrepancies regarding tourist arrivals and overnight stays. Most of tourists (74.2 %) and overnight stays (74.7 %) were registered in the Central region, North East and North West regions. However, the Central region attract the highest number of tourists, accounting for about 38 %, followed by North East (19 %) and North West (17%). The other regions coming in the decreasing order of their importance based on the tourist demand are: South Muntenia, West, South West Oltenia and

South Est. Bucharest Ilfov area is less of importance regarding tourist demand (0.1%), because of the capital which attracts most of the tourists.

The values of Herfindhal-Hirschman Index ranged between 0.2 and 03 in the analyzed period, reflecting a "moderate concentration" of the number of guest houses, places, tourist arrivals and overnight stays.

The values of Gini-Struck Coefficients showed a "relative concentration" of agro-tourism in the territory as long as they were higher than 0.3, which a few exceptions higher than 0.4.

The Concentration Coefficients also reflected a relative concentration as their values were over 0.3 and in a few cases over 0.4.

Therefore, the research pointed out that there is a moderate to high concentration of agro-tourism in Romania. It does not reflect equity among the eight regions, but on the contrary a trend of concentration of offer and demand in the Central, North East and North West regions.

However, all the other regions, make efforts to keep pace with this competition being interested in agro-tourism in order to valorize their natural, cultural and historical heritage, to strengthen the economic development of the local communities and regions, to improve living standard of the rural population and to better satisfy tourists' demand.

## References

Abargaonitei, SI. (2010), 'The agro-touristic offer of Bucovina' ('Oferta agroturistica a Bucovinei'). Iasi: Tipo Moldova, 108-133.

Antonescu, D. and Antonescu, R-M. (2013), 'Sustainable development of agro-tourism in the European Union and Romania'. ('Dezvoltarea durabila a agroturismului in Uniunea Europeana si in Romania'), Conference Proceedings of Academia Comerciala, pp.119-218, [Online], Retrieved on Sept.5, 2018, <http://conferinta2013.academiacomerciala.ro>.

Aronsson, L. (2000), 'The Development of Sustainable Tourism'. London and New York: Continuum.

Berno, T. and Bricker, K. (2001), 'Sustainable tourism development: The long road from theory to practice'. *International Journal of Economic Development*, 3 (3), 1-18.

Bolboaca, S. (2012), 'Descriptive statistics'. ('Statistica descriptiva'), [Online], Retrieved on Sept.5, 2018 <http://sorana.academicdirect.ro/pages/doc/MV2012/MVRom02.pdf>.

Bran, F., Manu, D., and Simon, T. (1997), 'Rural tourism'. ('Turismul rural'), Ed. Economică, Bucuresti, 98-101.

Câdea, M., Erdeli, G., Simon, T. and Pieptănatu, D. (2003), 'The touristic potential of Romania and the touristic organization of the space'. ('Potentialul turistic al României si amenajarea turistica a spatiului'), Ed. Universitară, Bucuresti, 48-54.

Chirtoc, I.E. and Busan, G. (2016), 'Development of Agrotouristical Sector in Romania', *Annals of "Dunarea de Jos" University of Galati, Fascicle I. Economics and Applied Informatics*, Years XXII – No.2/2016, 67-62.

Countries in the EU by Population (2018), *Worldometers*, [Online], [Retrieved on Sept.5, 2018], <http://www.worldometers.info/population/countries-in-the-eu-by-population/>.

- Gini, C. (1912). 'Variability and Mutability' ('Variabilità e mutabilità'), C. Cuppini, Bologna, 156 pages. Reprinted in *Memorie di metodologica statistica* (ed.) Pizetti E, Salvemini, T). Rome: Libreria Eredi Virgilio Veschi (1955).
- Gini, C. (1921), 'Measurement of inequality of income', *Economic Journal* 31, 22-43.
- Glavan, V. (2003), 'Rural Tourism. Agro-tourism. Sustainable Tourism. EcoTourism'. ('Turism rural. Agroturism. Turism durabil. Ecoturism'). Bucuresti: Editura Economica, 109-117.
- Glavan, V. (2006), 'The Touristic potential and its valorization'. ('Potentialul turistic si valorificarea sa'). Bucuresti: Editura Fundatiei Romania de Maine, 36-42.
- Hawkins, R., and Middleton, VTC. (1998), 'Sustainable tourism: a marketing perspective'. Butterworth-Heinemann, *Oxford*, [Online], [Retrieved on Sept.5, 2018], <http://eprints.glos.ac.uk/2966/>.
- Hirschman, AO. (1964), 'The paternity of an Index', *American Economic Review*, p.761-762.
- Iosifescu, M., Moineagu, C., Trebici, V. and Ursianu, E. (1985), 'Small Statistics Encyclopedic', Scientific and Encyclopedic Press House, Bucharest, 172-174, 179-181
- Marian, I. (2017), 'Rural Tourism and Agro-tourism in Romania', "*Ovidius*" *University Annals, Economic Sciences Series*, Vol. XVII, Issue 2 /2017, 226-231.
- Matei, E. (2006), 'Rural Tourism and EcoTourism'. ('Turism rural și ecoturism'), Editura Credis, București, 46-54.
- Matei, FD. (2015), 'Study on the evolution of seasonality in agri-tourism by regions of Romania', *The Romanian Economic Journal*, Year XVIII, No.55, March 2015, 149-161.
- Medlik, S. (1993), 'Dictionary of Travel, Tourism and Hospitality'. Butterworth-Heinemann, 360.
- Middleton, N. and O'Keefe, P. (2003), 'Rio plus ten'. London: Pluto Press, cited in Van Speier, J., 2006, 'Sustainable development and tourism', *Observatorio de Inovacao do Turismo, Revista Academica*, Vol.1, No. 2, Novembre 2006, 1-25, Brazil.
- Nistoreanu, P. and Ghereș, M. (2010), 'Rural Tourism' ('Turism rural'). Editura. C.H.Beck. București, 114-115.
- Pecican, ES. (2009), 'Indicators regarding the real convergence and their applications'. ('Indicatori privind convergenta reala si aplicatiile acestora'), *INCE – CIDE*, pp.1-30. [Online], [Retrieved on Sept.5, 2018], <http://www.studii-economice.ro/2009/seince091004.pdf>.
- Popescu, A. (2012), 'Research on concentration of pork production in Romania', *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, Vol.16(1)2016, 405-410
- Romania Population, (2018), *Worldometers*, [Online], [Retrieved on Sept.5, 2018], <http://www.worldometers.info/world-population/romania-population/>.
- Tempo Online Data Base, (2018) *National Institute of Statistics*, [Online], [Retrieved on Sept.5, 2018].[www.insse.ro](http://www.insse.ro)

Van Speier, J. (2006), 'Sustainable development and tourism'. *Observatorio de Inovacao do Turismo, Revista Academica*, Vol.1, No. 2, Novembre 2006, 1-25, Brazil.

## **Analysis of Tourism Trends in the New EU Member States**

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### **Abstract**

The paper analyzed tourism development in the new 13 EU member states in the period 2009-2016 based on the official data, regarding: tourism offer (accommodation units and bed places), tourist demand (tourist arrivals, overnight stays), tourism intensity (overnight stays/capita and km<sup>2</sup>), tourism efficiency (receipts, expenditures and balance, receipts/inhabitant) and tourism contribution to GDP. Tourism dynamics and structural aspects were determined using the classical methods. In the new member states, tourism plays an important role in the economy, contributing by 6.5 % to GDP, compared to 0.8 % in the EU. Croatia, Cyprus and Malta have over 13% contribution to GDP, keeping the 1st positions in the EU. Tourist arrivals increased by 60.5%, and night stays by 55 % in the analyzed period. Poland, Croatia, Czech Republic, Hungary, Bulgaria, and Romania are the most visited countries. Tourism growth led to a positive balance (Euro million 21,389). In the future, the development of sustainable tourism will depend on the use of the competitive advantages, the creation of the "unique brands", the integration of the tourism strategy in the general strategy, co-operation, capital and labor mobility, innovation, and adaptation to climate change. In this way, the new EU countries could get a higher market share in the EU, Europe and world tourism.

**Keywords:** tourism, trends, new EU member states

### **Introduction**

Tourism is one of the most dynamic branches of international trade and the third export sector in the world. It is an essential activity in the economy of every country, playing a specific role in the valorization of resources, jobs creation, economic growth, income flows, improvement of the payment balance, strengthening the international relationships and increasing the living standard of the communities all over the world as mentioned by Kulis *et al* (2008) and Popescu (2012).

Tourism has a large spatial dispersion among countries and a large variety of impacts: economic, social, environmental etc. as affirmed by Batista e Silva *et al* (2018).

It is a "special product" consisting of a diversified mixture of goods and services produced in various sectors: buildings, transport, agriculture, food industry, other industries, trade, business and investments, legislation, banking and insurance, education, culture, sport, communication technology, security and safety, and not in the last turn, tourism services and operational bodies: accommodation, board, hospitality, tour operators, travel agents, tourist attractions etc. as specified by Ursache (2001) and Popescu (2016).

The international tourism has increased year by year, being affected just for a short period by the economic and financial crisis of 2008-2009.

In 2017, at the world level, the international tourist arrivals reached 1,323 million and the receipts from international tourism accounted for USD Billion 1,332 (UNWTO Barometer, 2018).

Europe keeps the top position in the world with 670.6 million international tourist arrivals ( 50.7 %) and USD Billion 519.2 (39%) (Statista, 2018).

The EU-28 is the most important "player" in Europe tourism and in the world. In 2017, it registered 538 million international tourist arrivals, representing 40 % of the world arrivals and the contribution of travel and tourism to GDP accounted for USD Billion 665.3.

The statistical data proved that the year 2017 was the 8th consecutive year when the EU recorded a sustained growth of tourism after the economic crisis ( Statista, 2018).

The countries from the Central and Eastern part of Europe are considered a "jewel" of valuable heritage of the "old continent" and of the EU-28 at present. They made and continue to make substantial efforts to develop tourism, keeping pace with the international competition.

After the political changes and passing to the period of transition to the market economy, Poland, Hungary, Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Bulgaria and Romania succeeded to increase the tourism receipts per inhabitant in the period 1991-1996, but in the coming year till 2002, they registered a decline as found by Aguayo (2005).

After that, they continued to make huge efforts to better co-ordinate their tourism strategies, to establish more effective regional policies and to prepare to meet the criteria to be accepted as EU member states. The membership was a challenge but also an opportunity to open a "new door" for the intensification of trade with goods and services with a positive effect on the economic growth. However, the performance in tourism and the role in the economic growth and employment differ from a country to another depending on tourism importance in the economy, tourism strategy, existing resources, interlinks with other economic sectors, tourism management and marketing.

The development of tourism in the new EU member states (NEUMS) has been positively influenced by the opening of frontiers, the rich and diversified natural cultural patrimony, innovation and investments in buildings and means of transportation, by a higher living standard of the population and by people desire to extend their knowledge and experience travelling.

Other factors such as: climate change, holidays seasonality, terrorist attacks, high taxation, specificity of regulations and difficulties in staff employment have had a negative impact on tourism (Amelung et al., 2007, Iordache, 2009, On Mon, 2015, Nagar and Sinha, 2017, Ana, 2018).

The EU decided to transform Europe into a "top tourist destination" stimulating competitiveness, promoting sustainable and high quality tourism, strengthening the picture of the "old continent" as a "leader of the world destinations" and injecting more funds in tourism development (European Commission, 2010). As a result, the NEUMS are challenged much more than before to keep pace with the stronger and stronger competition among the EU countries to attract more visitors and get a higher income. Starting from a real evaluation of the resources, they have to better use their competitive advantages and offer "star products", "niche products", "destinations of excellence" which have to reflect the "uniqueness" of their natural, historical and cultural heritage, the "brand personality" needed to distinguish them from the offer issued by competitors as sustained by Murphy *et al.* (2007) and Gajdosik *et al.* (2015).

Only in this way, tourist destinations could touch tourists' heart and mind and provide satisfaction, nice memories, and reasons to return. It is said that "a tourist could bring other 10 tourists to a destination, if he/she was satisfied" as affirmed by Popescu (2012).

The development of IT enabled tourists to get information on a their desired destination, to solve easier the travel formalities ( booking the room hotel, air tickets, entrances to museums etc). This was a factor of tourism development in the new EU member states and in the EU-28 as well.

The EU funds put at the disposal of the member states have contributed to the development of infrastructure, buildings and other tourism facilities.

The studies regarding tourism requires official statistical data to be processed in specific tourism indicators and indices. Sometimes these official data are not sufficient, a reason to complete them with data from other sources, and this combination of information allows researchers to study tourism in more details and identify uncovered spatiotemporal patterns (Batista e Silva *et al.*, 2018).

In this context, the purpose of the paper was to complete the existing literature on tourism development in the new 13 EU member states in the last period of time, more exactly 2009-2016.

The objectives of this paper have been:

- (i)To analyze the dynamics of the key tourism indicators such as: tourism offer in terms of establishments for tourist accommodation and bed places, tourist demand in terms of: tourist arrivals, overnight stays in order to see how tourism has developed in the new 13 EU member states in the proposed time interval;
- (ii)To evaluate the efficiency of tourism in terms of tourism intensity ( overnight stays/inhabitant and square kilometer, receipts/inhabitant), and the receipts, expenditures and balance;
- (iii)To establish the market share of these countries based on various tourism indicators;
- (iv)To identify the countries where tourism is very a important activity in the economy based on its contribution to GDP.
- (v)To show the rank achieved by each country based on the T&T competitiveness Index.

The paper is structured in the following sections: *Introduction* where it is approached the importance of tourism in the economy and the attractiveness of the new EU member states from a touristic point of view, *Materials and methods* present the study area, data collection, the main tourism indicators used in this study to characterize the new member states and the utilized methodology, *Results and Discussions* where there are presented the results obtained after processing the empirical data and also the corresponding interpretations and comments. *Conclusions* end the paper presenting the main ideas resulting from this research.

## **Materials and Methods**

### ***The Study Area***

The recent access of other 13 countries to the EU has open a new era of the economic and political development, co-operation, stability and security. This paper refers to these new EU member states (NEUMS) which joined the EU in 1 May 2004: Cyprus, Czech Rep, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia, in January 2007: Bulgaria and Romania and in 1 July 2013: Croatia.



**Table 1: The surface and population in the NEUMS in the year 2016**

Crt. No.	Country	Surface (km <sup>2</sup> )	Population*
1	Bulgaria	110,879	7,153,784
2	Croatia	56,594	4,190,669
3	Cyprus	9,251	848,313
4	Czech Rep.	78,867	19,553,843
5	Estonia	45,228	1,315,944
6	Hungary	93,028	9,830,485
7	Latvia	64,589	1,968,957
8	Lithuania	65,300	2,888,558
9	Malta	316	450,615
10	Poland	312,685	37,967,209
11	Romania	238,397	19,760,314
12	Slovakia	49,035	5,426,252
13	Slovenia	20,273	2,064,188
	Total NEUMS	1,444,442	104,419,131
EU-28		4,422,793	510,277,177
Share in the EU-28 (%)		25.87	20.45
Europe**		10,180,000	741,447,138
Share in Europe (%)		11.24	14.08
World**		134,325,130.2	7,446,964,280
Share in the world (%)		0.85	1.4

Source: Own calculation, based on the following sources: \*EU Eurostat, 2018, Population change-Demographic balance and crude rates at national level; \*\* Worldometer, 2018, Population of Europe.

All together, these countries have 1,144,442 square kilometers surface, representing 25.87 % of the EU area and a population of 104,419,131 inhabitants, accounting for 20.45 % of the EU population. The surface and population by NEUMS and their share in the EU, Europe and the world area and population are shown in Table 1.

Taking into account the surface, among these countries there are large states such as: Poland, Romania and Bulgaria and small states such as Malta and Cyprus. Considering the population, the largest countries are: Poland, Romania, Czech Republic and Hungary, and the smallest ones are Malta and Cyprus. These aspects have an important influence on the indicators of tourism efficiency expressed per inhabitant and square kilometer.

The open borders allowed the development of inbound and outbound tourism and tourism facilities, the extend of job offer and the increase of GDP.

All these 13 countries of the EU have precious values of the common history and culture on the "old continent", a large variety of climate conditions and landscapes, a large range of historical and cultural attractions which make them important tourist destinations.

### **Data collection**

In order to set up this paper, the empirical data have been picked up from UNWTO Tourism Highlights published in the period 2010-2017, EU Eurostat Data Base-Tourism Statistics for the period 2009-2017, and other sources of information such as: Worldometer, Statista and Wikipedia.

**The main specific tourism indicators analyzed in this study** have been the following ones: (i) Tourism offer regarding the accommodation capacity in terms of the number of establishments and bed places; (ii) Tourism demand in terms of tourist arrivals and international tourist arrivals; (iii) Tourism demand in terms of nights spent at establishments with tourist function by residents and non residents; (iv) Tourism intensity in terms of night stays/ inhabitant and per square kilometer; (v) Tourism efficiency reflected by receipts, expenditures and balance; (vi) Tourism receipts/inhabitant; (vii) Contribution of tourism to GDP; (viii) Competitiveness Index in tourism and travel.

The most indicators were analyzed in their dynamics and structural aspects in the period 2009-2016. They were presented separately by each country and also at the NEUMS group.

Also, the market share of each country and of the NEUMS group in the EU-28 was shown where it was possible.

### **Methodology**

*Index method* was used to reflect the increase/decrease in the last year of the analysis, 2016, compared to the first year, 2009, using the formula of Fixed basis Index:  $I_{FB} = (X_i / X_0)100$ , where  $X_i$  is the value of the (indicator) in different years  $i = 0, 1, 2, \dots, n$  of the chronological series.

This method was used in order to show the evolution of each tourism indicator taken into account during the interval of reference and to point out the differences among countries within the NEUMS group.

*The structure of the NEUMS* for various indicators was calculated based on the formula:  $S_{ij} = (X_i / X_{ij})100$ , where  $X_{ij}$  = the value of the  $j$  indicator in the country  $i$ . This indicator reflects the share of each country in the NEUMS group level and allows to establish the hierarchy of the countries and their importance in the tourism in the Central and Eastern part of Europe.

*The tourism intensity (TI)* was determined as a ratio between the number of nights spent at tourist accommodation establishments (NS) and the resident population of each country (P), according to the formula:  $TI = NS/P$  or as a ratio between the overnight stays (NS) and the surface of each country (S), based on the formula:  $TI = NS/S$ . This indicator allowed to show in what measure a country is under social and environment pressure due to tourist flows.

*Tourism economic effect on inhabitant (TEE)* was evaluated as a ratio between tourism receipts (TR) and the population (P) of each country and at the NEUMS group, according to the formula:  $TEE = TR/P$ . This indicator was used in order to quantify the efficiency of tourism and its impact from an economic and social point of view in each country.

*The Competitiveness Index in Travel and Tourism* was used in this study in order to reflect the rank of the NEUMS countries in the world, according to the results shown by World Economic Forum in T&T Competitiveness 2017 Report.

The obtained results were tabled and then correspondingly interpreted.

## **Results and Discussions**

### ***Tourism Offer In Terms Of Number of Establishments and Number of Bed Places***

An important aspect of tourism is related of its offer for tourist accommodation. All the NEUMS made substantial efforts to keep pace with tourists demand for accommodation in various types of units such

hotels, holiday or other short-stay accommodation, camping grounds, recreational vehicle parks, and trailer parks.

In 2016, the NEUMS had 129,588 units for tourist accommodation, representing 21.34 % of the number of units existing in the EU-28. In the same year, the number of bed places accounted for 4,159 thousands, representing 13.3 % of the places existing in the EU-28.

The highest number of units belongs to the following countries: Croatia 64.22 %, Poland 8.1 %, Czech Rep. 7.1 %, Romania 5.42 % and Hungary 3.5 %, all these countries together summing about 88.5 % of the total units for tourist accommodation in the NEUMS.

Regarding the number of places, the countries with the highest offer are: Croatia 23.7 %, Poland 18 %, Czech Rep. 17.2 %, Hungary 10.7 %, Bulgaria 7.9 % and Romania 7.8 %, totalizing 85.3 % of the total number of bed places in the NEUMS (Table 2).

**Table 2: Number of establishments and number of bed places in the year 2016**

	Tourist establishments		Bed places	
	No. of units	Share (%)	Thousands	Share (%)
Bulgaria	3,331	2.6	328	7.9
Croatia	83,233	64.2	987	23.7
Cyprus	785	0.6	84	2.0
Czech Rep.	9,168	7.1	717	17.2
Estonia	1,454	1.1	58	1.4
Hungary	4,436	3.5	446	10.7
Latvia	759	0.6	47	1.1
Lithuania	2,686	2.1	77	1.9
Malta	184	0.1	43	1.0
Poland	10,509	8.1	749	18.0
Romania	7,028	5.4	326	7.8
Slovakia	2,755	2.1	184	4.4
Slovenia	3,260	2.5	113	2.9
Total NEUMS	129,588	100.0	4,159	100.0
EU-28	608,400	-	31,319	-
Share in the EU-28 (%)	21.4	-	13.3	-

Source: Eurostat, 2018, Number of establishments and bed-places

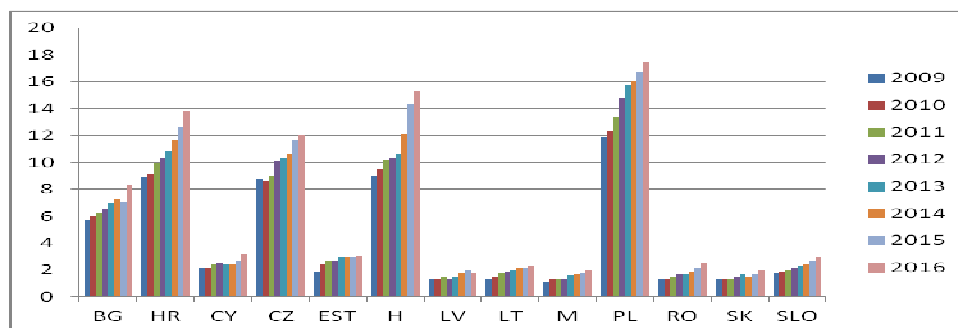
### ***Tourism Demand in Terms of Tourist Arrivals***

The interest of tourists, both residents and non residents to travel and visit the NEUMS has become more evident from a year to another. From 71 million tourist arrivals in the year 2009, the NEUMS reached 114 million in the year 2016 (+60.56%) (Ana, M.I., 2018).

The number of international tourist arrivals in the NEUMS increased by 53.5 % from 56.498 thousand arrivals in 2009 to 86,754 thousand arrivals in 2016. As a result, the market share of the international tourist arrivals of the NEUMS in the international arrivals in the EU-28 grew up from 21.92 % in 2009 to 22.32 % in 2016. In the Europe tourism, the NEUMS's market share for foreign tourist arrivals increased from 12.23 % to 14.07 % in the analyzed period.

The number of international tourist arrivals increased in the period 2009-2016 by: 93.6 % in Romania, 71.2 % in Lithuania, 68 % in Hungary, 66.3 % in Malta, 66.2 % in Slovenia, 65.4 % in Estonia, 58.8 % in Croatia, 55.6 % in Slovakia, 48.8 % in Cyprus, 46.8 % in Poland, 36.6 % in Czech Rep and 35.5 % in Latvia ( Fig.1.)

The highest number of international tourist arrivals is in the following countries, in the decreasing order: Poland, Hungary, Croatia, Czech Republic and Bulgaria. In 2016, their market share in the EU-28 was: Poland 4.5 %, Hungary 3.9 %, Croatia 3.5 %, Czech Rep. 3.1 %, Bulgaria 2.1 %, Cyprus 0.9 %, Slovenia 0.8 %, Romania 0.6 %, Lithuania 0.6 %, Slovakia 0.5 %, Malta 0.5 % and Latvia 0.4 %.



**Fig.1: The international tourist arrivals by country in the NEUMS, 2009-2016 ( millions)**

Source: Own design based on the data of UNWTO Tourism Highlights, 2010-2017.

The international tourist arrivals per 1,000 inhabitants and per square kilometer are presented in Table 3. This indicator, reflecting tourism intensity, ranged between 4,363 foreign tourists per inhabitant in Malta, the top level, and 125 foreign tourists/capita in Romania, the lowest level.

**Table 3: International tourist arrivals per 1,000 inhabitants and per square kilometer of the NEUMS in 2016**

	International tourist arrivals/1,000 inhabitants	International tourist arrivals/km <sup>2</sup>
Bulgaria	1,153	74.4
Croatia	3,295	244
Cyprus	3,756	344.5
Czech Rep.	1,145	153.3
Estonia	2,388	69.5
Hungary	1,551	164.0
Latvia	911	27.8
Lithuania	1,166	35.2
Malta	4,363	6,222
Poland	460	55.8
Romania	125	10.4
Slovakia	368	40.7
Slovenia	1,468	149.5
NEUMS Average	831	75,8
EU-28 Average	761.7	87.8

Source: Own calculations based on the data of UNWTO Tourism Highlights, 2010-2017.

Also, taking into account the surface of the countries, on the top position is Malta with 6,222 foreign tourist arrivals/km<sup>2</sup> and at the opposite pole it is Romania with 10.4 tourists/ km<sup>2</sup>.

In 2016, compared to the EU-28 average, it was noticed that the NEUMS average, accounting for 831 international tourists/1,000 inhabitants is higher than 761.7 which represents the EU-28 average. But, making the comparison per square kilometer, in the EU-28 there were 87.8 tourists compared to 75.8 tourists in the NEUMS (Table 3).

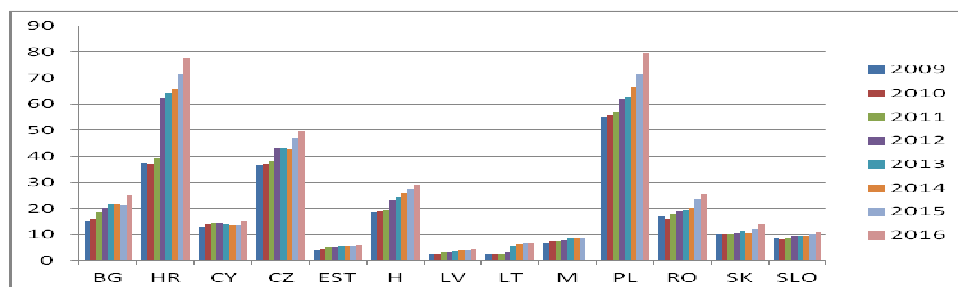
The figures from Table 3 show that in Malta, Cyprus, Croatia it is a high pressure of tourist flows on the local population and also on the environment, which could involve more attention to the social aspects and expenses related to the preservation of the natural and cultural heritage than in other countries.

### ***Tourism Demand In Terms Of Overnight Stays at Tourist Accommodation Establishments***

The total number of nights spent at tourist accommodation establishments in the NEUMS increased by 54.95 % from 228.2 million in 2009 to 353.6 million in 2016. The share of the nights spent by residents and non residents in the NEUMS in the total overnight stays in the EU-28 registered a slight growth from 10 % in 2009 to 11.6 % in 2016.

All the countries belonging to the NEUMS recorded an increase of the night stays in the analyzed period, but the highest growth rate was achieved by the following countries: Lithuania +180 %, Croatia +107.5 %, Latvia +76 %, Bulgaria +64.7 %, Hungary +56.7 %, Estonia +55 % and Romania + 46.2 %.

In the decreasing order, the hierarchy of the NEUMS based on total number of overnight stays is the following one: Poland, Croatia, Czech Rep., Hungary, Romania, Bulgaria, Cyprus, Slovakia, Slovenia, Malta, Estonia, Lithuania and Latvia ( Fig.2.)



**Fig.2: The overnight stays spent by residents and nonresidents at accommodation establishments by country in the NEUMS, 2009-2016 ( millions)**

Source: Own design based on the data of UNWTO Tourism Highlights, 2010-2017.

The overnight stays spent by non residents at accommodation establishments in the NEUMS increased by 67.6 % from 114.4 million in 2009 to 191.8 million in 2016, reflecting the interest of the foreigners to visit these countries.

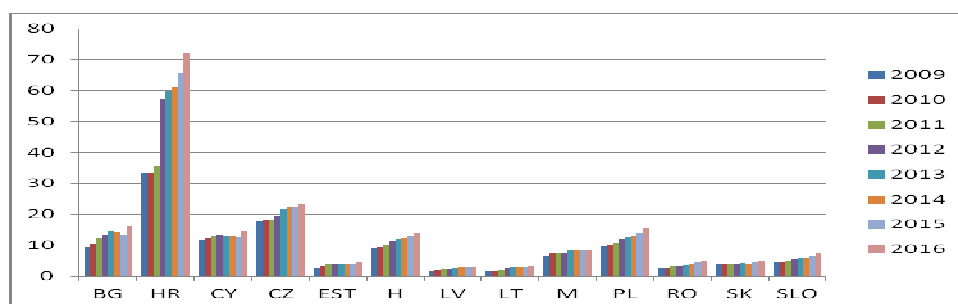
The share of the nights spent by foreign tourists in the NEUMS in the total number of overnight stays (residents and non residents) increased from 50.1 % in 2009 to 54.2 % in 2016.

The share of the nights spent by foreign tourists in the NEUMS in the total number of overnight stays of the non residents in the EU-28 increased from 12.1 % in 2009 to 12.9 % in 2016.

The statistical data pointed out that in the NEUMS, the night stays increased by 67.6 % compared to the growth rate in the EU-28 which was 59.9 % in the analyzed period.

In 2016, the hierarchy of the NEUMS based on the overnight stays spent by foreign tourists was the following one: Croatia, Czech Rep., Bulgaria, Poland, Cyprus, Hungary, Malta, Slovenia, Slovakia, Romania, Estonia, Lithuania and Latvia (Fig.3.).

In the analyzed period, the highest growth rate of the nights spent by foreign tourists was registered in: Lithuania +135.7 %, Croatia +116.5 %, Romania +77.7 %, Latvia +76.4, Bulgaria +72.3 %, Estonia +62.9 %, Poland +62.5 %, Slovenia +55.3 % and Hungary + 50 %.

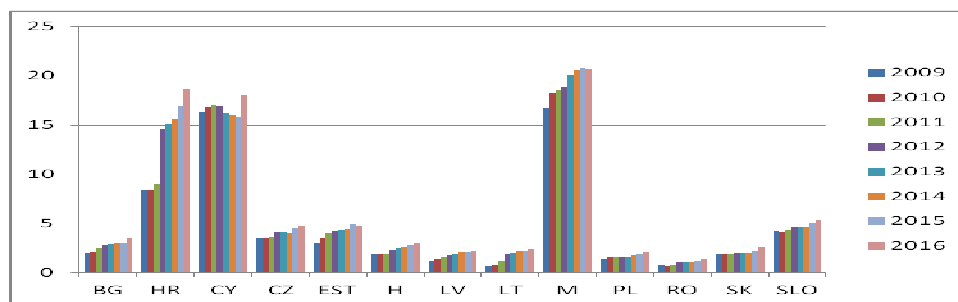


**Fig.3: The overnight stays spent by nonresidents at accommodation establishments by country in the NEUMS, 2009-2016 ( millions)**

Source: Own design based on the data of UNWTO Tourism Highlights, 2010-2017.

### Tourism Intensity

All the NEUMS registered an increased tourism intensity both in terms of overnight stays/1,000 inhabitants and overnight stays/km<sup>2</sup> (Fig.4, Table 4 and Table 5).



**Fig. 4: The dynamics of tourism intensity in terms of overnight stays/1,000 inhabitants in the NEUMS, 2009- 2016 (thousands/1,000 inhabitants)**

Source: Eurostat Statistics Explained, 2016, Tourism intensity, 2016.

**Table 4: The dynamics of tourism intensity by NEUMS in terms of night stays per km<sup>2</sup>**

	2009	2010	2011	2012	2013	2014	2015	2016	2016/2009 %
BG	138	145	168	183	195	196	194	228	165.2
HR	428	422	448	709	735	754	813	888	207.5
CY	1,406	1,492	1,544	1,576	1,519	1,483	1,446	1,659	118.0
CZ	465	468	485	549	549	544	597	630	135.5
EST	91	104	119	123	127	128	127	137	150.5
H	201	205	209	249	263	280	296	315	156.7

LV	39	44	51	55	58	64	63	68	174.3
LT	39	43	50	88	92	99	100	107	274.3
M	21,845	23,927	24,309	24,786	26,902	27,787	28,266	28,443	130.2
PL	176	178	182	198	201	213	228	254	144.3
RO	73	67	75	80	81	84	98	106	145.2
SK	209	209	212	220	231	220	248	283	135.4
SLO	422	416	437	464	467	457	504	545	129.1

Source: Own calculations based on Eurostat Statistics Explained, 2016, Tourism intensity, 2016.

The highest increase regarding the night stays/1,000 inhabitants was recorded in: Lithuania +218 %, Croatia +119.7 %, Latvia +99.4 %, Bulgaria +75.3 %, Hungary 60 %, Romania 58.9 % and Estonia +53.8 %.

Regarding tourism intensity in terms of night stays/km<sup>2</sup>, the highest growth rate was achieved by: Lithuania +174.3 %, Croatia +107.5 %, Latvia +74.3 %, Bulgaria +65.2 %, Hungary +56.7 % and Estonia +50.5 %.

**Table 5: The hierarchy of the NEUMS based on tourism intensity in terms of night stays/1,000 inhabitants and per km<sup>2</sup> in 2016**

No. of night stays/ 1,000 inhabitants		No. of night stays per km <sup>2</sup>	
Country	Values	Country	Values
1.Malta	20,651	1.Malta	28,443
2.Croatia	18,570	2.Cyprus	1,659
3.Cyprus	18,092	3.Croatia	888
4.Slovenia	5,356	4.Czech Rep.	630
5.Estonia	4,732	5.Slovenia	545
6.Czech Rep.	4,708	6.Hungary	315
7.Bulgaria	3,520	7.Slovakia	283
8.Hungary	2,980	8.Poland	254
9.Slovakia	2,560	9.Bulgaria	228
10.Lithuania	2,420	10.Estonia	137
11.Latvia	2,243	11.Lithuania	107
12.Poland	2,091	12.Romania	106
13.Romania	1,279	13.Latvia	68

Source: Eurostat Statistics Explained, 2016, Tourism intensity, (nights spent by residents and non-residents at tourist accommodation establishments per inhabitant.

### ***Tourism receipts, expenditures and balance in the NEUMS***

Taking into account the tourist inflow and higher and higher overnight stays, the receipts coming from tourism increased in all the NEUMS. In 2016, they accounted for Euro Million 45,899 which allowed to spend Euro Million 24,511 for the development of tourism, resulting a positive balance of Euro Million 21,389.

Almost all the NEUMS had a positive tourism balance, except Romania which registered a deficit of Euro Million 362.

**Table 6: Tourism receipts, expenditures and balance in the NEUMS in 2016 (Euro Million)**

	Receipts	Expenditures	Balance
BG	3,285	1,227	2,058
HR	8,627	853	7,774
CY	2,489	1,061	1,428
CZ	5,703	4,447	1,256
EST	1,345	1,048	297
H	5,121	1,954	3,167
LV	783	628	155
LT	1,090	813	177
M	1,307	369	938
PL	9,908	7,204	2,704
RO	1,568	1,930	-362
SK	2,483	2,023	460
SLO	2,190	854	1,337
TOTAL	45,899	24,511	21,389
EU-28	112,299	87,031	13,246
Share in the EU-28 %	40.87	28.16	161.47

Source: Eurostat, 2018, *Tourism expenditure, highest spending by German residents.*

The contribution of the NEUMS to the EU-28 tourism was of 40.87 % for tourism receipts and of 28.16 % for expenditures, and these situation has had a positive impact on the tourism balance at the EU level.

In the total receipts of the NEUMS, the highest share was registered by the following countries: Poland 8.82 %, Croatia 7.68 %, Czech Rep. 5.07 %, Hungary 4.56 %, Bulgaria 2.92 %, Slovakia 2.21 % and Slovenia 1.95 %, and the lowest share by Latvia 0.69 %.

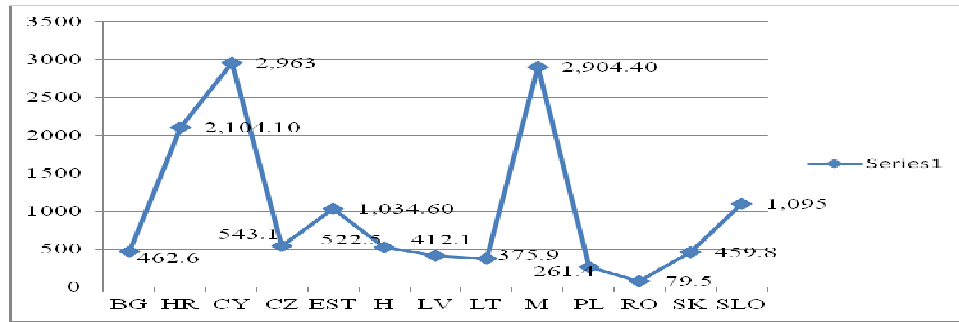
In 2016, the expenditures in tourism totalized Euro Million 21,511, of which: Poland 29.39 %, Czech Rep. 18.14 %, Slovakia 8.25 %, Hungary 8 %, Romania 7.9 %, Bulgaria 5 %, Cyprus 4.3 % and Estonia 4.27 %. The lowest expenditures were made by Malta 1.50 % (Table 6).

The receipts per inhabitant in 2016 at the NEUMS level accounted for Euro 439.6, much higher compared to the EU-28 average of Euro 220.

The receipts per inhabitant from NEUMS tourism varied between Euro 2,963/capita in Cyprus, the top value, and Malta Euro 2,904.4, capita and the lowest value Euro 79.5/ capita in Romania (Fig.5).

The receipts coming from international tourism in the NEUMS increased by 10.14 % in the period 2009-2016, from USD million 46,216 in the first year of the analysis to USD Million 50,905 in the last year, according to the data of UNWTO. The receipts of the NEUMS international tourism accounted for 11.4 % of Europe and for 4.1 % of the world international tourism.

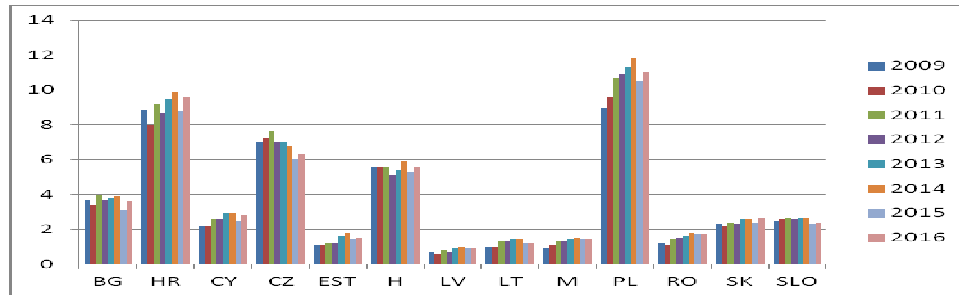




**Fig.5: Receipts/inhabitant in the NEUMS in 2016 (Euro)**

Source: Own design based on Eurostat, 2018, Tourism expenditure, highest spending by German residents.

The growth rate by country in the studied interval was the following: Malta +64.2 %, Estonia +40.9 %, Romania +40.1 %, Cyprus +27.7 %, Poland +21.8 %, Latvia +19.9, Slovakia +17.6 %, and Lithuania +17.2 %. In Hungary it was registered a slight growth rate 0.4 %, while in Czech Rep., Bulgaria and Slovenia it was recorded a decline of 10.1 %, 6.7 % and, respectively, 2.6 %.



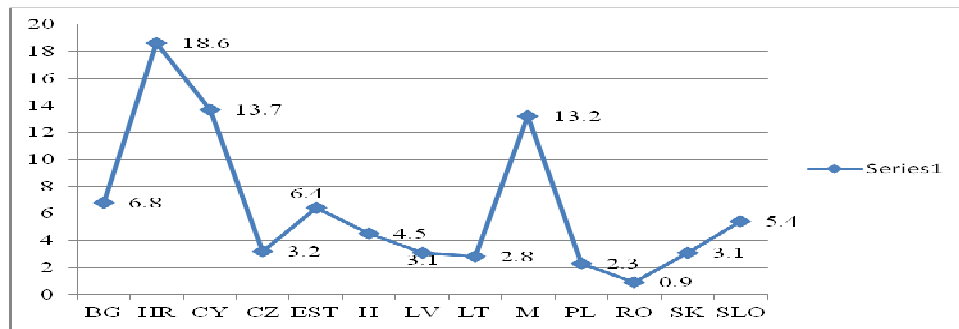
**Fig.6: The dynamics of the receipts from international tourism in the NEUMS, 2009-2016 (USD Billion)**

Source: Own design based on the data of UNWTO Tourism Highlights 2010-2017

The market shares of the NEUMS in the EU-28 receipts from international tourism are: Poland 3.7 %, Croatia 3.3 %, Czech Rep. 2.2 %, Hungary 1.9 %, Bulgaria 1.2 %, Cyprus 0.9 %, Slovakia 0.9 %, Slovenia 0.8 %, Romania 0.6 %, Estonia 0.5 %, Malta 0.5 %, Lithuania 0.4 % and Latvia 0.3 %. The evolution of the receipts from international tourism by NEUMS is shown in Fig.6.

**Contribution of tourism to the NEUMS GDP**

Tourism contribution to GDP varied from a country to another depending on the importance of this activity in the economy, on the receipts and GDP level.



**Fig.7: Contribution of tourism to GDP in the NEUMS in 2016 (%)**

Source: Own design based on Eurostat, *Tourism Statistics Explained*, 2016

In the EU-28, tourism contributed by 0.8 % to its GDP. But, in the NEUMS, the average contribution is 6.5 %, reflecting that in these countries, tourism is more important in the economy than at the community level. In this group of countries, in 2016, there are states where tourism has a high share in GDP such as: Croatia 18.6 %, Cyprus 13.7 % and Malta 13.2 %, coming on the 1st, 2nd and 3rd positions in the EU-28. This aspect reflects how important is tourism activity in the economic development of these countries. Also, important contributions of tourism to GDP were noticed in Bulgaria 6.8 %, Estonia 6.4 %, Slovenia 5.4 % and Hungary 4.5 % ( Fig.7.).

### ***Tourism and Travel Competitiveness***

In order to appreciate the competitiveness in travel and tourism at the world level, by regions and countries it is used the so called "T&T Competitiveness Index", which is determined by four complex factors, which in their turn consists of other subfactors.

As mentioned by World Economic Forum in its "The Travel & Tourism Competitiveness Report 2017", the following factors are used for establishing the competitiveness index in T &T: "*Enabling Environment* (Business Environment, Safety and Security, Health and Hygiene, Human Resources and Labour Market, ICT Readiness), *T&T Policy and Enabling Conditions* (Prioritization of Travel & Tourism, International Openness, Price competitiveness, Environmental Sustainability), *Infrastructure* (Air Transport Infrastructure, Ground and port infrastructure, Tourist Service Infrastructure) and *Natural and Cultural Resources* (Natural Resources, Cultural Resources and Business Travel)".

According to this report, Europe is the leader in the world regarding T&T competitiveness performance. Among the 10 top positions, there are Spain ( Rank 1), France ( Rank 2), Germany (Rank 3), United Kingdom (Rank 5) and Italy (Rank 8).

The countries of the NEUMS group are situated between the 32nd position occupied by Croatia and 68 position kept by Romania.

The decreasing order of the countries based on the Competitiveness Index is the following one: Croatia, Malta, Estonia, Czech Republic, Slovenia, Bulgaria, Poland, Hungary, Cyprus, Latvia, Lithuania, Slovakia and Romania (Table 7).

The differences of the occupied positions between this group of countries and the European leaders in competitiveness, and also the discrepancies existing among the members of the NEUMS group. The strong competition to extend the tourism market will require substantial efforts destined to improve and preserve environment, to establish a feasible tourism policy, to develop infrastructure, and preserve and promote natural and cultural resources as sustainable tourism imposes.

**Table 7: The Travel & Tourism Competitiveness Index 2017 Ranking of the NEUMS countries**

Country	Rank	Score	Change since 2015	Country	Rank	Score	Change since 2015
Croatia	32	4.42	1	Hungary	49	4.06	-8
Malta	36	4.25	4	Cyprus	52	4.02	-16
Estonia	37	4.23	1	Latvia	54	3.97	-1
Czech Rep.	39	4.22	4	Lithuania	56	3.91	3
Slovenia	41	4.18	12	Slovakia	59	3.90	2
Bulgaria	45	4.14	4	Romania	68	3.78	-2
Poland	46	4.14	4				

Source: World Economic Forum, *The Travel & Tourism Competitiveness Report 2017*

## Conclusions

In the 13 new EU member states, tourism is an important activity in the economy, contributing by 6.5 % to GDP, which is enough high compared to 0.8 % in the EU-28. The highest share in GDP was noticed in Croatia, Cyprus and Malta (over 13%), reflecting that for these countries tourism has a vital role. They are on the first three positions of the EU-28 from this point of view.

In the analyzed period, tourist arrivals increased by 60.5 %, the most numerous arrivals being in Poland, Croatia, Czech Republic, Bulgaria and Hungary. They reflect the tourists interest for visiting historical and cultural cities, for costal tourism and spa.

The overnight stays including residents and non residents increased by 55 %, the most numerous night stays being recorded in Poland, Croatia, Czech Republic, Hungary, Romania and Bulgaria.

The overnight stays of foreign tourists increased by 67.6%, and the highest share was registered in Croatia, Czech Republic, Bulgaria, Poland, Cyprus and Hungary.

Tourism intensity in terms of arrivals per inhabitant and per square kilometer is the highest in Malta and the lowest in Romania. In terms of overnight stays per capita and square km, the highest positions are occupied by Lithuania, Croatia, Latvia, Bulgaria, Hungary and Romania.

Due to the growth of tourist inflows, in 2016, the new EU member states recorded Euro million 45,899 receipts which led to a positive balance accounting for Euro million 21,389.

Tourism receipts per inhabitant were in average Euro 439.6, almost double compared to the EU-28 average. On the first positions there are Cyprus and Malta, and on the lowest one Romania.

The receipts from international tourism increased by 101.4 % in the new EU member states, the highest income from tourism being registered in Poland, Croatia, Czech Republic, Hungary and Bulgaria.

All these statistical aspects reflect the efforts made by these countries to adapt to the high competition imposed to apply the EU tourism policy and to access EU funds to improve tourism facilities.

For improving tourism performance and efficiency, as mentioned by Hall (2011), these countries should pay much more attention to their competitive advantages in the use and valorization of their natural and cultural heritage, to the development of their "unique image" in the EU tourism by creating "unique

brands", "excellence destinations" and "niches" which have to strengthen the personality of their tourist products and differentiate them from the products of the competitors.

The development of sustainable tourism involves a special strategy completely integrated in the strategy of economic, social and environmental development of each country. In this respect, co-operation, collaboration, partnership, networks, cluster creation and knowledge transfer could be important factors for success.

Capital and labor mobility in tourism as well as innovation in tourism product design and production, creation of its image and marketing could be also helpful for tourism development at international standards.

For passing the challenges caused by climate change and for reducing expenditures and damages, tourism strategy in the new EU member states should provide clear objectives and concrete measures to adapt to the situation and mitigate the impact.

The success achieved so far in the development of tourism is a guarantee that in the future the new EU countries will continue their efforts to get a higher visibility and position on the map of tourism in Europe and in the world.

## References

Aguayo, E. (2005), 'Tourism in the Central Europe: A comparison of the regions of Poland, Hungary, Czech Republic, Slovakia and Slovenia with other European countries in the year 2000', *Regional and Sectoral Economic Studies*. AEEADE., Vol. Vol. 5-2 (2005), 19-34.

Amelung, B., Nicholls, S. and Viner, D. (2007), 'Implications of Global Climate Change for Tourism Flows and Seasonality', *Journal of Travel Research*, 45 (3), 285–296.

Ana, M.I. (2018), 'Tourism industry in the new member states. Key countries and destinations', *Management & Marketing. Challenges for the Knowledge Society, De Gruyter*, Vol. 13, No. 1, Spring, 812-830.

Batista e Silva, F., Marín Herrera, M.A., Konstantín, R., Ribeiro Barranco, R., Freire, S. and Schiavina, M. (2018), 'Analysing spatiotemporal patterns of tourism in Europe at high-resolution with conventional and big data sources', *Tourism Management*, 68, 101-115.

European Commission. (2010), 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Europe, the world's No 1 tourist destination – a new political framework for tourism in Europe', [Online], [Retrieved on 15 Sept.2018], [http://eur-lex.europa.eu/legal-content/ EN/ ALL/? uri=CELEX%3A52010DC0352](http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52010DC0352).

Eurostat. (2018), 'Nights spent at tourist accommodation establishment', [Online], [Retrieved on 15 Sept.2018], [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tour\\_occ\\_ninat&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tour_occ_ninat&lang=en)

Eurostat. (2018), 'Number of establishments and bed-places', [Online], [Retrieved on 15 Sept.2018], 2018, <https://ec.europa.eu/eurostat/web/products-datasets/-/tin00181>

Eurostat. (2018), 'Population change-Demographic balance and crude rates at national level', [Online], [Retrieved on 15 Sept.2018], [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo\\_gind](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_gind),

Eurostat Statistics Explained. (2016), 'Tourism intensity, (nights spent by residents and non-residents at tourist accommodation establishments per inhabitant)', [Online], [Retrieved on 15 Sept.2018], [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File: Tourism\\_intensity\\_2016\\_\(nights\\_spent\\_by\\_residents\\_and\\_non-residents\\_at\\_tourist\\_accommodation\\_establishments\\_per\\_inhabitant\)\\_FP18-fr.png&oldid=392085](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Tourism_intensity_2016_(nights_spent_by_residents_and_non-residents_at_tourist_accommodation_establishments_per_inhabitant)_FP18-fr.png&oldid=392085)

Eurostat Statistics Explained. (2016), 'Tourism intensity' 2016, [Online], [Retrieved on 15 Sept.2018], [https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Tourism\\_intensity](https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Tourism_intensity)

Eurostat. (2018), 'Tourism expenditure- highest spending by German residents', [Online], [Retrieved on 15 Sept.2018], [https://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism\\_statistics#Tourism\\_expenditure:\\_highest\\_spending\\_by\\_German\\_residents](https://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism_statistics#Tourism_expenditure:_highest_spending_by_German_residents)

Eurostat Statistics Explained. (2018), 'Tourism statistics', [Online], [Retrieved on 15 Sept.2018], [https://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism_statistics)

Hall, D.R. (2011), 'Tourism development in contemporary Central and Eastern Europe: challenges for the industry and key issues for researchers', *Human Geographies, Journal of Studies and Research in Human Geography*, 5.2., 5-12.

Iordache, M.C. and Cebuc, I. (2009), 'Analysis of the impact of climate change on tourism in some European countries', *Scientific Annals of "Alexandru Ion Cuza" University, Iasi*, Vol. LVI Economic Sciences, 270-286.

Kuliš, Z., Šimundić, B., and Pivčević, S. (2018), 'The Analysis of Tourism and Economic Growth Relationship in Central and Eastern European Countries', Published in: *Economy, Finance and Business in Southeastern and Central Europe*, [Online], [Retrieved on 15 Sept.2018], <https://www.springerprofessional.de/en/the-analysis-of-tourism-and-economic-growth-relationship-in-cent/15733744>

Murphy, L., Moscardo, G. and Benckendorff, P. (2007), 'Using brand personality to differentiate regional tourism destinations'. *Journal of Travel Research*, Vol. 46, No. 1, 5-14.

Nagar, M. and Sinha, S. (2017), 'Challenges for the European Tourism Industry', [Online], [Retrieved on 15 Sept.2018], <https://www.slideshare.net/sinhasameer13/challenges-for-the-european-tourism-industry>

On Mon Christian. (2015), 'Challenges for the European Tourism Industry', AALEP EU, [Online], [Retrieved on 15 Sept.2018], <http://www.aalep.eu/challenges-european-tourism-industry>

Popescu, A. (2012), 'Tourism and rural tourism in the European Union 28'. Eikon & Rawex Com Publishing House, Cluj-Napoca and Bucharest, pp. 29-40.

Popescu, A. (2016), 'The correlation between international tourist arrivals and tourism receipts - a key factor of tourism efficiency', *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development* Vol. 16, Issue 4, 2016, 299-306

Statista, The Statistical Portal. (2018), 'Number of international tourist arrivals worldwide from 2005 to 2017, by region (in millions)', [Online], [Retrieved on 15 Sept.2018], <https://www.statista.com/statistics/186743/international-tourist-arrivals-worldwide-by-region-since-2005/>

Statista, The Statistical Portal. (2018), 'Direct contribution of travel and tourism to GDP worldwide in 2016, by region (in billion U.S. dollars)', [Online], [Retrieved on 15 Sept.2018],

<https://www.statista.com/statistics/311945/travel-and-tourism-direct-contribution-to-gdp-worldwide-by-region/>

Statista, The Statistical Portal. (2018), 'International tourism receipts of Europe from 2009 to 2017, by region (in billion U.S. dollars)', [Online], [Retrieved on 15 Sept.2018], <https://www.statista.com/statistics/261710/international-tourism-receipts-of-europe/>

UNWTO Tourism Highlights. (2010-2017), [Online], [Retrieved on 15 Sept.2018], [www.unwto.org](http://www.unwto.org)

UNWTO. (2018), '2017 International Tourism Results: the highest in seven years', Press Release No.18050/18 June 2018, [Online], [Retrieved on 15 Sept.2018], <http://media.unwto.org/press-release/2018-01-15/2017-international-tourism-results-highest-seven-years>

Ursache, M. (2001), Examining tourism development challenges in the CEECs, *GIDNI, Economy and Management*, 231-239, [Online], [Retrieved on 15 Sept.2018], <http://www.upm.ro/gidni/GIDNI-01/Eco/Eco%2001%2032.pdf>

Worldometer, Population of Europe, [Online], [Retrieved on 15 Sept.2018], [www.worldometer.info/world-population/europe-population](http://www.worldometer.info/world-population/europe-population)

World Economic Forum, The Travel & Tourism Competitiveness Report 2017, Paving the way for a more sustainable and inclusive future, [Online], [Retrieved on 15 Sept.2018], [http://www3.weforum.org/docs/WEF\\_TTCR\\_2017\\_web\\_0401.pdf](http://www3.weforum.org/docs/WEF_TTCR_2017_web_0401.pdf)

## Determining the Engagement Motivations behind Slacktivism

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### Abstract

Slacktivism, which is a portmanteau of the words of "slacker" and "activism", is a term that refers to the activism performed via Internet with little or no effort such as signing an online petition, liking or sharing a content, changing the profile photo or status on social media etc. Those who criticize slacktivism argue that this is a "feel good" behavior of the participants and because of low commitment and engagement these campaigns fail to produce tangible effects. On the other hand, there are so many cases (online social campaigns) that managed to raise awareness or create change. Also it is not possible to think of the activism of the 21st century apart from the Internet and social media. Thus slacktivists who mediate the spread of social campaigns became important actors for social marketing. Also understanding the slacktivist motivation and behavior is getting more attention in the literature. So the aim of this research is to determine the engagement motivations behind slacktivism. To understand the phenomenon better we have conducted a qualitative research and interviewed with ten participants (six man and four woman). We identified seven different motivations; self-presentation (or impression management), moral identity, social identity, perception of injustice, collective efficacy, issue involvement (or consciousness) and inform-inspire and prompt an action. In the second phase we have conducted an online survey, in order to determine the engagement motivations behind slacktivism in a larger sample. After the pilot study, the survey was conducted between April-August 2018. We found that social identity, moral identity, issue involvement and inform/inspire/prompt action motives are significant predictors of slacktivist behaviors. On the other hand, we also found that social identity, moral identity, non-affective injustice, collective efficacy, and inform/inspire/prompt action motives differentiates the degree of slacktivist/activist behaviors of the respondents. Contrary to the literature we couldn't find self-presentation or impression management as a significant predictor of slacktivism but this may be due to the survey method as participants also continue to manage their impressions. This study was supported by Anadolu University Scientific Research Projects Commission under the grant no: 1609E679

**Keyword:** Slacktivism, Digital Activism, Slacktivist Motivations

## **Managerial Opportunism: Causes and Consequences**

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### **Abstract**

One of the basic behavioral prerequisites of the new institutional economic theory is the opportunistic behavior of counterparties, aimed at satisfying personal interests. Under the conditions of institutional transformations of the last decades, this behavior has become widespread due to imperfections in legislations and the unpreparedness of society to comply with them. Common situation appeared in the most companies is the removal of the owner from company's management in favor of the financial manager. The situation that has arisen creates circumstances for the development of managerial opportunism in the company. In this article, authors have analyzed causes and consequences of the opportunistic behavior of financial manager in the company by plotting "bow tie" diagram. As a result, a hierarchical and theoretically detailed study has been conducted. The causes for the problem have been revealed and grouped by their nature. For each group of reasons, a corresponding group of possible counteractions to prevent the problem has been proposed. This research is a visual aid for practical application, which will be useful to those who encounter this problem.

**Keywords:** managerial opportunism, financial manager, causes, consequences, irrational behavior, the "bow tie" diagram

### **Introduction**

Nowadays the management of cash flows is the most complex and responsible element in the company's management system. Effective management of cash flows is mainly focused on developing an appropriate strategy within the available resources in order to increase the company value. Financial manager is responsible for risk analysis in the company and the efficiency of its operations (Dvas et al, 2018; Demidenko et al, 2017). In this regard, it is extremely important that the motives of the financial manager coincide with the company goals and missions. The actions of financial manager should be aimed at maximizing the owners' welfare (Kuporov et al, 2018; Andreyeva et al, 2018). In the framework of current economic instability, the risk of the financial manager's inclination to opportunism increases, i.e. increases the desire of enrichment at the expense of the company. That is why it is necessary to develop so-called barriers that prevent irrational behavior of managers and to present a plan of measures to minimize the consequences in the crisis situations caused by this kind of behavior.

One of the first classical works on the theoretical aspects of opportunistic behavior is O. Williamson's work "The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting" (2007). He



defined opportunistic behavior, introduced the notion of a contract threat as a condition for the emergence of opportunism. In this and later studies, Williamson researched the mechanisms of opportunism limitation, depending on the structure of transaction management.

Investigation of the irrational behavior of the financial manager is quite urgent. In his research, Aviram A. (2010) deeply analyzes the theoretical component of the problem: it occurs in a climate of information asymmetry between managers and investors (owners). Author highlights that the possible way to resolve the conflict between managers and investors is to balance their interests. Nevertheless, managers often prefer to conduct bias arbitrage. In this case, financial managers identify risks that shareholders overvalue, take action to address the risk, and then take credit for the 'lowered' risk.

It is worth noting that the questions of irrational behavior of the financial manager in scientific literature are connected mainly with the search of counteractions to such behavior (Isagawa, 2000; Lukianenko et al, 2015). A number of researchers (Foss et al, 2006) named the problem of managerial opportunism 'tying the King's hands'. In the research, authors analyze the sample of 329 firms. Using the path-analyze, they conclude that mechanism like staking personal reputation of financial manager reduces the problem of managerial opportunism. In other publications, we come across research of causes of financial manager's opportunism (Barnes et al, 2010). In such researches, the general reasons for the emergence of managerial opportunism in business are explored. Following reasons are mentioned: the division of labor; uncertainty of the situation; limitation of the rationality of economic entities; low level of public confidence. These reasons are presented in the author's research in sufficient detail. Nevertheless, the study does not imply structuring of the reasons given, as a result, the reasons vary in scale from the economic and legal prerequisites in society to specific situations during business activity.

Chang C. (2015) investigates the impact of five managers' opportunistic incentives on the reliability of firm's reported earnings.

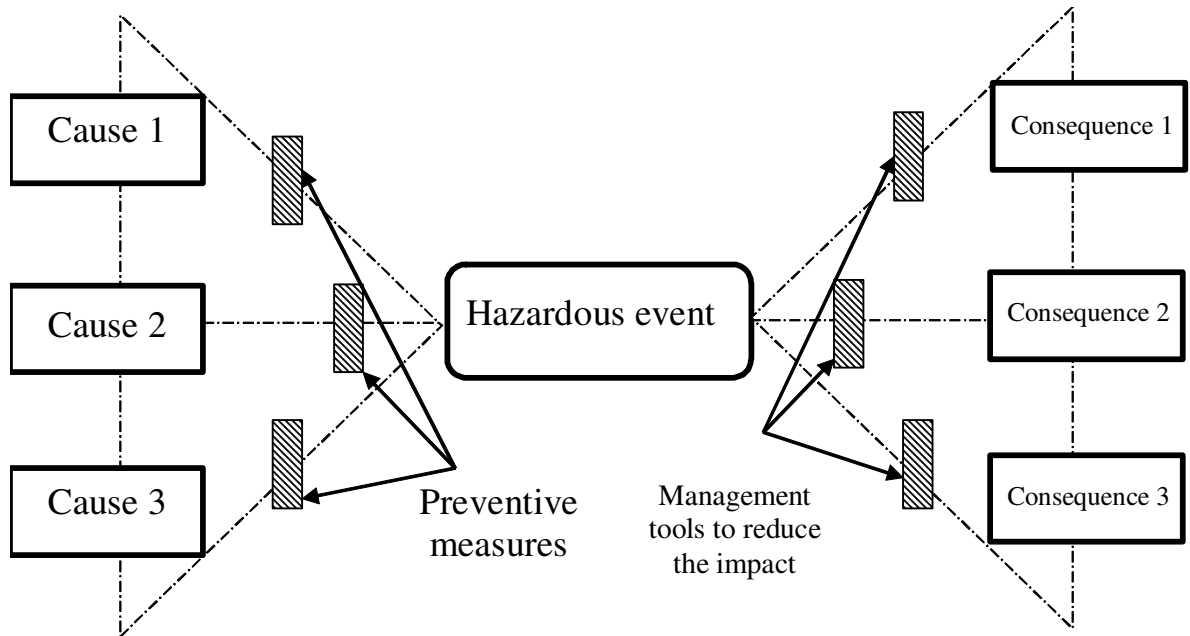
Most of the studies on this topic are similar to those listed, they represent large amounts of data (Ghouma, 2017; Lin et al, 2018), describe the problem of the irrational behavior of the financial manager, the causes of the occurrence and methods of settlement. However, they lack a clear structuring, isolation of the causes of the same level and their linkage to ways of solving the problem and consequences of insufficient attention to the problem.

The foregoing determines the relevance of this study and allows to formulate the following goal – it is necessary to systematize the causes of the irrational behavior of the financial manager in the company and to develop an effective plan to eliminate the consequences. As a methodological basis for the study, it is proposed to construct a "bow tie" diagram.

## **Data and Method**

Within the framework of the research, a "bow tie" diagram has been created. The diagram most closely meets the goals and the objectives of the study.

The "bow tie" diagram is a set of variants, which determines causes and consequences of the hazardous event. In other words, this is the most convenient way of the schematic description and analysis of risks, which reflects a number of possible causes and consequences. It allows making managerial decisions in a timely manner. Figure 1 represents the general image of the "bow tie" diagram.



**Figure 1: Example of the “bow tie” diagram**

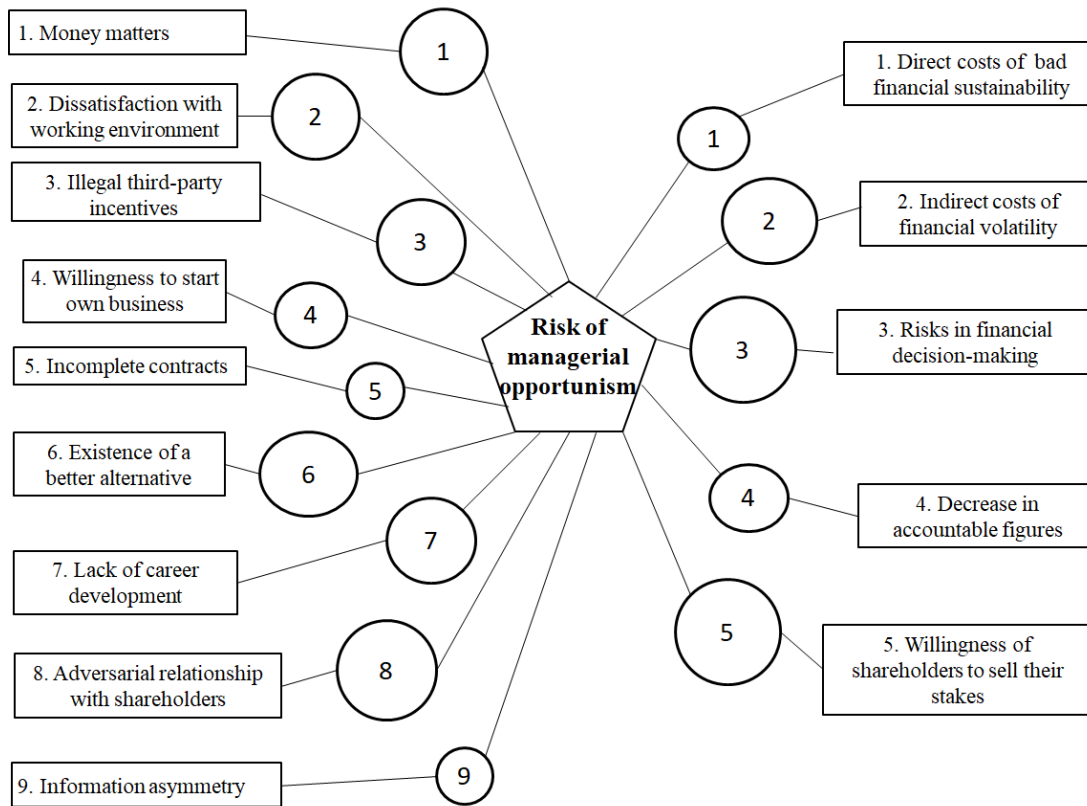
*Source: Vaughen et al, 2016*

The central node of the chart is the identified risk. Further, in the process of literature review and brainstorming, the causes, possible consequences, and the so-called barriers are determined. Barriers are mitigants, as well as management tools to reduce the impact of the risk.

The scope of this diagram is quite broad and is used universally. Exactly the “bow tie” diagram is applied to generate a strategy forex-pattern. The daily Forex strategy is the intersection of several moving averages that are responsible for determining the moment of trend change in the market. The identified area is subject to constant changes, therefore for a successful bidding it is required starting point. It is this kind of diagram that allows to analyze several variants of events’ development at once, to track the time after which the trend can change, and, therefore, have time to navigate under the new conditions.

## **Analysis and Results**

The risk of managerial opportunism has been considered as the main risk in this work. The essence of the risk lies in possibility of a situation in which the financial manager prioritizes his or her personal interests. It is precisely this factor, among others, that has been chosen as the center of the graph construction (figure 2).



**Figure 2: General appearance of the “bow tie” diagram**

Source: compiled by the authors

According to the methodology of construction of the “bow tie” diagram, the groups of possible causes of risk are located on the left, the groups of possible consequences in case of risk are presented on the right. The circles between the causes of risk and the risk itself are barriers, which can help to prevent risk, between the consequences and risk – barriers to minimize the consequences of the risk. Let's analyze each side of the diagram in more detail. Table 1 shows blocks of the causes of risk and their possible preventive measures.

The first block of reasons why the financial manager starts to prioritize his personal interests rather than the interests of the company is the block “Money matters”. The manager's lack of satisfaction with wages can lead to negative consequences. As measures to prevent these consequences, the following can be proposed: increase in the employee's salary; creation of a bonus system; freedom in vacation scheduling; provision of various benefits (public transport, taxi services, gasoline). In order to increase the financial manager’s interest in the development of the company it is possible to make his premium wage correlated with the value of shares at the securities market. Also, it is a good idea to suggest a financial manager to join the shareholders. If the measures listed above proved ineffective, the only possible solution is to fire the employee.

The second set of reasons has been identified as the block “Dissatisfaction with the working environment”. This unit includes the discrepancy between the reality and expectations of the employee about his workplace, possible disagreements and quarrels between him and his coworkers. To satisfy the

manager's requests, possible ways to optimize his working environment can be suggested. In order to resolve the tense situation in the team, it is proposed to organize events to improve the corporate culture, namely activities outside of work in an informal setting. An extreme measure to eliminate this reason may be changes in workforce to please the financial manager, which means to give him the opportunity to choose a team.

**Table 1: Causes of managerial opportunism and possible prevention measures**

<i>Causes</i>	<i>Preventive measures</i>	<i>Hazardous event</i>
<i>1. Money matters</i>	<i>1. Money matters</i>	<b>Risk of managerial opportunism</b>
• Low salary	• Modifying of the rewarding system	
• Lack of rewards/ poor system of rewards	• Salary increases	
	• Implementation of extra benefits	
	• Extra options of holiday system	
	• Suggest becoming a shareholder	
	• Pay a cut of income	
	• Hire an intern to show rivalry	
<i>2. Dissatisfaction with working environment:</i>	<i>2. Dissatisfaction with working environment:</i>	
• Poor working conditions	• Carry out repairs	
• Unfavorable atmosphere in working team	• Provide with new cabinet	
	• Changes in staff profile occur as financial manager wants	
	• Improving corporate culture	
<i>3. Illegal third-party incentives:</i>	<i>3. Illegal third-party incentives:</i>	
• Irrational choice of suppliers	• Internal/external audit	
• Irrational choice of marketing channels	• Approving the deals by board of directors	
• Distribution through intermediaries instead of direct sales	• Investment income of expenditure > third-party incentive	
• Putting a crimp in the company's program		
<i>4. Desire to start own business</i>	<i>4. Desire to start own business</i>	
	• Fire	
	• Tightening the security system	
	• Creating favorable conditions	
	• Contract re-signing	
<i>5. Incomplete contracts</i>	<i>5. Incomplete contracts</i>	
	• Contract re-signing	
	• Change the lawyer	
	• Require recommendations preliminary	
<i>6. Existence of a better alternative</i>	<i>6. Existence of a better alternative</i>	
	• Give a bad recommendation	
	• Buy off the company-rival	
	• Developed a close relationship of trust	
<i>7. Lack of career development</i>	<i>7. Lack of career development</i>	
	• Include on the board of directors	
	• Invite as shareholder	
<i>8. Adversarial relationship with shareholders:</i>	<i>8. Adversarial relationship with shareholders:</i>	
• Personality conflict	• Informal meetings	

• The conflict on investment and dividend policy	• Reach a compromise	
	• Give the ability to make policy choices	
	• Sign extra documents	
	• Consulting with independent experts	
<i>9. Information asymmetry:</i>	<i>9. Information asymmetry:</i>	
	• Employee change in Information Department	
	• Development of staff from Information Department	
	• Change of information resources	

Source: compiled by the authors

One of the most extensive blocks is the third block “Illegal third-party incentives”. In this block, the irrational decisions of the manager regarding taking actions to please third parties, who illegally financed manager, have been considered. The main ways to prevent the frauds of the financial Manager is to conduct both external and internal audit, which will allow identifying documentary inconsistencies, illegal sales and sales channels. For a financial Manager the investment income is of great importance, that is why it is possible to motivate him in such a way that his income is higher than any third-party’s reward.

“The desire to start own business” has been allocated in a separate block number four. In case the financial Manager wants to go freelance, he can start working to the detriment of the company, and start poaching customers from the base of the company. The first thing you can offer is more favorable conditions (table 1), then it is necessary to propose a re-signing of the contract, with stricter conditions of work and dismissal. If none of the proposals has yielded results, the only option is to dismiss the staff member. In order to avoid such situations, it is necessary to pay special attention to the company's information security system.

In case of an incomplete contract (block 5), the financial Manager can find opportunities to satisfy his personal interests to the detriment of the company. As a result, additional legal advice and the re-signing of the contract with the employee are needed.

The block “The existence of a better alternative” implies the fact that the competitors try to poach our Manager. In this case, you need to make every effort to ensure that a valuable employee stays in our company. The establishment of close contact with the staff member can be suggested as a measure. Also, as possible option, you can try to motivate competitors to leave their attempts to poach. If these options were not effective, it is possible to give bad recommendations to the employee who wants to leave, so that the new employer has doubts about his employment.

The seventh block “Lack of career development” can be perceived as the financial manager's dissatisfaction with his prospects, that is, the manager loses motivation and does not see further development. For additional motivation, you can offer him to become a shareholder or to include him in the Board of Directors.

The eighth block “Adversarial relations with shareholders” provides information on the possible causes of conflicts between the financial Manager and shareholders. The conflict can arise both against the background of personal hostility, and concerning investments. In order to overcome personal issues, it is proposed to organize informal meetings, where the conflict will be resolved. Considering investment issues, it is proposed to provide the financial Manager with more freedom for manipulation. Also, in case of a difficult situation, you can resort to assistance on the side, namely to invite an outside specialist who will present a report on the rationality of the Manager's actions or vice versa, prove the validity of the shareholders ' doubts.

Let us now analyze the right part of the “bow tie” diagram, which is dedicated to possible consequences of lack of control over the risk of managerial opportunism. This part of the diagram is presented in detail in Table 2.

Possible consequences have been divided into 5 main groups. Let us consider each group thoroughly and view the respective methods of loss reduction.

The first group is “Direct costs of bad financial sustainability”. Irrational behavior of management, no matter the cause, leads to a lack of financial sustainability of the firm. Emergence of managerial opportunism at the company leads directly to the increase of agency costs. Shareholders have to handle managerial opportunism by either raising the motivation of management, or by enforcing their control over management, either way leading to the increase of agency costs. Thus, shareholders have to invest their money into dealing with increasing agency costs, which, in turn, leads to the decrease in investment effectiveness, therefore WACC will rise. This negative effect may be reduced by switching from outsourcing the management productivity checks to organizing your own department with these functions. Because of the managerial opportunism being a deep and complex problem, it appears necessary to analyze the costs of control over management in the long term. From this point of view, organization of your company’s own structure seems to be more economically effective. If the problem of managerial opportunism did appear, undistributed profits should be used to cover the additional costs first and foremost. This way, the shareholder's benefit will decrease, however obligation to pay the interest due to borrowing funds will potentially cost even more. Financial sustainability may also be regained by conducting operations on terms of payment deferment. Payment deferment allows to accumulate the funds needed to handle the situation, or at least more time for the search of additional funding will be gained.

**Table 2: Consequences of managerial opportunism emergences and possible ways of loss reduction**

<i>Hazardous event</i>	<i>Management tools to reduce the impact</i>	<i>Consequences</i>	
<b>Risk of managerial opportunism</b>	1. Direct costs of financial volatility:		<b>Decrease in net profit</b>
	• Create an internal structure for own audit	• Increase of agency costs	
	• Conduct operations on terms of payment deferment	• Increase of WACC	
	• Using sources uncorrelated with the market		
	• Use undistributed profits as a source of money first		
	2. Indirect costs of financial volatility:		
	• Profitable conditions for the company in case of termination of the contract	• Loss of favourable counterparties	
	• Start looking for new employees beforehand	• Loss of investment opportunities	
	• Education of existing staff	• Downgrade in credit-rating	
	• Automation of the process and simplifying operations	• Downgrade of shares	
		• Staff turnover	
		• Loss of highly qualified staff	
	3. Risks in financial decision-making:		
	• Decrease of financial leverage	• Financial leverage	
	• Reduce fixed and variable costs	• Operating leverage	
	• Upgrade the technologies		
	4. Decrease in accountable figures:		
	• Reduction of operating leverage	• Cash flow:	

	• Contracts under more stringent conditions	> Operating		
	• Conduct an inventory check and to sell unnecessary property	> Investing		
	• Lease unused equipment	> Financing		
		• Increase in accounts receivables		
	5. Willingness of shareholders to sell their stakes:			
	• Organization of tenders	• Loss of shareholders		
	• Start a front company to improve the image	• Sale of shares		

Source: compiled by the authors

The next group of consequences have been compiled into a block named “Indirect costs of bad financial sustainability”. These costs mostly are either judgmentally estimated, or long-term. Company may lose beneficial contractors because of the decrease in financial sustainability, or because of an opportunistic manager, who intends to lure them for the sake of his own profit. This situation may appear within the firm as well, leading to the loss of highly-qualified employees. These tendencies may result in high personnel turnover: places of former employees will be taken by the new ones, which will be either lured by the manager again, or simply deterred by bad financial sustainability of the company. All the factors mentioned above lead to a decrease in investment attractiveness, and therefore to the deterioration of credit rating and share value. Thus, company not only suffers significant losses caused by the increase of the costs of handling the managerial opportunism, but also it gets more difficult to attract additional funding. These may lead to company refusing to take on new planned projects, which will slow down company’s growth and development.

Costs caused by high personnel turnover may be reduced by several different means. Firstly, by acknowledging the problem, it makes sense to start looking for new employees beforehand. Most of the time, an employee gives a month's warning. This time period in terms of the market being overflowed with potential employees with economic degree allows to quickly find a replacement, which helps to reduce the risk of production downtime. However, this refers only to less qualified personnel. In order to replace more valuable employees, a wise choice might be to give up on the complex search of trustworthy professional applicants and instead switch to educating experienced employees in the company. Finally, living in the age of mass introduction of technology into all business processes, an opportunity appears to minimize the need in workers through automation. The losses caused by lured away contractors may be reduced by introducing stricter terms of contract termination.

Third group of costs “Risks in financial decision-making” is compiled of risks, related to balancing fixed and variable costs (operating leverage) and balancing equity and loan capital (financial leverage).

In terms of bad financial sustainability, caused by managerial opportunism, a company may need to attract additional funds. However, with the increase of financial leverage the risk of company going bankrupt rises as well, therefore the interest rate of the consequent borrowed funds will increase. That means, that in order to minimize this effect, it is necessary not to solely rely on borrowed funds, and to use undistributed profits as a source of money first.

Operating leverage is used as a tool to identify and analyze this relation. In other words, it helps to determine and evaluate the effect the alteration of revenue has on the amount of profit the company gains. This effect can be described this way: with the rise of the revenue, the profit rises even faster, however this rise is restricted by ratio of fixed and variable costs. The lower the share of fixed costs, the less this restriction will be. With the growth of costs due to managerial opportunism, the fixed costs are constantly growing, and hence the operating leverage also grows. This trend can be mitigated by lowering fixed costs and updating production technologies, which will also lead to lower production costs.

The fourth group of consequences "Decrease in accountable figures" describes the decline in the company's reporting indicators. Today investors and creditors are more interested in an indicator of cash flow than in financial results of the. Cash flow includes three components: operations, investing and financing. Each cash flow belongs to the respective business activity. It is important that the overall cash flow is not negative. Nevertheless, the most important component of the cash flow is the cash flow from operating activities, since it shows exactly whether the company receives profit from its core business. Because of the increase in costs due to the growth in agency costs, the amount of operating cash flow may decrease, and therefore the overall balance of cash flow will have to be compensated for by the other two components. In order to obtain the necessary amount of money, conduct an inventory check and sell the unwanted property or lease unused equipment. To optimize the operating cash flow, it makes sense to reduce the operating leverage, which has already been discussed in more detail. Also, in this group of consequences, an increase in accounts receivable can be noted. Due to the irrational behavior of the financial manager, the firm can enter into contracts with unscrupulous counterparties that will not pay off their accounts payable to the company. Money, thus withdrawn from circulation, generates alternative costs. They can be reduced by concluding supply contracts under more strict conditions.

The fifth group of consequences – "Willingness of shareholders to sell their stakes" - is directly related to the influence of the manifestation of opportunistic behavior in the company on the shareholders themselves. Based on the information presented in the description of all previous groups, it becomes obvious that opportunistic behavior always results in costs and reduction in the benefits from investments. Accordingly, rational shareholders will try to sell their share. This leads to two serious consequences. First, a large number of shares of the company are entering the market. With the increase in supply, the value of the shares themselves is reduced. Secondly, shareholders are, first of all, the owners of the company, who determine the way of its development. A sharp large-scale change in the composition of shareholders will lead to more complicated management procedures for the company and will have an impact on the overall policy pursued by the firm. To restore the value of shares in the market, it is necessary to lower the offer again. To do this, you can organize the purchase of shares through an intermediary firm, thereby, firstly, showing that the demand for shares exists, and secondly, reducing the number of shares on the market and, accordingly, increasing their value. This repurchase of company's own shares will also solve the management problems if the company buys shares in sufficient quantity. Also, a firm can redeem shares by organizing tenders.

Nota bene, that according to all the analyzed consequences, in the long run, opportunistic behavior leads to a decrease in net profit.

## **Discussion**

This study can serve as a basis for further research. The diagram is aimed to show maximum informativeness and convenience of perception, but it is obvious that it is impossible to study absolutely all aspects of the problem without exception. Nevertheless, the specificity of the diagram makes it easy to add new elements that can be suggested by other researchers of this problem. In this case, this research may serve as a basis that will be subsequently supplemented with new causes and consequences.

## **Summary**

The problem of opportunistic behavior under modern conditions becomes particularly acute, which is caused by the transformation of social ties, the change in the status of wage workers and managers, the development of stock markets, the increasing complexity of products and, as a consequence, the need for higher education of hired workers.



At the same time, the specificity of the labor process often makes it difficult to determine the real contribution of a particular employee, which creates the prerequisites for shirking. It is known that today more than 40% of innovative companies suffer from the opportunistic behavior of their employees, losing as a result of deviations in the behavior of employees up to 15% of income. This situation significantly reduces the investment attractiveness of companies for owners and potential investors, as well as highly qualified personnel

Within this research, the problem of the emergence of managerial opportunism in the company has been comprehensively analyzed. As a result, the causes of the problem have been revealed, for each of which a corresponding group of possible counteractions have been proposed. The consequences of the emergence of the irrational behavior of the financial manager and the ways of their minimization have been grouped the same way.

## References

Andreyeva, D.A., Kokushkina, V. Dvas, G.V., Malinin, A.M., Nadezhina, O.S. (2018). Factors of Effective Regional Development and Labor Market Condition as Indicator of State of the Economy of the Region. Proceedings of the 31st International Business Information Management Association Conference, IBIMA 2018 - Innovation Management and Education Excellence through Vision 2020, IBIMA 2018, p. 5507 – 5513.

Aviram, A. (2010). What do corporate directors maximize? (Not quite what everybody thinks). *Journal of Institutional Economics*, 6(1), 47-53.

Barnes, B. R., Leonidou, L. C., Siu, N. Y., & Leonidou, C. N. (2010). Opportunism as the inhibiting trigger for developing long-term-oriented Western exporter–Hong Kong importer relationships. *Journal of International Marketing*, 18(2), 35-63

Chang, C. F. (2015). The Impact of Managerial Opportunism on Earnings Reliability. *International Journal of Economics and Finance*, 7(10), 222

Demidenko, D. S., Gorovoy, A.A., & Malevskaya-Malevich, E. D. (2017). The new elements of risk classification. Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, p. 2217-2221

Demidenko, D.S., Malinin, A.M., Litvinenko, A.N. (2017). A new classification of the risks of the quality processes. Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, IBIMA 2017, p. 2892-2897.

Dvas, G.V., Dubolazova, Y.A. (2018). Risk Assessment and Risk Management of Innovative Activity of the Enterprise. Proceedings of the 31st International Business Information Management Association Conference, IBIMA 2018 - Innovation Management and Education Excellence through Vision 2020, IBIMA 2018, p. 5650 – 5653.

Foss, K., Foss, N. J., & Vázquez, X. H. (2006). ‘Tying the manager's hands’: constraining opportunistic managerial intervention. *Cambridge Journal of Economics*, 30(5), 797-818.

Ghouma, H. (2017). How does managerial opportunism affect the cost of debt financing?. *Research in International Business and Finance*, 39, 13-29.

Isagawa, N. (2000). Convertible debt: An effective financial instrument to control managerial opportunism. *Review of Financial Economics*, 9(1), 15-26.

Kuporov, Y.Y., Avduevskaya, E.A., Bogacheva, T.V. (2018). Investments in Human Capital: Efficiency of Investments in Higher Education in Russia. Proceedings of the 31st International Business Information Management Association Conference, IBIMA 2018 - Innovation Management and Education Excellence through Vision 2020, IBIMA 2018, p. 929 - 940.

Lin, Y. H., & Wu, R. S. (2018). Managerial optimism or managerial opportunism: From a seasoned equity offerings perspective. *Asia-Pacific Journal of Accounting & Economics*, 1-18.

Lukianenko, D., Mozhovyi, O., & Burmaka, M. (2015). Top management motivation in global corporations. *International Economic Policy*, (2), 5-27

Vaughen, B. K., & Bloch, K. (2016). Use the Bow Tie Diagram to Help Reduce Process Safety Risks. *Chemical Engineering Progress*, 112(12), 30-36.

Williamson, O. E. (2007). The economic institutions of capitalism. Firms, markets, relational contracting. In *Das Summa Summarum des Management* (pp. 61-75). Gabler.

## Modern Trends of State Administrative Practice

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### Abstract

Justice is a distant goal-setting of the evolution of social environment, and it can be a guide for forming of current image of a state. A state has gone from the system of suppressing the majority in the interests of the minority to a social state where somehow interests of the majority are taken into account. It means that the challenge of building a state becomes a natural one, which maximally reflects the idea of justice and realizes it in the state-administrative practice. This paper reveals the stages of moving towards realization of justice in the whole system of relations between individual and society, and in state administrative practice.

**Keywords:** social environment, state administrative practice, social policy, state regulation of economy

### Problem Statement

In spite of neoliberal stereotypes, a state actively interferes with economic processes and takes distribution functions. Western European countries traditionally belong to a group of highly developed countries; occupy the highest positions in share of total government spending to GDP. Since the end of the nineteenth century, this indicator has increased by three to four times on an average. In Finland, France, Denmark, Belgium, Austria, Italy, Sweden, it exceeds 50% (Voxukraine, 2015). The countries of Western Europe have the highest percent of state budget spent on social needs. However, the USA has a low percentage of state budgets spend on social protection of population. But the share of aggregate state expenditure on education and health care in the USA is 36.3%, it is the highest figure in the world.

In the political sphere, democracy is generally recognized (with the exception of several monarchic states of the Middle East) as the only legitimate model of a state regime. Appeal to democracy is contained in Constitutions of all countries of the world (surprisingly with the exception of the US Constitution).

The dominant approach to the problem of justice in the global dimension is compromise, in which justice is actually equated to minimizing injustice.

For example, the philosopher John Rawls formulates the principles of justice as follows (adapted to the world level) (Kovarda, Minakova and Shevyakin, 2016):

In the political sphere - actually universal

1. Each State must have an equal right with respect to the common system of fundamental freedoms that is correlated with the freedom of all States.
2. Social and economic inequalities should be organized in such a way that:
  - a) they could reasonably expect benefits for all;
  - b) access to the regulations and positions would be open to all.

The problem of justice on a global scale is not only a matter of scientific research, but also an actual foreign policy agenda for world leaders. For example, the President of Turkey R. Erdogan (2015) in his paper 'Inclusive Growth and Global Justice' raised the issue of fairness of migration flows. Pope John Paul II in his Message for World Day of Peace 2002 with a motto 'No Peace Without Justice, No Justice Without Forgiveness' focused on the issue of realization of justice through the fair distribution of the benefits and the burdens connecting terrorism with the problem of injustice.

Various researchers have proposed their concepts of global justice. Martha Nussbaum (2004) put forward 10 principles of global social justice. Here are some of them:

- respect of national sovereignty;
- prosperous countries are obliged to deduct a part of their GDP to developing ones, while the figures should be above 1% of GDP;
- institutions of global economic management should pursue a fair policy for poor and developing countries, etc.

Arguing about justice in the global economy Tatsuo Inoue (2013) came to the conclusion that the cause of global poverty is the imposition of unfair political and economic relations to developing countries by developed countries. This reason imposes legal obligations on developed countries on resolution of poverty problems in developing countries. At the global level, equity is determined by bridging the gap between the countries of the North and the South. This task should become an orientation for developed countries.

## Research Results

The important indicator of justice is a state budget and tax system. Since the state assumes social responsibility towards citizens, the level of state's expenditures determinates whether the principle of justice is being realized in this sphere. Historically, practice has shown that at the stage of formation, states had an insignificant percentage of government spending to GDP (usually about or less than 10%). However, as a state assumed social responsibility towards citizens, this indicator was growing. It reached the peak during the wartime, when a state was responsible for preserving sovereignty and territorial integrity and also during the crisis, when a state expanded measures of economic support for business and social welfare of citizens.

Progressive taxation also serves as an indicator of justice, a state shifts care of socially disadvantaged groups to well-off people, which thus fulfill their social duty to society. The introduction of progressive taxation occurred gradually and by the 20th century this type of tax was introduced in many European countries. In 1942, John Hick wrote about the nature of progressive taxation the following: 'There is a sense of injustice from the fact that big incomes are earned not by those who are at the center of the war, but who are on its outskirts' (Scheve and Stasavage, 2010). By the end of the First World War, the rich paid no more than 10% of their income. But by 1920, it was raised up to 50-70% in such countries as the UK, the United States, Canada and France. Before the war, in countries involved in hostilities, the tax was 4.3%, after the war an average it was 63%. In non-involved countries, it increased from 9.7% up to 16.5%. Nowadays all countries in the world have progressive tax system; exception applies to a number of Arab republics that do not have personal income tax and several countries of the socialist camp with a flat tax rate (Bulgaria, Hungary, Romania, Macedonia, Russia, Kazakhstan, Estonia, Georgia, Latvia, and Mongolia). In European countries with a long history of progressive taxation, the reduction of upper tax rate is 45-55%. Progressive tax system has helped to reduce the social stratification in these countries and has become a world trend.

With the beginning of globalization, there are clear signs of increased consumption in the countries of 'golden billion'. By 2016, the number of dollar millionaires was 32931 people. In comparison with 2015, their number increased by 596 people (Credit Suisse, 2016). 73.2% of the world's population owns only 2.4% of the world's wealth, while 0.7% of the population controls 45.6% of the world's wealth.

The number of TNCs has increased. They provide about 50% of world industrial production, about 70% of world trade accounts for their share (Potatskaya, 2006). TNCs penetrate the local economy, forming a channel for the transfer of resources from the third world countries in favor of a holding company located in developed countries. Often their activities are mediated by lobbying.

Considering the process of production and consumption, we come to the conclusion that the world's biggest economies are piggybacking on the rest of the world, i.e. they consume more than produce (Sulakshin, 2014). But within piggybacking countries there are also subjects that consume the bulk of income. The response to these processes was the formation of an alternative phenomenon that contributes to minimizing the negative parameters of piggyback through two countertrends: the development of charity and the activity of organizations opposing the consumer economy and globalization.

Charity became a world trend in the XIX century, at the time when charitable organizations began to appear for supporting individuals in need, sponsorship as a support for science and art. According to the World Index of Charity (World Giving Index), over the past five years the proportion of those who donated to charity increased to 31.4% of respondents in 2015. The percentage of those who supported a stranger who needed it directly increased to 51.4%, and the share of volunteers rose up to 21.6%.

The development of justice in the world was manifested in the fact that by the middle of the 20th century people had access to such important social services as education and medicine. These benefits have become available not only to Western countries with developed social infrastructure where free primary education became a fundamental right in the 18th and 19th centuries, but also for the developing countries. The principle of compulsory and free of first stage of formal education was enshrined in the Universal Declaration of Human Rights: 'Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages'. The most socially oriented states have established a system of free pre-school education (Finland). The socialist system of free higher education typical of the USSR and the countries of the socialist camp is gradually coming to the European countries. The International Covenant on Economic, Social and Cultural Rights states 'higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular by the progressive introduction of free education'. At the same time, the states have introduced a support system for gifted and talented students and a system of providing vulnerable groups with state-funded education.

Reducing illiteracy in the world from 90% in 1800 to 15% in 2015 proves the effectiveness of the development of the compulsory education system. According to the UN forecasts, by 2050 the world must achieve full literacy (Roser and Ortiz-Ospina, 2018).

The first industrialised countries started the expansion of education in the 19th century, but this process became a global phenomenon only after the Second World War.

Healthcare became the human guaranteed by a state. By the end of the 19th century, governments began to introduce national health and old-age insurance programs. However, at that time it was mainly the prerogative of European countries and the United States. Subsequently, practice spread to most countries in the world. Article 12 of the International Covenant on Economic, Social and Cultural Rights recognises the right of everyone to 'the enjoyment of the highest attainable standard of physical and mental health. The creation of conditions which would assure to all medical service and medical attention in the event of sicknesses.

Within the framework of health insurance system, a state undertakes to provide the population with a set of health services, but part of the expenses is compensated directly by the population itself through deductions to funds. Given that the least developed countries have the rudiments of a public health system, international and regional programs are realized there to prevent epidemics. In particular, World Health Organization's initiatives span the following areas: fight against infectious and parasitic diseases, immunization and vaccination against major epidemic diseases. The organization also promotes the development of healthcare systems in the world.

In the first half of the 20<sup>th</sup> century, European countries began to expand the coverage of the health system, but it happened gradually. For example, France, Austria and Germany widened healthcare coverage in the period 1920-1960-ies while Spain, Portugal and Greece did this later, in '60s and '80s.

As public relations developed, the state began to pay close attention and care to certain categories of citizens (the most socially vulnerable) through providing material support from the budget and non-budgetary funds. The purpose of this assistance is to equalize the social position of citizens in comparison with other members of society. In Europe, this process was launched in the XIX century and was originally aimed at the social insurance of workers, subsequently spread to other categories of citizens and to various events such as disability, accidents, old age. In this case, the funds are formed with the compulsory contribution from the citizens and state subsidies. After the Second World War, European countries in moved to the system of social security for a wide range of citizens.

They were followed by the United States. In the 1980s, the system was introduced by Latin American countries. In Africa, social security began to develop in the period 1950-1960-ies for whites. So far, social security in Africa has been implemented mainly in relation to workers who live in cities and are employed in the public sector.

In the 20th century, thanks to the UN activities, social security was secured for all countries that signed the International Covenant on Economic, Social and Cultural Rights: 'The States Parties to the present Covenant recognize the right of everyone to social security, including social insurance' (Article 9). According to the UN classification, social security is no longer only social insurance for workers, but also a wide range of such social benefits as: acting social security system; coverage of nine basic aspects of social security (health protection, illness, old age, unemployment, work injury, family and children assistance, maternity, disability, loss of breadwinner and orphanage); adequacy of benefits in terms of size and duration; availability; interrelation with other rights.

Thus, the expansion of a number of countries implementing the social security system, as well as the growth of public expenditure prove that the world is moving towards the establishment of justice in this field.

It has been established that the growth of social expenditures in the advanced states of the world occurred synchronously in the 1930s.

For example, a social practice of supporting families through paid child benefit began to develop after the First World War and was a result of the development of humanism and Europe's demographic decline in the postwar period. Sweden and the UK actively developed this system; child care was caused by the problem of child malnutrition and a birth rate drop. After the Second World War, the idea of child benefits spread to other countries. Canada's Family Allowance Act went into effect in July 1945. In adopting this law, the state proceeded from such a formula for the realization of justice as 'the burden of raising up the next generation should be shared by the population as a whole, and not covered by a small segment of the working population' (Haanes-Olsen, 1972). In France, child benefits were included in the comprehensive social security plan in 1946.

To encourage more birth, child benefits were increased in 1969. In Germany, the allowances introduced in 1954 were financed from private funds, but in 1964 the state took upon itself the financing the entire program. In Sweden, the program fully started in 1948. The government

acknowledged that the economic burden of raising a child refers to society as a whole, and not exclusively to the individual household. In the UK, child allowances were supplemented by tax deductions (Haanes-Olsen, 1972).

In general, social expenditures continue to increase in the world. If in 1980 the average for the world was 5.24%, then in 2012 it reached 8.14%.

## Conclusion

The history of development of human society demonstrates a steady trend of increasing access to the benefits of civilization of all social groups (Kovarda, Minakova and Shevyakin, 2016). Initially, this access was enjoyed by representatives of the upper class. In the XIX century, the working class received an access to social services as a form of the principle of justice.

In the twentieth century, a number of social categories were admitted to rights in which they had previously been restricted. And this practice has spread from developed countries to the whole world through the development of international law.

Therefore, the world tends towards ever more humane and fair practices. At the same time, it was socialist experience that was the most powerful impetus for the transition to a more just society, but in general, this process is developing naturally within the evolutionary trend.

## References

CAF World Giving Index 2016. (2016). [Online]. [Retrieved August 5, 2018]. Available: [https://www.cafonline.org/docs/default-source/about-us-publications/1950a\\_wgi\\_2016\\_report\\_web\\_v2\\_241016.pdf?sfvrsn=4](https://www.cafonline.org/docs/default-source/about-us-publications/1950a_wgi_2016_report_web_v2_241016.pdf?sfvrsn=4).

Erdogan, R. (2015), 'Inclusive Growth and Global Justice'. [Online]. Project Syndicate: the world's opinion page. [Retrieved August 5, 2018]. Available: <https://www.project-syndicate.org/commentary/g-20-turkey-inclusive-growth-by-recep-tayyip-erdogan-2015-11?barrier=accesspaylog>

General Comment No. 19: The right to social security (Art. 9 of the Covenant) Adopted on 23 November 2007. (04.02.2008). [Online]. UN Committee on Economic, Social and Cultural Rights (CESCR). [Retrieved August 15, 2018]. Available: <http://www.refworld.org/docid/47b17b5b39c.html>

Haanes-Olsen, L. (1972), 'Children's Allowances: Their Size and in Five Countries', *Social Security Bulletin*, 35 (5), 17-28.

International Covenant on Economic, Social and Cultural Rights. Adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966. [Online]. UN Office of the High Commissioner for Human Rights. [Retrieved August 10, 2018]. Available: <https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx>.

Kovarda, V.V., Minakova, I.V., and Shevyakin, A.S. (2016), 'Sistema upravleniya mirovym gumanitarnym protsessom' Proceedings of the 6th All-Russian Applied Science Conference with International Participation, Gorokhov, A.A. (ed), Kursk: University Book closed joint stock company, 30-34.

No Peace without Justice, No Justice without Forgiveness. Message Of Pope John Paul II For the Celebration of the World Day of Peace. (2002). [Online]. The Holy See. [Retrieved August 5, 2018]. Available: [http://w2.vatican.va/content/john-paul-ii/en/messages/peace/documents/hf\\_jp-ii\\_mes\\_20011211\\_xxxv-world-day-for-peace.html](http://w2.vatican.va/content/john-paul-ii/en/messages/peace/documents/hf_jp-ii_mes_20011211_xxxv-world-day-for-peace.html)

Nussbaum, M.C. (2004), 'Beyond the Social Contract: Capabilities and Global Justice', An Olaf Palme Lecture, delivered in Oxford on 19 June 2003, *Oxford Development Studies*, 32 (1), 3-18.

Optimal share of a state in economy: theoretical calculation for the Ukrainian reality. (07.12.2015). [Online]. Voxukraine. [Retrieved August 10, 2018]. Available: <http://voxukraine.org/2015/12/07/optimalnaya-dolya-gosudarstva-v-economike-ru/#imageclose-18892>.

Pototskaya, T.I. (2006), 'Izuchenie transnatsionalnoi deyantelnosti kompanii kak element otraslevogo analiza (na promere almazno-brilliantovogo kompleksa), *Management in Russia and overseas*, 6, 35.

Roser, M. and Ortiz-Ospina E. (2018), 'Global Rise of Education'. Our World in Data. [Online], [Retrieved August 18, 2018], <https://ourworldindata.org/global-rise-of-education>.

Scheve, K., and Stasavage, D. (2010). 'The Conscription of Wealth: Mass Warfare and the Demand for Progressive Taxation', *International Organization*, 64(4), 529-561. doi:10.1017/S0020818310000226

Sulakshin, S.S. (2014), 'Global social parasitism (dedicated to the 100th anniversary of United States Federal Reserve System)', Materials of International Scientific-Social Conference, Moscow, 19.12.2013, Science and Politics, 2014.

Tatsuo, I. (2013), 'On Global Justice', *An International Journal of Social Science on Japan*, Oxford (2015), 18 (1), 106–109.

The Global Wealth Report 2016. [Online]. Credit Suisse. [Retrieved August 10, 2018]. Available: <https://www.credit-suisse.com/ch/en/articles/articles/newsand-expertise/2016/11/en/the-global-wealth-report-2016.html>.

Universal Declaration of Human Rights. Adopted and proclaimed by General Assembly resolution 217 A (III) of 10 December 1948. [Online]. The United Nations. [Retrieved August 5, 2018]. Available: <http://www.un.org/ru/universal-declaration-human-rights/index.html>.



## **Bankruptcy of Credit Organizations in Russian Federation: Causes and Prevention**

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### **Abstract**

Today one of key questions of the banking sector is the problem of credit institutions' devastation. Last time the quantity of credit institutions sharply reduced. The causes of such situation are macroeconomic conditions, limitations of policy of the Central Bank of the Russian Federation and necessity of improvement of standard and legal base in the bank sphere. In the research, authors analyze the problems connected with insolvency of credit institutions of the Russian Federation. Dynamics of bankruptcy of credit institutions and its causes are investigated. Authors identify the main causes of bankruptcy of credit institutions and prove that the modern methods of prevention of credit institutions' bankruptcy do not take into account the identified causes.

**Keywords:** bankruptcy, devastation, credit organizations, Russian Federation, causes, methods of bankruptcy prevention

### **Introduction**

The relevance of the research is identified by special value of credit institutions for functioning of economy of the whole country. As activity of individuals and companies, public and municipal authorities are directly connected with activity of credit institutions. Activity of any company is not possible without existence of at least one settlement account in credit institution on which the company's income is accumulated. Besides, a great number of individuals also use services of credit institutions, placing in them in deposits the cash. Therefore, the bankruptcy of one credit institution is cause bankruptcies of a great number of other subjects of economy by the principle of "pyramid". Thus, in the conditions of modern economy, credit institutions are such subjects of civil law, presence of creditors at which is supposed a priori.

The goal of research consists in carrying out the analysis of dynamics of bankruptcy of credit institutions in Russia.

For achievement the goal, it is necessary to solve the following problems:

- to analyze practice of bankruptcy of credit institutions in Russia;
- to identify the main causes of bankruptcy of credit institutions in Russia;
- to correlate the causes of bankruptcy of credit institutions with methods of its prevention, which are used in modern practice.

The theoretical base of a research was made by basic provisions of the economic theory, theory of economic measurements and also results of basic and applied researches of domestic and foreign specialists in the problems arising owing to bankruptcy of credit institutions. In research, general scientific methods of a research are used, including – observation, analysis, synthesis. Statistical data

of the Central Bank of the Russian Federation became information sources of work (Official site of the Central Bank of the Russian Federation, 2018).

## Data and Method

Issues related to the development of the banking sector, including the minimization of the devastation of credit institutions, are dealt with by many specialists (Bataev, 2017; Sergeev et al, 2017; Nikolova et al, 2017; Gutman et al, 2018). Generally, bankruptcy of credit institutions is investigated from the legal point of view. This aspect is caused by the fact that today the Federal law “About Insolvency (Bankruptcy)” (2003) actually is the uniform statutory act which regulates bankruptcy of all economic entities. The majority of norms has been borrowed from the Federal law of February 25, 1999 №40-FZ “About insolvency (bankruptcy) of credit institutions” which has become invalid today. Tarasenko O.A. (2016) in the article about features of legal regulation of credit institutions’ bankruptcy emphasizes inapplicability of many provisions of the Federal law “About Insolvency (Bankruptcy)” to the relations connected with devastation of credit institutions.

The inapplicability of normative legal acts sharply contrasts with statements researchers Shevchenko I.V. (2017), H. M. Ennis and H. S. Malek (2005). In their researches scientists have concluded that the government has to interfere with activity of credit institutions for prevention of their crash via available tools (including – standard and legal). Accordingly, on the basis of the literature review, as the main reason for the bankruptcy of credit institutions was put forward a hypothesis about the insolvency of the regulatory legislation.

Questions of credit institutions’ bankruptcy often meet in researches in aspect of applying the methods of forecasting this process. It is relevant in the conditions of survival in market economy. As a basis of large-scale range of models of the analysis and forecasting bankruptcy risk of credit organizations, financial indicators serve. These models represent analytical tools, which are necessary for identification of prospects of change of a financial state and also opportunities of preservation or loss of financial stability of the organization.

Today, many methods of forecasting bankruptcy are used, as well as foreign ones - BAKred Information System; Bank Monitoring Screens, CAMELS rating (Pleshchzyer, 2010); Basel Committee on Banking Supervision (Volovnik, 2011); Estrella A., Park S., Peristiani S. (2000); Jagtiani J.A., Kolari J.W., Lemieux C.M., Hwan Shin G. (2000) and Russian - Normative Method (Instruction of the Bank of Russia, 2017), Cromonov’s Method.

These methods are characterized by a wide variety; difference in content and quantity of indicators to be evaluated. Table 1 presents the main advantages and disadvantages of foreign and Russian methods for forecasting bankruptcy of credit institutions.

**Table 1 : Main advantages and disadvantages of foreign and Russian models of forecasting of credit institutions’ bankruptcy**

Foreign models		Russian models	
<i>Advantages</i>	<i>Disadvantages</i>	<i>Advantages</i>	<i>Disadvantages</i>
<ul style="list-style-type: none"> <li>- Possibility of remote assessment;</li> <li>- Satisfactory labor input of calculations;</li> <li>- Forecasting horizon very long.</li> </ul>	<ul style="list-style-type: none"> <li>- Specific features of organization activity aren't considered;</li> <li>- Macroeconomic factors aren't considered;</li> <li>- Large time costs.</li> </ul>	<ul style="list-style-type: none"> <li>- Application in Russian conditions;</li> <li>- Possibility of remote assessment;</li> <li>- Satisfactory labor input of calculations;</li> <li>- Simplicity of results interpretation;</li> <li>- Satisfactory horizon of forecasting.</li> </ul>	<ul style="list-style-type: none"> <li>- Macroeconomic factors aren't considered;</li> <li>- Quality indicators of organization activity aren't considered;</li> <li>- Specific features of organization activity aren't considered.</li> </ul>

The main advantages and disadvantages of foreign and Russian methods for forecasting bankruptcy of credit organizations, which are presented in Table 1, are similar. This aspect confirms the fact that Russian researchers often adapt foreign methods of forecasting bankruptcy to credit institutions.

To obtain detailed and comprehensive estimates of commercial banks, in particular, when examining them for possible bankruptcy, it can be applied the method of complex analysis. Currently, regulatory authorities of the Netherlands and the UK actively use the system of comprehensive assessment of banking risks. Due to its high efficiency and versatility, this system is used in a study on the possible bankruptcy of large multi-branch banks and bank holdings.

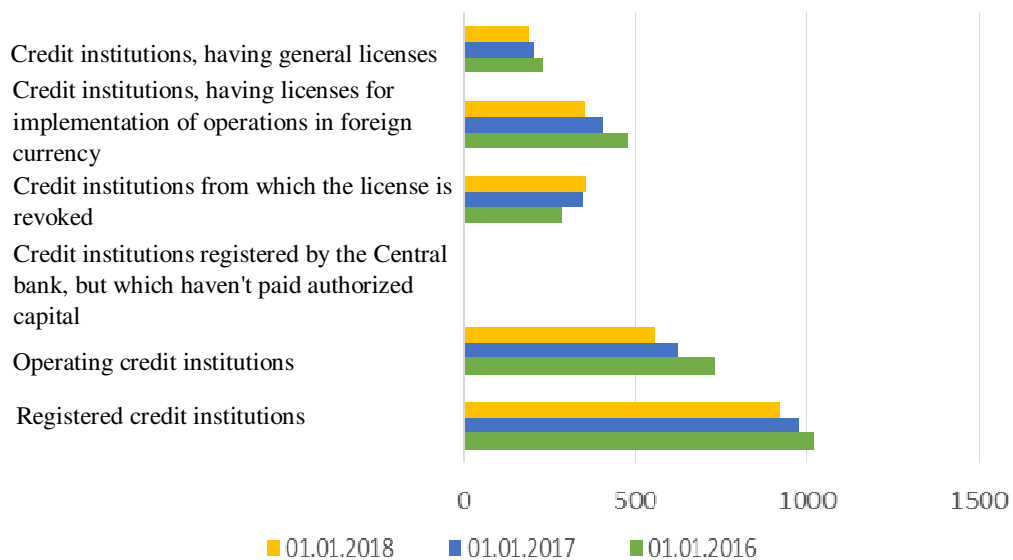
Defining the mechanism of bankruptcy as a legal recognition of liquidation, these methods are conditionally methods used to predict the bankruptcy of organizations. But none of these methods can not be considered universal due to “specialization” on any one kind of crisis. It is advisable to track the dynamics of changes in performance indicators for several of them. These methods were used to correlate them with the main causes of bankruptcy of credit institutions.

## Analysis and Results

The quantitative analysis of the banking sector of the Russian Federation for the period 2016-2017 made it possible to draw the following conclusions:

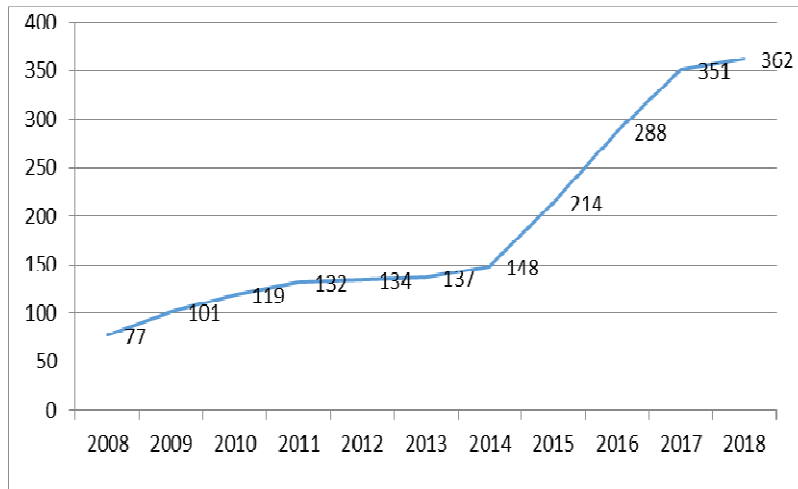
- there is a reduction in the number of registered credit institutions; organizations that have licenses for implementation of operations in foreign currency as well as organizations that have general licenses (figure 1).

This aspect is related to the restructuring of the banking sector, the introduction of a new classification of commercial banks and the desire of the Central Bank of the Russian Federation to ensure the most complete control over their activities, including the control of operations in foreign partners. As the main reason for the implementation of such a policy are sanctions from European countries.



**Figure 1 : Quantitative characteristics of credit institutions of Russia**

- the number of credit institutions leaving the market is growing every year. For example, as of 01.01.2016 it was 288, and at the beginning of 2018 - 362 credit institutions were revoked licenses (figure 2);

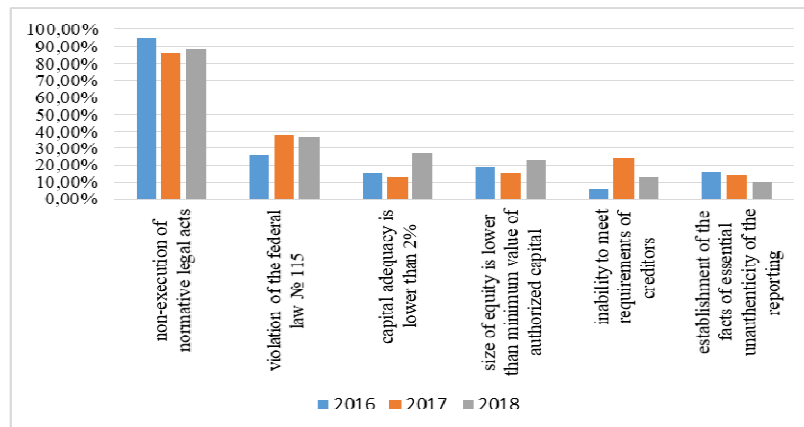


**Figure 2 : The number of the credit institutions from which the license is revoked for the last ten years (2008-2018).**

- analysis of the literature allowed us to identify, as the main hypothesis of the reasons for the bankruptcy of credit institutions, the imperfection of legislation and, as a consequence, its violation. We analyzed the reasons for the bankruptcy of credit institutions in the period 2016-2018, the results are shown in figure 3.

It should be noted that most of the analyzed credit institutions are deprived of a license in case of violation of 2 or more points indicated on figure 3. The above hypothesis was confirmed - the two most frequent reasons for revoking license of credit institution are related to the legislation.

In 2016-2017, the Central Bank emphasizes on the withdrawal from the market of banking services of credit institutions that were actively involved in the laundering of criminal proceeds and illegal transfer of funds abroad. At the same time, the number of credit institutions that have lost their banking licenses due to their unsatisfactory financial situation has increased. Thus, cases of revoking license in connection with the loss of own capital have significantly increased. We note in 2017 a sharp increase in credit institutions that went bankrupt as a result of their inability to meet creditors' requirements.

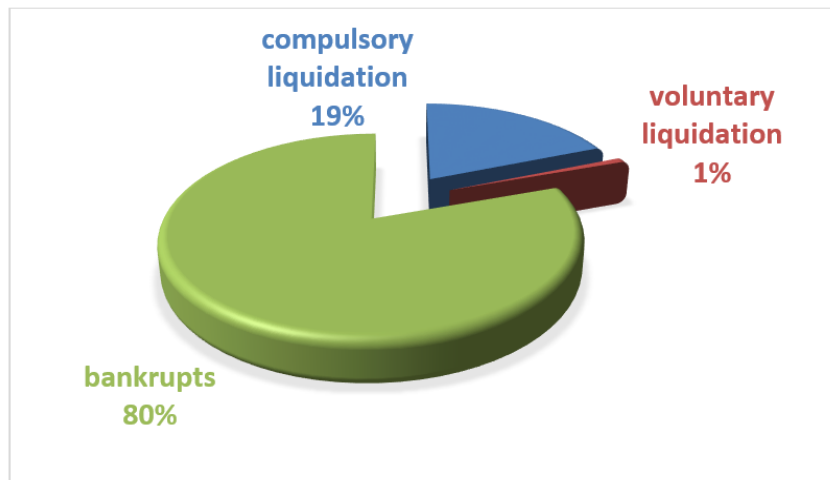


**Figure 3 : The main reasons for revoking license of credit institutions in 2016 – 2018 (in percentage terms)**

Revoking license on banking operations of credit institution involves appointment of temporary administration on management of this credit institution, consisting of employees of the Central Bank of the Russian Federation. Besides them, as a part of temporary administration employees of the Deposit Insurance Agency state corporation can work.

By the beginning of 2017 96 temporary administrations on management of credit institutions in connection with revoking licenses at them are appointed.

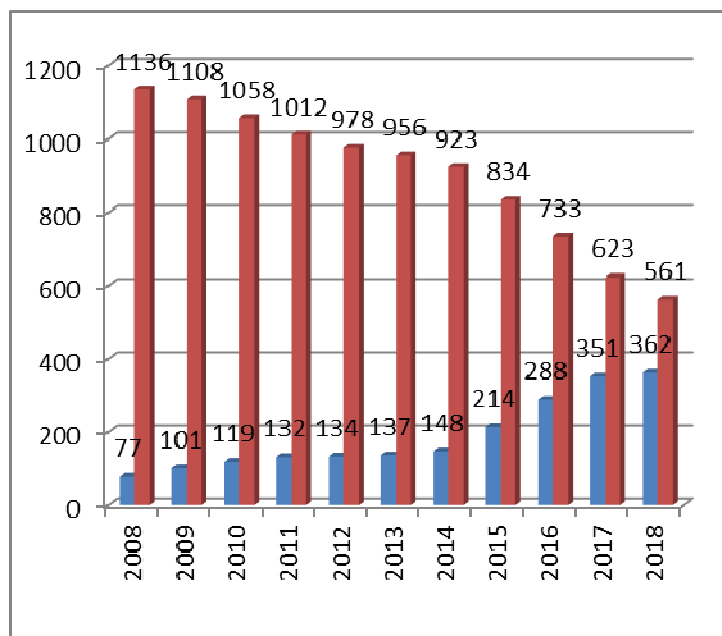
As of January 1, 2017 liquidating procedures were carried out in 351 credit institutions. For January 1, 2018 liquidating procedures have been realized already in 362 credit institutions (figure 4).



**Figure 4 : Methods of revoking license of credit institutions (date: 01.01.2018)**

For January 1, 2018 there are 362 bankrupt credit institutions. From them 311 credit institutions were supervised by Deposit Insurance Agency, including 277 credit institutions was carried out the procedure of bankruptcy proceedings and 34 credit institutions are taken place compulsory liquidation.

The analysis of dynamics of the operating and bankrupting credit institutions for the last ten years identified that the number of the operating credit institutions continues to decrease (figure 5) every year. Such situation confirms opinions, that the mega-regulator pursues policy on reduction of number of credit institutions, having left in the market only of large players of the banking sector.



**Figure 5 : The ratio of operating (red) and bankrupting (blue) credit institutions from 01.01.2008 to 01.01.2018.**

In target to minimize the number of bankrupting credit institutions the priority directions of development in the field of legislation should be the activities carried out in the implementation of the concept of proportional regulation and the creation of a new mechanism for sanitation. The sanitation should be based on the implementation of refurbishment directly by the Central Bank (not by the Deposit Insurance Agency). The remediation procedures themselves are supplemented by a new instrument: direct capitalization of the sanated bank by the Central Bank. The transition from a credit scheme to direct participation in the capital of rehabilitated banks will reduce the amount of financing for sanitation.

The improvement of the legislation regulating the bankruptcy procedures of credit institutions and the rational policy of the Central Bank of the Russian Federation can also strengthen the domestic banking system within a short period of time, make it stable, reliable, and fully protects creditors and debtors that are trusted.

Analysis of the banking sector of the Russian Federation made it possible to identify the main causes of bankruptcy of credit institutions. The next stage of the research will be to correlate the causes of bankruptcy of credit organizations with the methods used both in foreign and in Russian practice. To do this, a matrix was compiled, which compared the methods for forecasting the bankruptcy of organizations and the reasons for the bankruptcy of credit institutions. This matrix will determine how topical methods today take into account the main causes of bankruptcy of credit institutions and emphasize or reject their usefulness (table 2).

The systematization of existing methods of analyzing the bank and predicting the probability of its bankruptcy showed that a significant drawback of almost all foreign methods is their inapplicability in Russian conditions. Those systems, in relation to which attempts have been made to adapt to our economic situation, are not accurate enough. Note that none of the considered methods focuses on one of the most common causes of bankruptcy of credit institutions - violation of regulations.

**Table 2: Correlation of causes for bankruptcy and methods for forecasting bankruptcy of credit institutions**

	non-execution of normative legal acts	violation of the federal law № 115	capital adequacy is lower than 2%	size of equity is lower than minimum value of authorized capital	inability to meet requirements of creditors	establishment of the facts of essential unauthenticity of the reporting
Foreign models						
BAKred Information System (BAKIS)	-	-	+	+	+	+
Bank Monitoring Screens	-	-	+	+	+	+
CAMELS	-	-	+	-	+	+
ORAP (Organization and Reinforcement of Preventive Action)	-	-	+	-	+	+
PATROL	-	-	+	-	+	+
Базельский комитет по банковскому надзору	-	-	+	+	-	-
Модель Альтмана	-	-	-	-	+	-
Estrella A., Park S., Peristiani S	-	-	+	+	+	-
Jagtiani J.A., Kolari J.W., Lemieux C.M., Hwan Shin G.	-	-	+	-	+	-
RATE	-	-	+	+	+	-
RAST	-	-	+	+	+	-
SAABA	-	-	-	-	+	-
FIMS	-	-	+	-	+	-
Russian models						
Normative Method	-	-	+	-	+	-
Pleshchyzer's Method	-	-	+	-	+	-
Shemetev's Method	-	-	+	-	+	-
Cromonov's Method	-	-	+	+	+	-

## Summary

Analysis of the practice of bankruptcy of credit institutions on the basis of statistical data showed that the ratio of operating and bankrupting credit institutions over the past decade has changed dramatically, and the number of bankrupting organizations is increasing every year, while the number of organizations is decreasing. The main reason for the liquidation of credit institutions for the last three fiscal years was the violation by banks of the requirements of federal laws and other regulations. As for the direction of improving the banking legislation, in order to create a stable national banking system, a detailed study of the problems associated with the insolvency of credit institutions is necessary; application of foreign experience; the development of new methods for forecasting the bankruptcy of credit institutions, as well as the development of existing legislation, since at this stage it is at the stage of formation and is a relatively young branch of legislation. At the moment, in the

modern foreign and Russian economic literature, a large number of different methods for diagnosing the bankruptcy of credit organizations are proposed. None of these models is perfect and does not give an accurate result. For the analysis of a particular organization, it is reasonable to apply several methods at once, having obtained an average result. For the analysis of the credit institution under study, a new methodology for forecasting bankruptcy should be developed, based on the bankruptcy forecasting methods and bank failures in Russia over the past ten years.

## References

Bataev, A.V. (2017). Contemporary approaches to advancement of the banking Sector – Virtual credit organizations. Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, IBIMA 2017, pp. 77 - 88.

Ennis H. M., Malek H. S. Bank Risk of Failure and the Too-Big-to-Fail Policy. *Online access:* [http://www.richmondfed.org/publications/research/economic\\_quarterly/2005/spring/pdf/ennismalek.pdf](http://www.richmondfed.org/publications/research/economic_quarterly/2005/spring/pdf/ennismalek.pdf).

Estrella A., Park S., Peristiani S. Capital Ratios as Predictors of Bank Failure // FRBNY Economic Policy Review. – 2000. – July. – P. 17.

Gutman, S.S., Rytova, E.V., Kravchenko, V.V. (2018). System of Regional Indicators for Sustainable Development of the Far North Regions. Proceedings of the 31st International Business Information Management Association Conference, IBIMA 2018 - Innovation Management and Education Excellence through Vision 2020, IBIMA 2018, p. 1843 – 1852

Instruction of the Bank of Russia (2017). On the mandatory standards of banks (28.06.2017, №180-I). *Online access:* <http://base.garant.ru/71721584/#friends> [In Russian]

Jagtiani J.A., Kolari J.W., Lemieux C.M., Hwan Shin G. Predicting Inadequate Capitalization: Early Warning System for Bank Supervision // Emerging Issues Series, Federal Reserve Bank of Chicago, S&R. – 2000. – 10R. – P. 37.

Nikolova, L.V., Rodionov, D.G., Litvinenko, A.N. (2017). Sustainability of the business in the conditions of globalization. Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, IBIMA 2017, p. 417-421.

Official site of the Central Bank of the Russian Federation (2018). *Online access:* <http://www.cbr.ru>. [In Russian]

Pleshchzyer, M.V. (2010). Methodological aspects of forecasting the bankruptcy of banks during the financial crisis. *Audit and financial analysis*, (2), pp. 161-166. [In Russian]

Russian Federation: Laws. (2003). About insolvency (bankruptcy). The Federal law of 26.10. 2002 N127-FZ. *Tax messenger*, (1), 200. [In Russian]

Sergeev, D.A., Marikhina, V.V., Velichenkova, D.S. (2017). Innovative financial tools used for hedging Russian banks' investment risks under the conditions of unstable economy. Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, IBIMA 2017, pp. 2133-2143.

Shevchenko, I.V., Chechena, M. V. (2017). Bankruptcy of credit institutions abroad. *Modern social and economic processes: problems, regularities, prospects*, pp. 46-48. [In Russian]



Tarasenko, O.A. (2016). Bankruptcy of credit institutions: features and problems of legal regulation. *Current problems of Russian law*, (8 (69)). [In Russian]

Volovnik, A.D., Ziyadullaev, NS, & Kibardin, Yu. S. (2011). Basel III: a test of the reliability of the Russian banking system in the face of global competition. *Economy of megacities and regions*, (3), 39. [In Russian]

## **The Concept of Risk-based Management in The Activity of Business Organizations**

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### **Abstract**

The problem of risk management is described rather amply in the international standards and professional literature. But at the same time, there is no specific methodology regarding the risk management in the activity of business organizations that could provide a specific tool for small and medium businesses based on interrelated methods, models and algorithms allowing to achieve specific results in risk-based management. Risk-based management collects data on the various factors in the management system (methods, instruments, measures) and provides an opportunity to move from empiricism in management to a specific scientifically justified implementation of management in the activities of business organizations. At the present time, there is no defined concept of risk-based management of business organizations. In relation to the study it is proposed to substantiate the necessity of development of this concept on the basis of defining categories of business organizations risk-based management under conditions of globalization of economic processes. The goal of business organizations that plan to be stable should be the implementation of risk-based management capable to cope with the risks of different types, as well as to search for the most effective options to execute and to make managerial decisions, taking into account the level of risk for each type of threat.

**Keywords:** risk-based management, business organizations, small and medium business, development, growth.

### **Target Setting**

At the present time, there is no clear methodological support for the development of the concept of risk-based management in the activity of business organizations. Risks are present in all the fields of human activities and socio-economic communities: economic, social, natural, technological, business and others, where there is a need to make forecasts regarding the development or future conditions. Therefore, the risk theory is an interdisciplinary science, the categories and laws of which can be used in engineering, politics, economics, social and other spheres.

Risk management is inseparable from the management of business organizations. At the same time, risk-based management is an essential element of decision-making, activities optimization and value creation by business organizations.

A crucial point of the modern economic activity is the use of quantitative methods of risk assessment, such as simulation modeling, decision trees, neural networks, quantitative scoring models and more complex modeling tools using Big Data.

### **Analysis of recent studies and publications**

The analysis of the prospects for business development in foreign literature is reflected in the works of the authors such as: P. Arrhenius, E. Auster, E. Autio, W. Baumol, D. Birch, Ch. Brown, H. Wallenius, N. Sharma and many others. Long-term patterns of economic development, its wavy character were studied in the works of foreign scientists such as A. Akayev, C. Juglar, J. Kitchin, H. Clark, C. Pérez, W. Rostow, M. Hirooki, J. Schumpeter and domestic scientists such as S. Yu. Glazyeva, V. E. Dementyeva (Dementiev, 2011), E. N. Kablova, L. A. Klimenko, N. D. Kondratyeva, S. M. Menshikova, M. I. Tugan-Baranovsky.

A large number of risks for the whole mankind and every human being, both global and local, led to the development of the theory of sustainable development of the society, encompassing nature, economy, society, the principles of which were formulated at the UN Conference in Rio de Janeiro, and later in 2012 at the conference "RIO + 20" the ways to solve the problems of sustainable development were formulated, namely: the eradication of poverty through the rejection of irrational patterns of consumption and production, protection and wise use of natural resources; ensuring of economic growth, of food security, creation of sustainable livelihoods sources by protecting ocean and sea ecosystems, maintaining of their biological diversity; more effective forest management; improvement of methods of water resources conservation and management to contribute to the sustainable development and protection against desertification, etc.

Each year, the World economic summit (WES) submits a global risk report. The report examines 30 separate global risks, as well as 13 major trends or drivers. The risks are divided into five categories: economic, geopolitical, environmental, social and technological. The experts of the forum stated 13 basic trends that contribute to strengthening or to the weakening of the influence and ratio of specific global threats, or to the change of balance between risks or their groups.

The goal of the research is to justify the necessity to develop the concept of risk-based management of business organizations in order to make and to work out the effective management solutions to prevent the probability of risk.

### **Key Findings**

Any activity, including economic one, carries a risk element. Any production, commercial or financial transaction is risky, since it is impossible to take into account all the factors affecting the implementation.

In the economy, the ability of a market entity to take risks provides a preferential development of a particular form of ownership, of a particular type of activity, of a particular mode of production. In business, active, risk-able people can succeed. Accordingly, the absence of risk can ultimately harm the economy, undermine its dynamism and effectiveness.

The main reason is the lack of information, which results in uncertainty about the future, unpredictability of the behavior of business partners. Even the low qualification of managers who take risky decisions can be seen as a lack of information on the correct approach to business management. If we systematize the risks by the scale of the consequences, we can mark out the micro- and macro level of their implementation.

The term "risk" is used both in the context of various fields of human activity, and in everyday life. The root of the word comes from ancient Greek, which means that people use this term in different meanings not for the first millennium.

F. Knight first mentioned the risk as a quantitative measure of uncertainty in his work "Risk, uncertainty and profit". He defined the risk as "measurable uncertainty", "probabilistic (stochastic) certainty" (Knight, 1994).

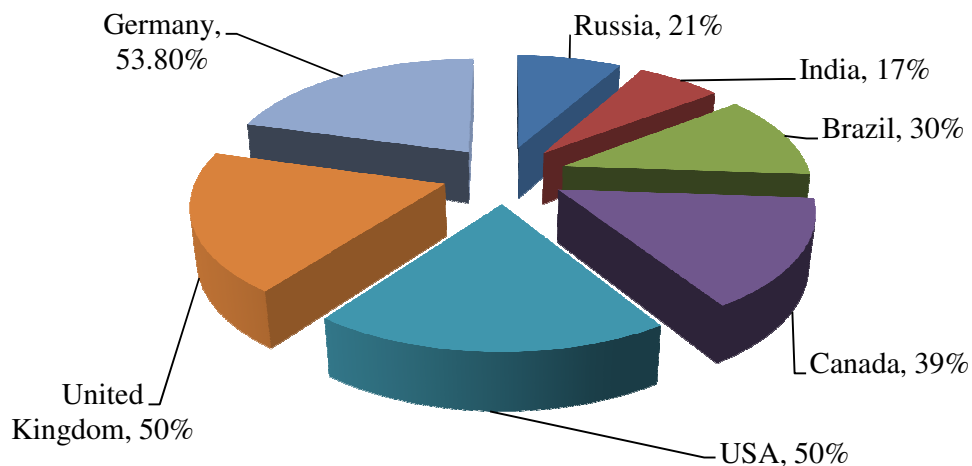
In the Global Risk Report of 2017, the World Economic Forum highlights 12 key areas of innovation and their inherent risks and benefits (Gray, 2017). The list of 12 includes three-dimensional printing, artificial intelligence and robots, biotechnologies, Internet of things and others. Technologies will continue to play a vital role in promoting of global prosperity. New achievements contribute to the increasing of economic productivity, to the providing of radical solutions in the field of healthcare and climate change, among other benefits.

But the pace of innovation in the fields such as artificial intelligence (AI), Internet of things (IoT) and biotechnology, also create new risks that will grow in the world where the geopolitical tensions, nationalism and social instability are still growing. Small and medium businesses need to take into account the threats associated with the technological change, thanks to the focus of the shifting global risk.

One of the key results of the Global Risks report this year is that inequality and polarization are now among the three leaders as the main factors of global risks.

In any circumstances, this will be a harsh assessment of the social, economic and political problems facing the world. However, after the recent well-known events of 2014 - 2016, the rates for global politics are particularly high. Elections are won and lost on the basis of the growing disappointment and loss of confidence towards politicians and political institutions. There is a growing risk that social discontent with the political process can damage the decision-making at the national level all over the world and hinder the cooperation at the global level.

Let us present in Figure 1 the share of small and medium businesses in different countries of the world for the year 2016.



**Fig. 1: Share of small and medium businesses in different countries of the world for the year 2016**

In the period of the technological revolution (in the initial phases of the long wave), small businesses have unique opportunities to obtain the innovative rent from the commercialization of basic innovations, having paid back the costs of research expenditures in the emerging industries.

Successful entities of small and medium businesses - innovators have the opportunity to turn into large entities due to the weak predictability of field development. It is facilitated by the narrow-mindedness of the large organizations that cannot discern the market perspective of innovative products of small firms and react with delay to the threat to their market positions.

A vivid example of the realization of growth opportunities during the technological revolution is Apple - the most expensive brand (\$ 752 billion according to Forbes in 2017) . The success of Apple was provided by its innovative solutions in the field of personal computers and operating systems, as well as the underestimation of the PC market large business.

At low rates of technological development of the industry, small business should use a niche strategy, which consists in concentrating on narrow market segments, where the more specific products are produced. Small business is not able to compete on equal ground with large business in mass production, since its output is associated with cost savings by means of the effect of the output scale. Small business in these conditions should use a niche strategy with the production of the highest possible quality and best customer service (Dementiev, 2011).

For the successful development small and medium businesses need to get the customer loyalty and to maximize the share of its narrow market segment. The development of small and medium businesses can be diversified, i.e. designed to find and to master develop new narrow market niches.

According to the researches, small and medium businesses are at great risk when they strive to enter to broader markets and to become larger, because instead of growth, it is more likely that they collapse. Therefore, at low rates of technological development of the industry, the most reliable strategy for survival of small and medium businesses is the desire to consolidate the existing market share.

Small business has more opportunities for development in industries and spheres of activity with a high rate of technological development, winning at the speed of improving innovations. Representatives of small and medium businesses have incentives to speed up the pace of innovation, when they can expect a win in the form of significant innovation rent and capture a significant market share. In their turn, the large organizations that dominate on the market tend to eliminate or minimize the number of their competitors.

During the technological revolution, the threat of novelty is also relevant for large organizations that introduce new products to the market, though to a lesser extent than for small and medium businesses unknown to the market.

Therefore, in order to survive, small and medium businesses need to establish close ties with large organizations (for example, through franchising, long-term contracts, mergers and acquisitions) through which small and medium businesses can access to the resources.

Old large business organizations also benefit from the cooperation with small and medium businesses, reducing the threat of aging. Forms of interaction can be the creation by large entrepreneurial structures of new innovative forms, the conclusion of contracts with small and medium businesses for the creation of innovative products .

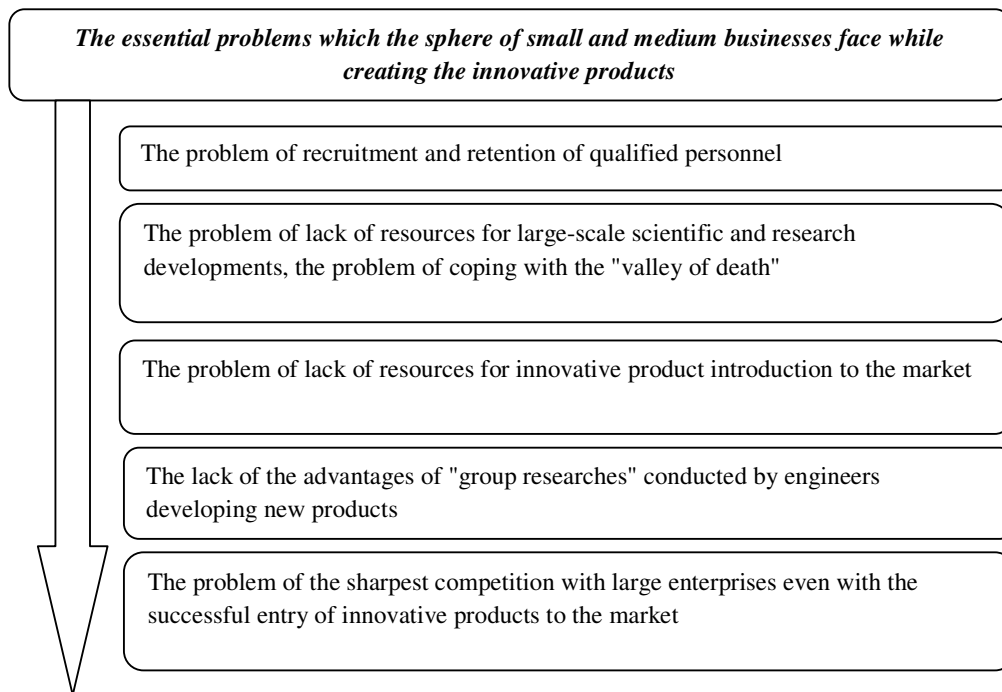
The threat of novelty for representatives of the sphere of small and medium business is particularly strong during the formation of a new industry (stage of long wave aggression). It is related to the lack of confidence of market participants due to the fact that the small (new) business organizations are unknown. Therefore, new business organization should use different development strategies within the new industry.

D. A. Zhdanov considers the influence of certain parameters (age, number of employees, sales volume) on the organizational and managerial structure.

Opportunities and difficulties in the development of small and medium businesses are linked, in particular, with their interaction with big business.

Large business can seize the market initiative to commercialize the innovations of small and medium businesses. Large business organization can invest in building up entry barriers in those markets where they have already the market power and freeze their existing patents to preserve market power (Dementiev, 2011).

Let us imagine on Figure 2 the essential problems which the sphere of small and medium businesses face while creating the innovative products.



**Fig. 2: The essential problems which the sphere of small and medium businesses face while creating the innovative products (compiled by the authors)**

At the same time, the large business is the source of personnel for small businesses. Many innovative organizations of the United States are established by the comes from the large companies. In the case of financial difficulties, many representatives of small and medium businesses are obliged to accept to be absorbed by large corporations. In the event of overcoming difficulties at the stage of the transition to the industrial output by small and medium business organizations they become competitors of large business. The transactions on the absorption of small and medium business organizations with the promising items under development by large businesses can be mutually beneficial. Small business can benefit more from selling its innovative business than from increasing the output of new products, because due to the resource limitations it cannot compete with large companies in the market of innovative products (Dementiev, 2011).

The main problem of Russia's retardation in the innovation sphere comes from the low demand on the part of business for new technologies and innovative products.

According to Deloitte company, in majority of the companies surveyed, the maturity level of risk management in 2017 is estimated to be low and medium (40% and 42%, respectively). The total maturity level for all the companies surveyed was 1.77 points out of 3 possible. In majority of companies (68%), the results of the analysis of risks associated with achieving strategic goals and with the planning of the organization's budget are taken into account by the management when setting goals / forming the budget, but this procedure is regulated in only 8% of cases. At the same time,

88% of respondents say that the risk analysis does not directly impact the revision of strategic goals and budgets. 72% of the companies surveyed say that the company's system of key performance indicators is not directly related to risk management activities (Polyanin & Dokukina, 2017).

Risk-based management is a complex of measures that facilitate the synthesis of management systems at all activity levels of business organizations capable to adapt to the variability of external and internal threats to the management object.

The introduction of a risk-based approach makes it possible to classify the activities of business organizations according to the degree of threats to public relations and referring them to risk categories or to a certain class of danger.

Several forms of risk-based management are used: aggressive, instructional, corrosive, pacifying.

1. Aggressive form of changes demonstrates to the managers of business organizations the need for changes in one or another area of any type of organization. Another facet of this form is the fixation of management on the fact that they objectively cannot cope with the variability of conditions and are not ready to introduce new innovations. In this case, shock therapy is needed - the processes conducted by the manager are focused on the change of managerial positions in the activities of business organizations, new priorities of the resource potential use are being formed, the incentive structure is changing, all this is accompanied by an aggressive management style. The purpose of this event is to create a temporary situation of disunity and disorientation - which creates a favorable ground for the rapid implementation of elements of a new organizational culture.

2. An instruction form of changes is necessary, provided that the manager has a clear idea of the need for profound changes. With this form of change, the orienting point is on managers who need to adapt as changes occur, since it is the management team that determines the manager activities regarding the support and coordination of some or other changes.

3. A pacifying form of change carries the meaning of a gradual implementation, with an obligatory account of the characteristics of each change taking part in the innovations. The specificity of this form is an attempt to avoid conflict within the business organization, to preserve the accumulated values.

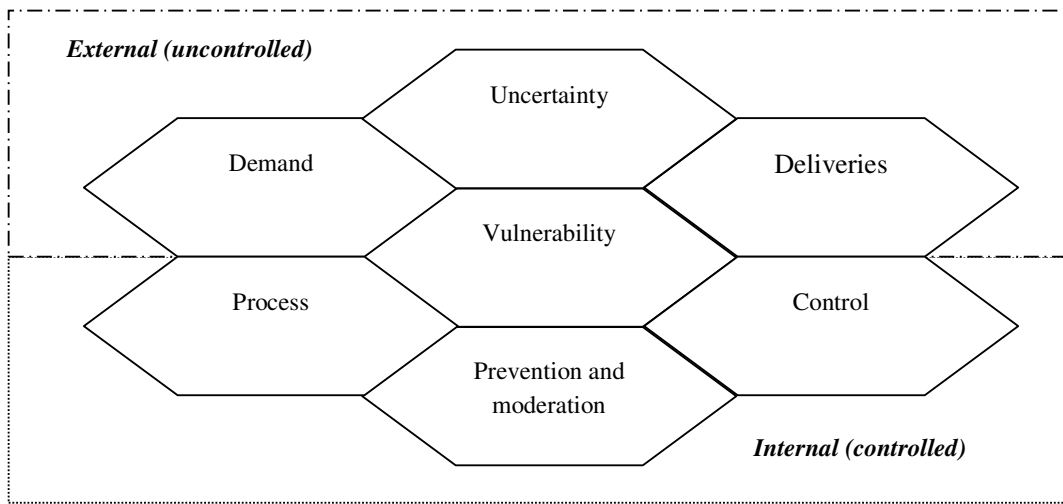
At the present moment, in the Russian Federation, the prevailing form of adaptive processes management, with the account for the specificity of the mentality, is the aggressive form, while in the United States and the EU countries it is the pacifying one. One should take an example from Western colleagues, because in the event of failure of the aggressive form, the manager can lose the business organization itself. In this case, a neat system of introducing changes will be beneficial, a system which is aimed at smooth development of the organization, as well as at the formation of steps for the growth of the organization and for the creation of conditions for the implementation of the strategic decisions already taken.

In this case the sources of impacts on the risk-based management forms should be: actions of employees, competitors and partners; the state of the financial environment of discovery in science and technology; force majeure.

At the same time, it is important to identify the sources of risk in the activities of business organizations (Figure 3).

A specific feature of the qualitative approach in the study of risk-based management is the paramount identification of project risks, on the basis of which all possible risks that the organization may face are identified. The next step in qualitative analysis is the cost estimate of the consequences of such risks and methods of combating them. Carrying out of the qualitative analysis should be realized at the stage of small and medium business activity planning.

*Sources of risk in the activities of business organizations*

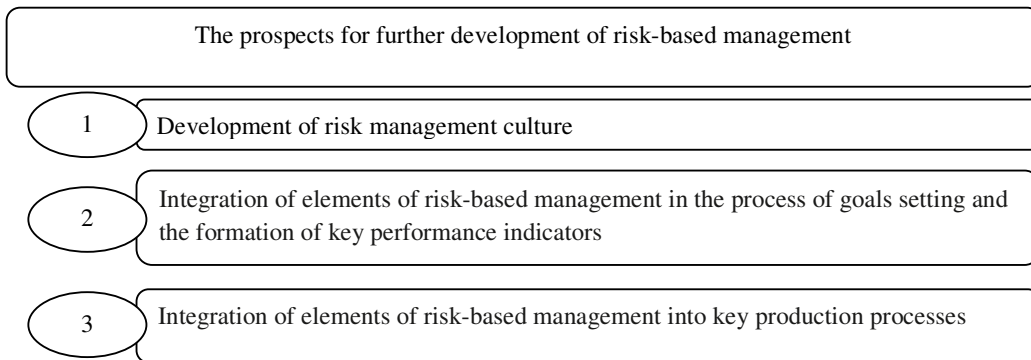


**Fig. 3: The sources of risk in the activities of business organizations (compiled by the authors)**

The quantitative analysis, which is based on the mechanisms and methods of the theory of probability and mathematical statistics, determines in numeric dimension the level of influence of the project risk factors on the change in project efficiency. It is based on the results of the conducted qualitative analysis and on the business plan of the project.

The main task of qualitative analysis is the identification of all possible risks. When this analysis is carried out, the factors of uprise, the areas of risk occurring are determined. The magnitude of damage caused by these risks, the sources of their uprising and the likely magnitude of losses of the business organization caused by these risks are determined by means of a quantitative analysis.

Let us present in Figure 4 the prospects for further development of risk-based management.

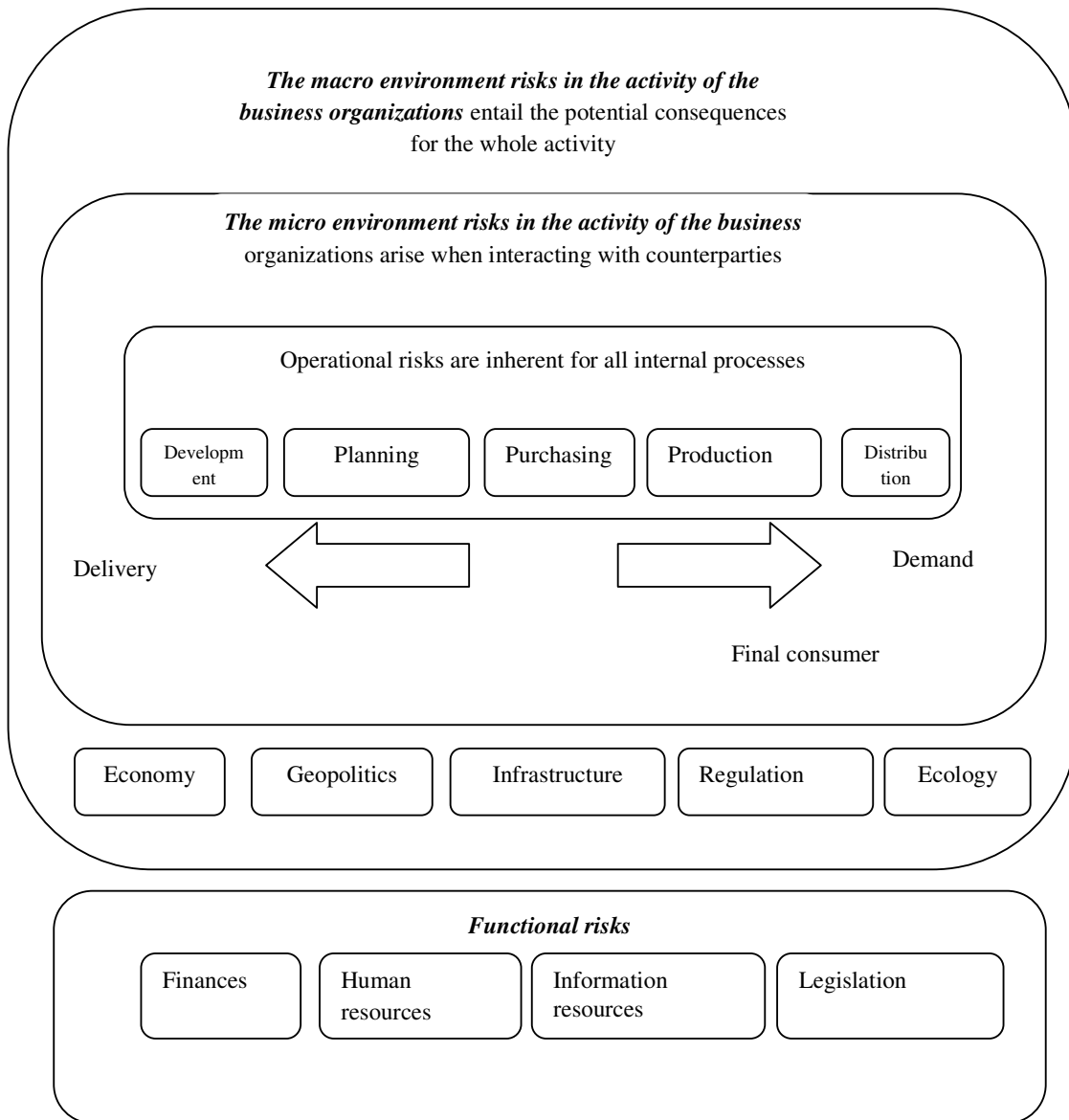


**Fig. 4: The prospects for further development of risk-based management (compiled by the authors)**

The entrepreneurs develop their company's strategy on the base of the existing course of public trends, such as inflation, unemployment, exchange rates and the like. Moreover, the entrepreneur needs both information that the authorities determine by the functioning of the political, economic, social and other systems, and the support of the authorities (moral, financial and resource), which allows to minimize the negative economy consequences of imperfection of market relations.



At the same time, it is necessary to define the main categories of risk-based management of business organizations (Figure 5).



The resources of business structures involved in risk-based management include:

the resource of operational and production planning, which makes it possible to react quickly to situations, analyze and plan the solution of diverse tasks, and keep records and control over all changes in the activities of business organizations, is fundamental in the system of risk-based management, it is the use of this type of resources that is the bedrock of the adaptiveness of organization to the entire list of known business risks;

the resource of capital, it is a capital which, together with the borrowed funds, is the "blood circulatory system" of the business organization activity, it makes it possible to acquire and promote the functioning of the remaining resources that did not exist originally;

the personnel resources, where the managers in business organizations are also included, the staff of workers, employees and other personnel, together with their knowledge and experience, is the main interlink for all the factors ensuring the functioning of the organization, which entails the fulfillment of the tasks of organization;

the resource of information and technology, this is the information affecting the whole range of activities of business organizations - the most valuable and expensive of the resources. Only the reliable information about the changes in social, economic and political spheres, changes in markets of organizations, innovative technologies, etc., which directly affects the organization, allows the effective planning, during which all possible conditions and ways to adapt to them must be taken into account;

the resource of machinery and equipment - on the basis of already existing information and technological, personnel and financial opportunities for the functioning of business organizations has the possibility to acquire the equipment that contributes to the development of the organization, among the people responsible for this resource should be specialists capable to adapt these resources depending on the changing situation within and beyond the state.

## **Conclusion**

Thus, the risk-based management is a set of measures that allow to synthesize the management systems at all the levels of the organization that can adapt to the variability of external and internal threats in the activity of business organizations.

One of the specificity of this type of management is the risk-management, by means of which, it becomes possible to be prepared for previously unknown and unpredictable threats in the market environment using the abilities of this system.

The most part of the business sector does not think about the formation of this system, but on an intuitive level they try to calculate possible negative situations and ways of dealing with them. However, an insufficient level of analytical abilities is rather high in modern Russia - this becomes evident from the survey data of heads of organizations who admit that they do not have either the opportunity or sufficient skills for the adequate monitoring and objective forecasting, not only in the economic policy at the world level, but also in the behavior of the employees and, which is quite dangerous - in the behavior of counterparties.

## **Acknowledgments**

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## **References**

Avdeeva, IL (2017) 'New forms of development of information systems for business support in the context of globalization'. *National interests, priorities and security*. 4. Vol 13, 760-772

Collins, A (2017) 'The risks that just won't die'. <https://www.weforum.org/agenda/2017/02/global-risks-report>

Dementiev, VE (2011) 'Structure of the corporate system and long waves in the economy'. M: CEMI RAS. - 213 p.

Drzik, J (2017) 'Digital espionage and other technology risks for 2017' <https://www.weforum.org/agenda/2017/01/technology-risks-amplified-by-global-tensions/>

Fridman, M (1961) 'The Lag in the Effect of Monetary Policy' *Political Economy*. October., 447-466.

Golovina, TA (2014) 'Use of digital and mobile innovations for the development of enterprises of the regional Internet market' *Issues of modern economics*. Vol 3., 6.

Golovina, TA, Polyinin, AV, Rudakova, OV (2017) 'Development of the system of state strategic management of business structures on the basis of the possibilities of a new model of the digital economy' *Bulletin of the Voronezh State University. Series: Economics and Management*. Vol 2., 13-18.

Gray, A (2017) 'What new technologies carry the biggest risks?' <https://www.weforum.org/agenda/2017/01/what-emerging-technologies-have-the-biggest-negative-consequences/>

Knight, F (1994) 'The concept of risk and uncertainty' *Thesis: theory and history of economic and social institutions and systems*. Vol 5.

Modern classics of the theory of entrepreneurship. Laureates of the International Award for Contribution to Business and Small Business Studies (1996-2010) / Per. with English. under the scientific. Ed. A.Yu. Chepurenskiy; pref. and after. A.Yu. Chepurenskiy; Nat. Issled. University Higher School of Economics, Nauch. lab. research of entrepreneurship. - Moscow: Izd. house of the Higher School of Economics, 2013. - 526

Polyinin, A, Pronyaeva, L, Golovina, T, Avdeeva, I, Polozhentseva, Y (2017) 'Administrative and Managerial Approaches to Digital Economy Development in Russia' Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth / 29th International Business Information Management Association Conference (3-4 May 2017 Vienna Austria). *International Business Information Management Association (IBIMA)*, 2166-2180

Polyinin, AV, Dokukina, IA (2017) 'Tendencies and forecasts of economic growth for the Russian economy: a regional aspect' *Srednerussky Vestnik of Social Sciences*.12. Vol 3. 53-63

Polyinin, AV, Gretchin, VV (2013) 'The place of information technologies in modern management' Actual problems of economic development and legal regulation of social and economic relations materials of the round table. Oryol branch of the Russian Academy of National Economy and Public Service under the President of the Russian Federation. 72-75.

Reyes, S (2017) 'Four key areas for global risks in 2017.' – <https://www.weforum.org/agenda/2017/01/global-risks-in-2017/>

Rudakova, OV, Polyinin, AV, Kuznetsova, LM (2016) 'The main priorities of Russia's innovative attractiveness' *Srednerussky Vestnik of Social Sciences*. No. 2 (11). 152-162

The World's Biggest Public Companies // Forbes. — URL: [https://www.forbes.com/global2000/list/#header:marketValue\\_sortreverse:true](https://www.forbes.com/global2000/list/#header:marketValue_sortreverse:true)

Top 10 operational risks for 2017. –<https://www.risk.net/risk-management/operational-risk/2480528/top-10-operational-risks-for-2017#risk2>

## **Personnel Management of the Organization in the Context Of Digital Transformation of Economic Systems**

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### **Abstract**

The development of the postindustrial society enters a new phase of the information way of production and consumption. A new type of digital economy based on scientific discoveries and knowledge, development and implementation of new ideas and innovations in all spheres of human activity is now developing. The transformation of the processes of social and economic development, digitalization of social production requires the development and justification of new approaches to the development of the labor market, personnel management in organizations. It is necessary to develop human capital assets very actively to increase the productivity. Foreign countries financing already the digital education receive significant competitive advantages in the world market, which is especially important in the context of globalization. The goal of the research is to study the problems of the organizations personnel management in the context of digital economy and to justify the organizational and management measures to address the above mentioned issues in Russia. In article authors researched the development of the personnel management system in the conditions of digital transformation of economic systems. The need to study the problems of personnel management in the context of the digital transformation of economic systems and determination of their solution vectors is conditioned upon integration and globalization processes that determine the necessity to search modern methods, tools and technologies for the development and for the application of the personnel capacity of economic entities. Inefficient methods of personnel management lead inevitably to a slowdown in the growth rates of both the digital economy and the country's economy as a whole.

**Keywords:** personnel management, personnel, digital transformation, labour market, competences

### **Target Setting**

In developed and in many developing countries the globalization and the rapid development of technologies in the last decades of the twentieth and early twenty-first century led to the transition from the industrial society to the postindustrial one. The American philosopher and futurist Alvin Toffler wrote that during the "third wave" of the mankind history (the first one is agrarian, the second

one is industrial and the third one is post-industrial) the information becomes the main type of the produced goods, and the World's Knowledge will grow at an exponential rate.

However, the most significant result of the transition to the postindustrial society is the digitalization of the production and communications, which led to the formation and development of the digital economy which is characterized by global coverage. By now, the digital economy which is a multicomponent digital eco-environment, functioning on the basis of a high-quality ICT infrastructure, which provides the needs of consumers, business and state, as well as their interaction has been formed.

The following scientists and professional associations made a special contribution to the study of digital economy, formation of new technological structures, e-business models, introduction of digital technologies and development of digitalization: Don Tapscott (Tapscott, D., 1999), Boston Consulting Group (Boston Consulting Group, 2015), Boston Consulting Group (Boston Consulting Group, 2016), International Bank for Reconstruction and Development (International Bank for Reconstruction and Development, 2016).

The issues of the human capital development, challenges and risks in the development of the labor market are reviewed by the specialists from Digital McKinsey (Digital McKinsey, 2017), by foreign scientists F. W. Taylor (Taylor E., 2016), P. Drucker (Drucker P. F. 2004), by the leading scientists of the Labor Resources Forecasting Laboratory of the RAS Institute of National and Economic Forecasting (Korovkin A. G., 2017).

At the same time, the existing publications and scientific developments give the general view to the issue of the digital economy development, without studying the problems of personnel management in different organizations and the specifics of personnel development in the context of the digital market formation.

Foreign countries are currently carrying out digital transformations in all the spheres of the national economy in order to increase their global index of competitiveness and the formation of Industry 4.0 (implementation of the fourth industrial revolution), which provides for a complete digitalization of business processes, transformations in personnel management, search for new approaches in personnel management.

In the Russian Federation the program of the development of digital economy has been realizing since 2017, which also requires the addressing of systemic issues in the field of personnel management.

## **Key Findings**

The transition to the digital economy will require dealing with numerous problems associated with the transition to an information and technology method of production and consumption, and, first of all, dealing with the problem of reforming of the personnel management system in different organizations.

A human being is the main productive force of digital economy. In comparison with the industrial age, the key competences of managerial personnel in the information technology method of production and consumption are changing significantly. If in the industrial age the main competence of managers is the ability to apply standard algorithms to solve typical management problems, then the key competence of managers in the information and digital economy is the ability to search for the necessary information, adapt it to solve specific problems, taking into account the individualization of the situation in each specific case and the ability to organize management decisions taking into account the peculiarities of organizational processes.

In addition, one of the most important competences of a manager in digital economy is the ability to generate and to transform the creative ideas into unusual highly effective practical solutions, to assess their positive and negative consequences and risks, the ability to develop and to manage unique projects based on network professional, intercultural and social communications.

During last 25 years Russia has not managed to escape from the structure of the labour market inherited from the USSR (Golovina, 2014). A significant part of the Russian labor market is still made up of companies with state participation, as well as traditional large companies - "children" of 1990s privatization wave. The sale of a part of state enterprises de jure changed their form of ownership, but retained in fact the priority of socio-political goals over the economic efficiency, and in some cases, a constant dependence on financial state support.

According to the Federal State Statistics Service, the state administration is one of the top 3 most highly paid industries in the Russian Federation along with mining and the financial sector.

The number of public employees increased significantly (from 2.4 to 5.3 million people in 1995-2015), and their payroll has also increased. The segment of small and medium business (SMB), though it showed the growth from 11 to 16% of employed, remained represented mainly in basic, non-capital-intensive sectors (trade, private transportation, etc.), which determines the predominantly primitive nature of employment. It should be noted, that the share of employed in SMB still lags behind the labor markets of other countries (Samostroenko & Sulima, 2017): for comparison, in India it makes 40%, in Brazil - 52%, in China - 80%, in Germany - 63%, in the USA - 46% .

Large "new" companies, which we roughly define as a private business, founded after the collapse of the USSR beyond the privatization of assets (usually these are not the mineral companies), also constitute a small segment.

In the nearest 5-10 years, the economic paradigm and labor markets will be formed under the influence of the key trends that affect already the employment pattern in the world economy and will continue to stimulate further significant changes in the midterm.

The geopolitical, demographic and technological trends create a new reality for the labor market. The employees find themselves more often than not in the situation of uncertainty, of a rapidly changing and obsolete context. The vertical hierarchy becomes useless, horizontal interrelations become more complex, the importance of the commercialization of ideas and developments increases. For each participant of the labor market, the zone of responsibility for the result, for themselves, for the team extends.

In 2025, Russia will compete in a much less centralized global market than today. The role of globalization and access to international markets will remain essential for the economic development. Growth slowdown, increasing inequality and socio-cultural characteristics will accelerate the regionalization.

The pace of world economic growth slowed down from 6.6% in the 1960s to 2.3% in 2016. The forecasts for 2018-2019 are a little bit more favorable (2.9-3%), but it is important to take into account that in recent years such predictions have been regularly adjusted downward. In particular (Avdeeva, 2017), the world growth forecast made by IMF for 2011-2015 was revised down by a total of 1.5 percentage points.

Countries are closed from each other in terms of migration flows. In particular, the Malta Declaration adopted in 2017 is designed to ensure the control over the external border of the European Union and to prevent the illegal migration flows to the EU.

There is a decentralization of economies and power: Brexit (the exit of Great Britain from the European Union), the new focus of the USA, underlined in the inauguration speech of D. Trump with the words "americanism, not globalism", the policy of import phaseout in Russia, etc. are bright examples of regionalization.

The division between countries and within countries keeps growing. Despite the fact that the inequality is recognized as a serious threat to the world stability (Dobrynin, 2016), 1% of the richest people control today 50% of the world's welfare against 43% in 2010.

In the US, the real salaries of 70% of employees have not grown for the past 40 years. The same is true for many other countries, including Russia, where real incomes of the population have been growing down since 2014.

For employment in segments requiring lower skills, there will be an increase of competition for work places. At the same time, there will be a constant increasing workload of highly qualified employees. By 2025, the nature of competition for personnel will change significantly, taking into account the aging of the population and the entry into the labor market of young employees of the "Z" generation.

Unlike the previous generations, "Zs" apt to change quite often not only employers, but also spheres of activity. Often they possess a more developed set of digital competencies than their teachers and managers. In the struggle for new employees, organizations will have to adapt to their values.

Due to the rapid development of technologies, the experience of older generations will be the least, than ever before in the mankind history, relevant for new generations.

Together with geopolitical and demographic trends, the most obvious influence on the world labor market in the horizon of 2025 will be exerted by the technological changes. They will successively change the existing market structure, the organization of particular companies and entire industries and, as a result, the requirements for competencies and employees training.

Remote employment and freelancing have become standard practice for many professions in the developed countries, and their share keeps growing. It is estimated that by 2020 in the US every second person will be a freelancer. The development of technologies will support the spread of cross-border remote employment, which is not afraid of migration barriers.

The technologies of remote interactive cooperation will continue to transform the world education, expanding the opportunities for learning, regardless of the listener's location and undermining the positions of traditional educational institutions.

The self-employment, possible thanks to the development of platform solutions (such as Uber, Airbnb, YouDo, Profi.ru) allows to connect services providers and consumers without intermediaries. Only in Europe the volume of transactions through the platforms that provide services on demand (cleaning, hairdressing, training), as well as the joint use of cars and real estate, will grow twentyfold by 2025, increasing the employment in this segment by at least 17% (Domachev et al, 2016).

The rapid development of technologies, including artificial intelligence and machine learning, raises an understandable question: "Can robots and algorithms replace people and when will it happen?" Today there is no consensus on this issue. For example, scientists Carl Frey and Michael Osborne determined in 2013 that 47% of professions in the US are exposed to the risk of automation in the offing of 10 to 20 years (Kupriyanovskiy, 2016).

Having continued this research together with Citibank, in 2016 the authors disseminated the findings in more than 50 countries: in general in OECD countries the algorithms will replace people in 57% of the professions.

Experts from the World Economic Forum analyzed 15 developed and developing economies of the world and made the conclusion that 7.1 million of work places, two-thirds of which are office-administrative, will disappear by 2020. In Russia this phenomenon is called "superfluous people" - potential unemployed, whose basic level of skills will not allow them to master "more complicated" professions.

The evaluation of the automation potential of particular tasks, rather than professions categories, gives more conservative results: according to the OECD report, only 9% of employees can be replaced by algorithmic solutions.

It is important to note that any new technologies have always not only replaced human labor, but also changed its structure, created new employment. The WEF estimates the number of new work places in 15 countries at 2 million by 2020.

The influence of technologies on the labor market was estimated also in Russia. In the framework of the Atlas of New Professions - the joint development of the Agency for Strategic Initiatives and the Skolkovo Moscow School of Management - it is projected that by the year of 2030 57 "traditional" professions will disappear and 186 new ones will appear.

The labor market of Russia remains unattractive for the most talented employees-masters of universal competencies of the XXI century (Polyanin, 2017), (Taylor, 2016). In the annual Global Talent Competitiveness Index (GTCI) in 2017, Russia's position in comparison with the previous year have not almost changed, providing it with 56th place out of 118 countries participating in the Index. Therewith, according to the criterion "Attractiveness", the country took only 81st place, and according to possibilities for talents - 107<sup>th</sup>.

In the international division of labor, Russia has taken long ago the place of a raw materials exporter. 76% of the country's merchandise exports makes energy, another 17% - other products of the mining industry and metallurgy. As a result, a third of work places in the Russian labor market are primitive employment (Rudakova et al, 2016).

The program "Digital Economy of the Russian Federation" provides for two mechanisms that will not allow the risks associated with the disappearance of a number of traditional occupations. A system of training and continuous retraining of personnel is foreseen. The labor future of young people should be aimed at the realities of the digital economy.

The system of higher education and professional postgraduate education should be rebuilt. Thanks to the digital technologies, every citizen of the country should have access to quality education, oriented to the future. Professions will not disappear at once, this will not happen in a year, not even in 10 years, and a purposeful long-term policy will help the system to adapt to new realities.

The transition to the digital economy in Russia will be one of the main factors of the GDP growth - according to forecasts of the Labor Resources Forecasting Laboratory of the RAS Institute of National and Economic Forecasting, until 2025 the digital technologies will determine from 19 to 34% of the total GDP increase. Similar forecasts exist for other countries (Makarov & Polyanin, 2015).

According to a study by the McKinsey Global Institute, in China, where the potential for rapid growth by means of large investments and employment growth will sooner or later be exhausted, from 7 to 22% of the total GDP growth by 2025 will be possible by means of the application of digital technologies. In the United States, the increase in value by means of the digital technologies infusion by 2025 may amount to 1.6-2.2 billion US dollars. The experience of the US and China is encouraging: the development of the digital economy in these countries contributes to the strengthening of competition, improvement of the effectiveness of personnel management, reduction of prices, facilitation of access.

Today, the companies with low labor productivity are rapidly losing their ground, as the market evaluation of companies in the stock market is determined by the achievements in the field of intellectual property and services, rather than by the production of real goods or production means.

What is the reason for such gap? In our opinion, the problem is directly related to the development of strategies in the field of human capital – to the ways of organizing, managing and developing of business, as well as to the coordinating of employees activities during their work process.

In Thomas Fridman's book entitled Thank You for Being Late, published in 2016, there is a graph built by Eric "Astro" Teller, the head of the Google X division of Alphabet company; according to the given calculations, the infusion of new technologies outstrips the human ability to adapt to them, which grows linearly.



The business practice of corporate planning, organizational structure, distribution of work responsibilities, setting of professional goals and management methods have been introduced already at the first industrial revolution, and companies should constantly review and update them in order to keep up with the times.

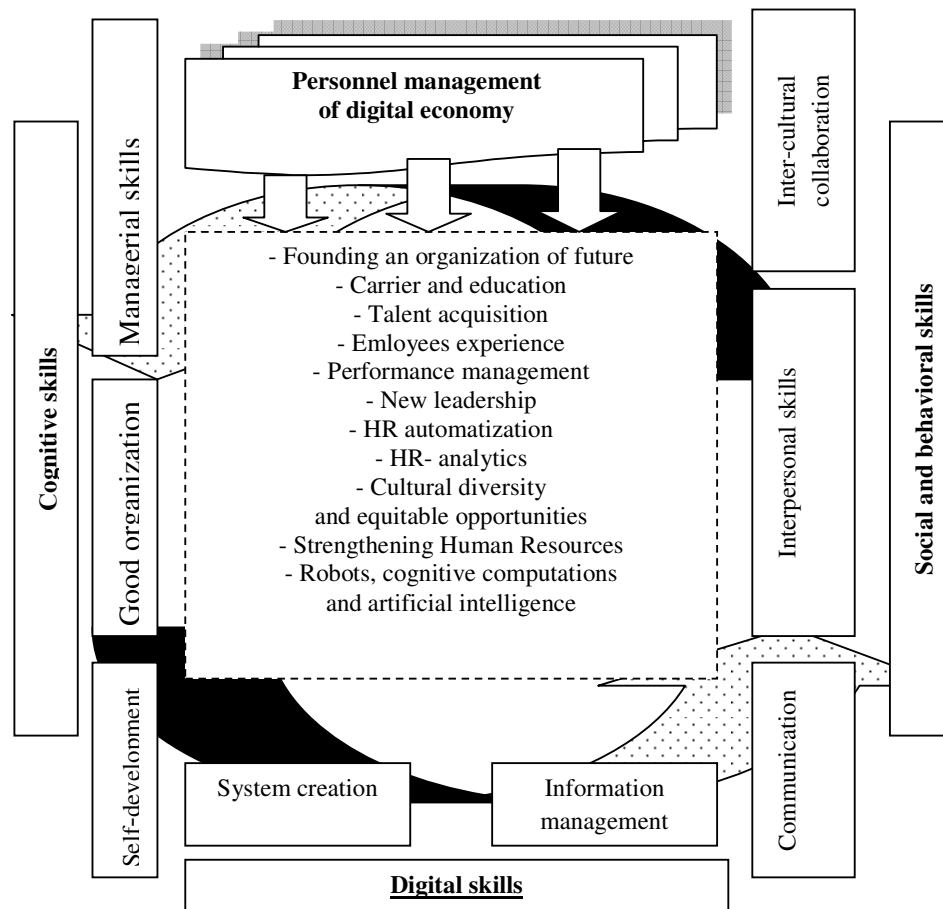
Companies should pay more attention to the career development strategies, staff mobility, creation of the organizational ecosystems and networks that can give a "second life" to employees and organizations.

The task is not only to develop new skills or to achieve new and more attractive career heights. Along with this, organizations need to invest more efforts to form leadership qualities, structural issues, cultural diversity, technologies and to enrich the employees experience using new and more interesting work methods.

In all leading companies, the HR departments help employees to develop professionally and to build successful careers by adopting the concept described in the book *The 100-Year Life* (Polyani & Gretchin, 2013).

New models of education put in question the idea of building a static career and reflect the principle of reducing of the "half-life" of professional skills, crucial for the organization of the 21st century.

The personnel management trends are shown in Figure 1.



**Fig. 1: The development of the personnel management system in the conditions of digital transformation of economic systems (compiled by the authors)**

The digitalization of managerial activity creates objective prerequisites for the wide effective application in the manager's work of formal criteria, procedures, and rules for results evaluation, efficiency of activities, as well as large data that allow to diversify significantly and to scale the activities evaluation of many people, including experts, specialists, managers, etc.

At the present time, it is necessary to apply in personnel management new, modern approaches taking into account the steadily growing demands of the digital economy.

From the point of view of information support and support of the problem solution in the field of personnel management, it is possible to consider the information technologies that contain potentially a digital component. According to the authors, the out-technology is promising, it represents one of the forms of contracted work, when there is a transfer to specialized organizations of either particular management functions (outsourcing) or of the organization employees. Out-technology makes it possible to implement in practice such important principles of personnel management as optimality and flexibility.

In the personnel management of a modern organization, an indicator of employee loyalty is used, for which some technical means are traditionally used. Among the promising developments in foreign companies are used Vibralmage and Mystery Shopping.

Vibralmage combines scientific achievements in the field of psychology and biometrics, it is based on a non-contact analysis of a person's psychoemotional state of a person. With its help, the monitoring of personnel emotions level is evaluated, the level (threshold) of stress, the presence of anxiety and the degree of aggressiveness are determined, the real-time lie detection is carried out. Another advantage of Vibralmage technology is its "contactlessness", which makes it possible to check the loyalty of employees without assaulting their dignity and without causing them moral harm.

To assess the loyalty of employees the Mystery Shopping involves attracting a number of agents who simulate external contacts and assess the personnel actions in the process of simulated event. The application of this technology makes it possible to identify the characteristics of loyalty, in particular, to what extent the employees of the organization are tolerant towards their manager, what is their honesty and reliability level, whether they carry out or not the illegal or immoral actions that can hurt the reputation of the organization, etc.

The qualification criteria also take a significant position in the current approaches to the organization's personnel management. The management of the organization realizes that successful economic activity is largely determined by the level of its employees qualification, at the same time the in-house training does not always allow to solve this problem, especially if the required specialist is needed rapidly.

A worthy solution of the problem of ensuring of the level of personnel qualification should be the technologies constructed according to the headhunting type, screening, recruiting.

Headhunting, as a method of staff recruiting, involves a purposeful search and attraction of the most valuable and promising personnel. This technology is not widely used in Russia, at the same time, it opens great prospects in the process of recruitment of particularly valuable specialists. At the present time, it is the most effective personnel-technology, which allows to satisfy the need for exclusive personnel for the positions of top managers and key specialists.

Personnel management uses screening technology, which presupposes that the personnel are recruited in relation to executive employee and on formal grounds. On the contrary, the technology of recruiting presupposes taking into account of the personal characteristics and business qualities of the candidate.

Executive Search staff recruitment method is prospective for modern economic conditions personnel-technology, it is applied both to candidates pretending for top positions, as well as to the specialists of

rare professions. This technology is implemented in practice by HR and consulting agencies and unlike the traditional recruiting way suggests an initiative search for candidates, even among those who currently work in another organization and are not actively looking for a new job. Using this technology makes it possible to choose the best candidate:

- among "inactive", who are not in search of a new job;
- among "active" who are looking for work.

The experts of the Boston Consulting Group in the annual report "Creating People Advantage" state the directions that should be prioritized in the system of the personnel management in the conditions of economic systems digitalization:

- young talents management;
- leadership processes management;
- HR-analytics;
- staff behavior and culture;
- management of staff involvement in the adoption of management solutions.

The making of personnel decisions is an integral part of any managerial function. The need to make a personnel decision covers all areas of activity where the manager is engaged, developing tasks and achieving the results. Thus, the understanding of the nature of making personnel decisions is of great importance for those who want to succeed in the art of management.

In the conditions of digital economy transformation, the traditional methods of personnel management, not complemented by innovations, quickly become obsolete and do not bring any significant effect. The labor market is changeable, so in the modern organization there must be a change in personnel management approaches.

## **Conclusion**

It is proved that the basis for Russia's further economic growth will be the development of the labor market and organizations personnel management. Organizational and managerial approaches to the personnel management should be strategic, determine the direction of digital personnel development.

The proposed personnel - technologies take into account the challenges and opportunities that are emerging to increase the productivity of economic entities in the digital economy era.

In the course of business transformation and organizations digital models emergence the leadership itself should change. It is necessary to train leaders representing the younger generation who are ready for flexibility and cultural differences acceptance, as well as new models of personnel management that allow to manage the personnel using the digital technologies. Although the traditional management training schemes are still popular, the organizations are extending the existing hierarchical boundaries, opening the way for a new generation of managers who feel free in a rapidly changing business environment.

The result of the study is the possibility of practical application of the digital personnel development directions, of the personnel management system that meet the current needs of the economy, ensuring the productivity growth in the national economy sectors.

## **Directions for Future Research**

In the course of the transformation of business organizations into digital organizations, the HR function should become one of the main in the digital economy. This presupposes the transition from

HR platforms digitalization to the digital workplaces introduction, the digitalization of the employees work, the deployment of technologies that change the methods of work and interaction between employees.

In this regard, the subject for further research and development should be:

1. To solve the problem of releasing of a large number of staff because of digital transformation of labor market, considerable investments and joint efforts of federal and regional governments, educational institutions and major employers will be required to reorient the public's consciousness. Yet today it is necessary to coordinate the work of these structures, so that the Russian labor market meets the needs of the new digital economy.

2. To compensate the lack of practical knowledge and skills in the field of digital business and digital personnel management, it is necessary to foreseen organizational and managerial mechanisms for the interaction of companies with universities.

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### **References**

Ahmad, N., Schreyer, P. (2016) 'Are GDP and Productivity Measures Up to the Challenges of the Digital Economy'. *Int. Product. Monit.* 2016 30, 4 - 27.

Avdeeva, I.L. (2017) 'New forms of development of information systems for business support in the context of globalization', *National interests, priorities and security*. Publishing House, 4. vol. 13, 760-772

Dobrynin, A.P. (2016) 'Digital economy - various ways to the effective application of technologies (BIM, PLM, CAD, IOT, Smart City, BIG DATA and others)', *International Journal of Open Information Technologies*. Vol. 4 (1), 4-11.

Domrachev, A.A., Evtushenko, S.N., Kupriyanovskii, V.P., Namiot, D.E. (2016) 'On innovative initiatives of the EEA member states in the field of building a global digital economy', *International Journal of Open Information Technologies*, 9, 24-33.

Digital McKinsey (2017) *Digital Russia: a new reality*, 133 p.

Drucker, P. F. (2004) 'Management challenges for the twenty-first century', M.: publishing house «Williams», 272 p.

Golovina, T.A., Avdeeva, I.L., Parakhina, L.V. (2014) 'Use of digital and mobile innovations for the development of enterprises of the regional Internet market', *Issues of modern economics*, 3, 6.

Golovina, T.A. Polyanin, A.V. Rudakova, O.V. (2017) 'Development of the system of state strategic management of business structures on the basis of the possibilities of a new model of the digital economy', *Bulletin of the Voronezh State University. Series: Economics and Management*, 2, 13-18.

Kupriyanovskiy, V.P., Namiot, D.E., Sinyagov, S.A. (2016) 'Cyber-physical systems as a basis of digital economy', *International Journal of Open Information Technologies*. 4, 2. 18-25.

Korovkin, A.G., Kuznetsov, S.G., Dolgova, I.N., Korolev, I.B. (2017) 'Dynamics of high-performance workplaces in the Russian economy: the macroeconomic experience estimates', *Prediction for economic growth. Materials of the International scientific conference dedicated to the 80th anniversary*

of academician Y. V. Yaremenko. 2017. P. 251-261.

Makarova, Yu.L., Polyaniin A.V. (2015) 'Specialized technological centers as an economic basis for the development of the infrastructure of entrepreneurial activity', *Srednerussky Vestnik Social Sciences*, 2 (38), 157-162.

OECD (2017), OECD Digital Economy Outlook 2017, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264276284-en>

Panov, D. 'Calculate take-off ', *Rossiyskaya Gazeta - Special Issue* , 7254 (88)

Polyaniin, A., Pronyaeva, L., Golovina, T., Avdeeva, I., Polozhentseva, Y. (2017) Administrative and Managerial Approaches to Digital Economy Development in Russia, *Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth / 29th International Business Information Management Association Conference (3-4 May 2017 Vienna Austria)*. International Business Information Management Association (IBIMA), 2166-2180

Polyaniin, A.V., Dokukina, I.A. (2017) 'Tendencies and forecasts of economic growth for the Russian economy: a regional aspect', *Srednerussky Vestnik of Social Sciences*, 12, 3, 53-63

Polyaniin, A.V., Gretchin, V.V. (2013) 'The place of information technologies in modern management', *In the collection: Actual problems of economic development and legal regulation of social and economic relations materials of the round table. Oryol branch of the Russian Academy of National Economy and Public Service under the President of the Russian Federation*, 72-75.

Prokhorov, A. 'Telecommunications market: all are busy with something, but there is no growth', *Cnews Analytics*

Rating of the countries of the world on the level of development of information and communication technologies. <http://www.itu.int/>

Report of the European parliamentary technology assessment network «Productivity in Europe and the USA» Report of the EPTA "Productivity in Europe and the United States. Technology trends and policy measures" Analytical Bulletin No. 32 (631) – 2016., M.: Analytical management Of the office of the Federation Council 90 p.

Rudakova, O.V., Kuznetsova, L.M. Polyaniin, A.V. (2016) 'The main priorities of Russia's innovative attractiveness', *Srednerussky Vestnik of Social Sciences*, 2 (11), 152-162

Russia online: The impact of the Internet on the Russian economy. The Boston Consulting Group, 2015.

Russia online: you can not catch up. The Boston Consulting Group, 2016

Samostroenko, G.M., Sulima, E.P. (2017) '«Digital» inheritance as a factor in the development of entrepreneurship in the field of personal data protection', *Central Russian Herald of Social Sciences*, (12), 252-258

Tapscott, Don. (1999) 'Electronic-digital society: Pros and cons of the era of network intelligence', Kiev: INT Press; Moscow: Relf beech. 432 p.

Taylor, E. (2016) 'Labor in the Global Digital Economy: The Cybertariat Comes of Age'. *Radic. Philos.* 60-62.

Vidas-Bubanja, M., Bubanja, I. (2016) 'The Future of Digital Economy in SEE Countries (Case study:

Croatia, Macedonia, Montenegro, Serbia, Bosnia and Herzegovina). 39th International Convention on Information and Communication Technology, Electronics and Microelectronics (mipro), 1515-1520.

World Development Report 2016. Digital dividends. Overview. International Bank for Reconstruction and Development. World Bank 2016. [http://www.ds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2016/01/13/090224b08405bbc0/1\\_0/Rendered/PDF/World0developm0l0dividends0overview.pdf](http://www.ds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2016/01/13/090224b08405bbc0/1_0/Rendered/PDF/World0developm0l0dividends0overview.pdf)

Kolesnichenko, E.A., Radyukova, Ya.Yu., Bespalov, M.V. (2017) 'Increasing the Involvement of Staff in the Activity of the Company as a Factor Influencing its Efficiency, 30th IBIMA Conference. 8-9 November 2017, Madrid, Spain, 2170-2179.

Vertakova, Yu., Plotnikov, V. (2016) 'Innovative and industrial development: specifics of interrelation', *Економічний часопис-XXI*, 156 (1-2), 37-40

Polyanin, A., Golovina, T., Avdeeva, I., Dokukina, I., Vertakova, Y. (2017) 'Digital strategy of telecommunications development: Concept and implementation phases' / Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, 2017-January, 1792-1803

# The Value of the Company and Transformation of its Evaluation under the Influence of Informatization

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## Abstract

Globalization of economic processes taking place in the world space indicates the need for mutual relations of stakeholders in business development, contributing to financial stability and sustainable development of companies in different countries, improvement of corporate behavior, effective investment and innovation policy. The article reveals the directions to increase the digitalization of the economy, the issues of creating information database for the companies' activities, the strategy of creating equity, increasing the additional cost, providing a continuous reproduction process. Nowadays, information exposure has become an important problem that requires the evolution of the reporting system, increasing the ability to eliminate information gaps in order to meet the needs of different stakeholders, that is to involve them in the corporate governance of economic entities. The paper studies methods and techniques of financial and non-financial information integration through a company's single integrated report to reflect the results how the company uses its resources through the structural elements of capital: production, financial, intellectual, human, natural and social capital. The possibilities to increase the transparency of business by preparing a new model of non-financial reporting based on integrated thinking, which provides a comprehensive assessment of the organization's effectiveness and prospects, provides investors with the information necessary to make more effective decisions on the capital allocation. The methodical bases of the reporting formation for business strategy, opportunities of the company to create additional cost taking into account economic, social and natural factors are defined, that will increase the interest in financial investments to create capitalized value.

**Keywords:** reporting, capital, cost, analysis, management.

## Introduction

The current direction of the digital economy is one of the main factors for the economic growth at the

global level through the creation of social and economic benefits. Digitalization covers all existing markets, creating innovative information platforms, contributing to the rapid development of companies, setting new challenges for modern business, taking into account the changing environment of its business. Under these circumstances, there is a need to ensure financial stability and sustainable development of various companies, to improve corporate governance, to coordinate stakeholders' investment decisions in order to create long-term values and ensure profitable implementation of business models, as well as the growth of equity. One of the tools to solve this problem is the information content of stakeholders through the formation of integrated reporting required in the daily business practice.

A lot of emerging issues of both methodological nature and informative one to prepare the reporting for the disclosure of the company's equity creation and accumulation lead to a wide format of discussion and enhances the relevance of the concept to create non-financial integrated reporting. The debatable discussion nature of integrated reporting raises concerns about its reflection in the reporting of retrospective information about the capital creation at the end of the reporting periods. This approach reduces the efficiency of management and investment decisions in the areas of creating additional value, because it does not take into account the future. The current situation leads to the need to reform the content of corporate reporting, to improve methodological tools for the disclosure of the company's management and investors focus on the rational capital use and business value creation. An innovative approach to business informatization will provide many opportunities to use integrated reporting to solve problems of economic and financial risk management, to realize the company's opportunities in the field of environmental and social policy, to direct resources to fulfill the company's mission, considering the needs of stakeholders and improving the welfare of the population.

### **Approaches to the Analysis of the Company's Capital Management Information Content**

The scientific works of many economists are devoted to the study of the problem how to increase the information content of the capital formation and its use, the creation of additional value in the external environment, the participants connectivity in the implementation of the company's business model. However, while studying the capital, its financial and economic aspects prevail overall reflecting the formed capital and its elements in the accounting (financial) statements (Tikhomirov and Plotnikov, 2018). A retrospective analysis of the reporting evolution allowed us to study the scientific point of view to the disclosure of the capital essence. Such scholars like Cooter M.I., Benke R., Betge Y., Sherr I.F. identified the concept of capital with the value of a company's net assets or the size of its net worth. Scientists Anthony R.N., Needles Anderson B., Caldwell H., Blank I.A. defined the capital essence as the value of the accumulated stock or wealth of the organization.

Blank I.A. represented capital in three aspects: accumulated stock of economic values, investment resource, factor of production organization (Blank, 2008). Such economists as Babayev Yu.A., Kurakov L.P., Khaustov Yu.I., Bychkova S.M. considered capital to be a set of economic resources in the composition of own and borrowed capital used for the organization and maintenance of current activities. In other words, capital was characterized as a source of the organization funds with the disclosure of its composition and status in the balance sheet of the organization for the reporting period. According to Malinovsky R.G., Gilyarovskaya L.T. and Sitnikova V.A. the capital represents self-increasing cost which is result of an investment of the organization resources and it creates profit. Paly V.F. characterizes capital as the amount of funds that are invested in the processes of the economy and are in continuous enterprise turnover. In modern Economics, a number of authors associate the concept of capital exclusively with equity, the amount of which is reflected in the section "Capital and reserves" of the balance sheet, whereas debt capital is defined as liabilities. This view is shared by Kyshtymova E.A. who describes capital as a composition of invested funds invested in the creation of the organization and accumulated capitalized funds received in the form of profit within its operation (Kyshtymova, 2015).



At present, we can see a change in the modern economists' views to the definition of the capital concept and essence, its information content in the accounting (financial) reporting system, which characterizes only the financial aspect of the formation and accumulation of capital, without revealing the entire history of the business model. Lytneva N.A., Parushina N.V., Polyinin A.V. note that this information is insufficient for stakeholders. In the context of market development "effective use of equity and its elements are under the attention of competitors, potential investors, domestic and foreign contractors, contributing to the development of the reproduction process through the material support of the production cycle, the development of trade turnover strengthening the investment potential of commercial organizations" (Lytneva, 2017a, 2017b). There is an urgent need to reform the reporting on the business state and its opportunities. Corporate integrated reporting in accordance with the interests of stakeholders can serve as an instrument of business characteristics, its directions and place in the public life of the country.

The concept of "stakeholders" was put forward by Freeman R. whose idea was to have a functioning corporation as a complex system of overlapping interests (Freeman, 2014). Disclosure of information about the company's activities is necessary for a wide range of stakeholders. The task of reporting is to combine financial and non-financial information of the value chain, taking into account the needs of different stakeholders. In this regard, Libert B. believed that the digital revolution leads to the need for the company to move to business models based on networks and platforms, which contribute to the increase of information business (Libert and Bonchek, 2017). Vermeulen E. was of the same opinion and noted the beginning of stakeholders' cooperation, the manifestation of their interest in business in the long term, which radically changes the ways and methods of processing and summarizing information about the company (Vermeulen, 2015).

In the world practice of informatization to create additional values there are no uniform standards and rules of reporting, which leads to heterogeneity of disclosed criteria and indicators of capital assessment. This conclusion is confirmed by the results of the international disclosure study presented by the world's largest audit company KPMG, which showed heterogeneity of purpose and reporting aims (Table 1). In many countries, companies produce financial statements according to International financial reporting standards (IFRS), but the concepts of disclosure, reporting models and, accordingly, the indicators of capital assessment differ significantly (Guseva, 2013). Each company takes into account the interests of different stakeholders (investors, partners, shareholders, public organizations), provides for different goals and objectives, discloses heterogeneous information: the created value of the business; the accumulated value; reflects the results of joint efforts to maximize profits; the level of asset management. The provision of such information may have a legislative basis, such as the requirement of mandatory disclosure to meet the public needs in the given country.

Additional information in the reporting of different countries characterizes, as a rule, the direction of the company's strategy, its business model, competitive environment, the impact of business on the environment, environmental protection measures, public relations. As a result, many companies disclose insignificant non-financial information in different interpretations, which is of no interest to stakeholders, and in some cases, inadvertently veils the attractive side of the business. The lack of transparency in the opportunities for creating additional value, directions and measures to achieve business goals leads to the risks of people making investments

**Table 1: Purpose of integrated reporting and value creation disclosures**

Countries	Stakeholders	The purpose of the disclosure
Australia	Shareholders	To assess the financial performance of companies, financial position, strategic and long-term development
Great Britain	Shareholders	To disclose trends and factors that characterize the direction of the company's strategy, position and results of its activities
Denmark	Users making economic decisions	To support users of information in making economic decisions in relation to the functioning and development of the company
Canada	Investors	To support investors in making decisions on the implementation or continuation of investment
Norway	-	To review the results of the company formation, its development and position
USA	Investing stakeholders	To disclose issues and risks that may not be indicative of the company's future performance or financial position
France	Investors	To disclose financial results of the company
Sweden	-	To overview business activities, financial position and financial results
SAR	Investors	To disclose the dynamics of the company's value formation for creditors and investors
Japan	Investors	Voluntary reporting

Source: <https://home.kpmg.com/xx/en/home/services/audit/better-business-reporting.html>

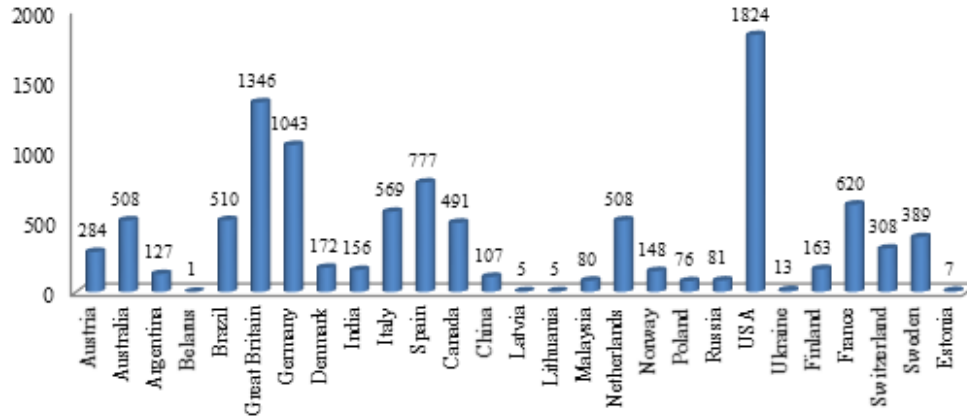
### **Russian Practice of Reporting Informatization Concerning Business Lines in the Environment**

The idea of creating integrated reporting is an innovative step to provide stakeholders with a comprehensive description of capital creation, business value, through the integration of financial and non-financial information, changes in the reporting formalization with the reflection of historical data, current information and forecasting strategies. Corporate integrated reporting in the new format will provide more information for all aspects of company's sustainable development. Until now, there have been no common approaches to the structure and content of integrated reporting, the parameter of its information content, analytical capabilities, the formation of criteria and indicators that focus on the future and ensure the interests of modern users. In foreign practice, the process to study the methodology of integrated reporting is much more active.

International integrated reporting Council ("IIRC") characterized integrated reporting in a broad and narrow sense: in a broad sense, integrated reporting is defined as a process based on the formation of a new "integrated thinking" about value creation and the links involved in this process; in a narrow sense, integrated reporting is presented as a report with a brief report on the chosen strategy of the company, the effectiveness of its functioning and future directions of development, which are involved in creating value taking into account environmental factors in the near future, in the medium and long term. In the overall context the corporate integrated reporting is characterized as non-financial reporting which represents the evaluation of the company's strategy and activities for its promotion, performance activities and ways of their achievement, competitiveness, sustainability of the business.

Study of non-financial reporting practices based on CorporateRegister.com data (Figure 1) indicates that at the beginning of 2017 the most registered reports of companies are observed in the US (1824), UK has

1346 reports, Germany - 1043, Spain - 777, France - 620, Italy - 569. Among the countries of South America Brazil is the most active having 510 reports. Australian companies have approximately the same number (508), the same goes for the Netherlands (508) and Canada (491). Russian companies are far from the leadership, the number of reports is 81, which is approximately equivalent to China (107), Malaysia (80), Poland (76). A small number of the provided integrated reports are made by Belarus (1), Latvia (5), Lithuania (5), Estonia (7). The analysis of the data shows the growth of business informativeness and the need to disclose the results of companies' business on an international scale.



Source: <http://media.rsp.ru/document/1/7/4/743222fc4c6650093518c635d0e8ecdd.pdf>; [www.corporateregister.com](http://www.corporateregister.com)

**Fig. 1: Number of non-financial reports provided by companies from different countries at the beginning of 2017**

Information openness and transparency of the company determine its readiness for dialogue and cooperation with various groups of stakeholders in order to create added value. Meanwhile, reporting is mainly characteristic of large companies.

Russian organizations are characterized by an active practice of non-financial reporting, In the last three years there has been a reduction in the number of organizations that have submitted reports both for the whole country and for individual industries. According to the National Register of corporate non-financial reports and the Library of corporate non-financial reports by the Russian Union of Industrialists and entrepreneurs (RSPP), on August 2, 2018, 173 Russian companies have been registered, which have submitted 881 reports since 2000 (Table 2).

As a part of non-financial reports since 2000, there have been three types of reporting by Russian companies: environmental reporting, social reporting, and sustainable development reporting (Figure 2). Each type of reporting had its own purpose of information disclosure on the establishment of certain capital and did not pursue the goal to reflect the value chain, the characteristics of the capital formation and accumulation. The analysis shows that most of the social reports were submitted. The share of social reporting in its total amount is 39%, reporting in the field of sustainable development is 36%. The smallest group is environmental reporting which accounts for 9 per cent of the total period under review. The dynamics of the National Register shows that many companies annually prepare and submit different types of reports, which characterizes the organization to be open to cooperation with stakeholders. Increased openness meets the principles of international practice and ensures the efficiency of the

information content of stakeholders and regulators. A number of companies made reporting in isolated cases.

**Table 2: Dynamics of non-financial reports submitted by Russian large companies**

Date	Types of reporting				Total
	Environmental	Social	Sustainable development	Integrated	
2001-2004	8	6	3	-	17
2005	6	14	4	-	24
2006	6	18	10	-	34
2007	5	26	19	-	50
2008	5	27	15	-	47
2009	4	12	23	5	44
2010	5	16	26	11	58
2011	6	28	29	12	75
2012	5	26	29	15	78
2013	7	31	32	16	86
2014	7	20	33	19	79
2015	6	23	35	21	85
2016	5	16	31	22	74
2017-02.08.2018	6	75	29	20	130
Total	81	341	318	141	881

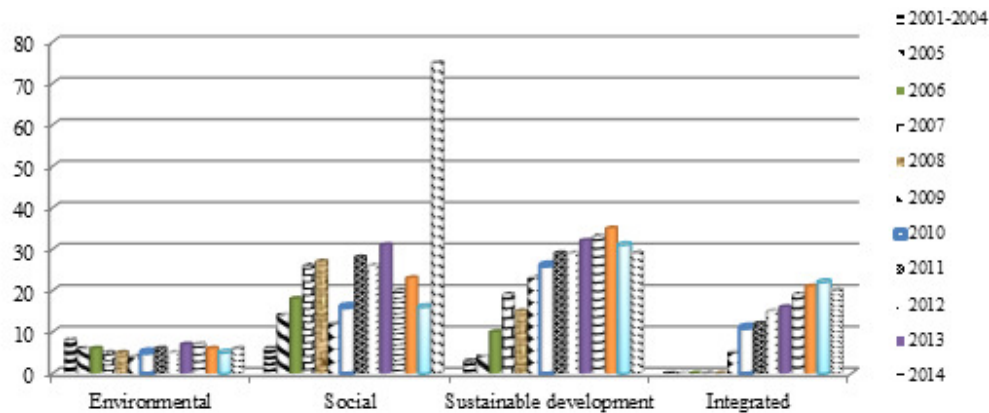
Source: <http://pcnn.pф/simplepage/157>



Source: <http://pcnn.pф/simplepage/157>

**Fig. 2: The structure of the present non-financial reports of major Russian companies for the period since 2000, August 2018**

In 2001-2004 only 17 reports were registered with the main share being environmental reports. The largest group was social reporting, 341 reports were submitted to the national Register by Russian companies for the analyzed period. At the same time, nowadays, such reporting remains prevalent (Figure 3). Reporting in the field of sustainable development characterizes the results of the company's activities, where the emphasis was placed on the formation of financial capital and the use of production, human and intellectual capital. The direction of environmental and social policies was viewed as supplementary information. Integrated reporting was an attempt to unify all activities and disclose the entire value chain. In Russian practice such non-financial reporting appeared in 2009.



Source: <http://pcnn.pф/simplepage/157>

**Fig. 3: Diagram of the Russian companies reporting according to different types**

Integrated reporting becomes a tool to connect different participants in the company's business, an informative source of investment attractiveness, a source of capital structure disclosure. The lack of a methodological framework and national standards have led to a slow reorientation of its content to the international requirements to prepare integrated non-financial reporting. The result can be traced by the identity of the integrated reporting content and the reporting structure for sustainable development with the attempt to reveal the current and prospective information, given the future strategy of the company.

### **Integration of Financial and Non-Financial Information for Company's Capital Creation**

Currently, the priority types of reporting are the following: integrated, reporting in the field of sustainable development and social one. Environmental reporting is done by small companies. The purpose of environmental reporting is to disclose the status and use of natural resources (capital) owned by the organization which are necessary for the implementation of economic activities. The main factors affecting the environment in the implementation of business processes, economic assessment of the impact of the studied factors on the environment, monitoring compliance with established standards in the field of environmental safety are subject to disclosure. The main industries where such reports are prepared are oil and gas, woodworking, pulp and paper. Environmental statements are prepared by such major companies as 'Gazprom' (PJSC), 'Gazprom Transgaz Ukhta' (Severgazprom LLC), 'Surgutneftegas' (OJSC), Group "Ilim", 'Novolipetsk metallurgical plant'.

Large companies disclose information about natural capital in the expanded aspect of environmental policy, environmental activities, including the protection of air, rational use of land, the implementation of departmental monitoring, environmental control and other activities that contribute to the effective use of natural resources (capital). For example (Table 3), the environmental reporting of 'Surgutneftegas' provides information on the management of production and consumption waste, which is formed annually by 800 thousand tons. More than 70% of the total waste mass is drill cuttings. During the production process the company seeks to reduce the amount of drilling waste, as well as the level of negative impact of production on the environment. The results of effective use of natural capital are a factor in the multiplication of production capital which increases the interest of investors in environmentally friendly production.

**Table 3: Information of the environmental report by ‘Surgutneftegas’ concerning waste management**

Indicators	2016	2017	Change	2018 (prognosis)
Generated waste, thousand tons	742,990	837,660	+94,670	737,810
including drilling waste, thousand tons	486,830	591,940	+105,110	486,300
Utilization of generated waste, thousand tons	475,210	527,110	+51,900	481,500
including drilling waste, thousand tons	392,050	444,540	+52,490	398,300
Level of generated waste utilization, %	63,960	62,930	-1,030	65,260
including drilling waste, %	80,530	75,100	-5,430	81,900
Neutralization of generated waste, thousand tons	43,940	50,540	+6,60	43,870
including drilling waste, thousand tons	22,180	27,750	+5,570	22,100
Disposal of generated waste for disposal, thousand tons	186,340	235,520	+49,180	184,600
including drilling waste, thousand tons	42,910	100,900	+57,990	41,100

Source: [media.rssp.ru/document/1/3/5/35ba0a203b4bcfe25699e535de2e8d6c.pdf](http://media.rssp.ru/document/1/3/5/35ba0a203b4bcfe25699e535de2e8d6c.pdf)

The analysis shows that the consistency and stability of its presentation is missing within the environmental reporting. Many organizations are only legally established form of environmental report, provided for companies whose business activities are associated with risks of negative impact on the environment. Such report is provided to state regulators as a part of: payment calculation for negative impact on environment (ecology); waste data; information about stable development of production. The need for an environmental report is caused by the following reasons: obvious and implicit risks of harm to the environment; possible atmospheric pollution by emissions of harmful substances (for example, emissions from nuclear power plants, thermal power plants); pollution of water resources by dumping of industrial waste; disposal of waste underground; the presence of landfills or waste bins.

However, the abbreviated form of the environmental report practically does not disclose the creation of natural capital and its determining factors. In 2012 the government adopted the environmental policy Framework of the Russian Federation for the period up to 2030 providing for the development of non-financial reporting in the field of sustainable development, which includes the reports preparation, mainly environmental reports in accordance with international standards on a voluntary basis. Nevertheless, the reporting improvement for the disclosure to create and use natural capital for the benefit of stakeholders has been slow in coming.

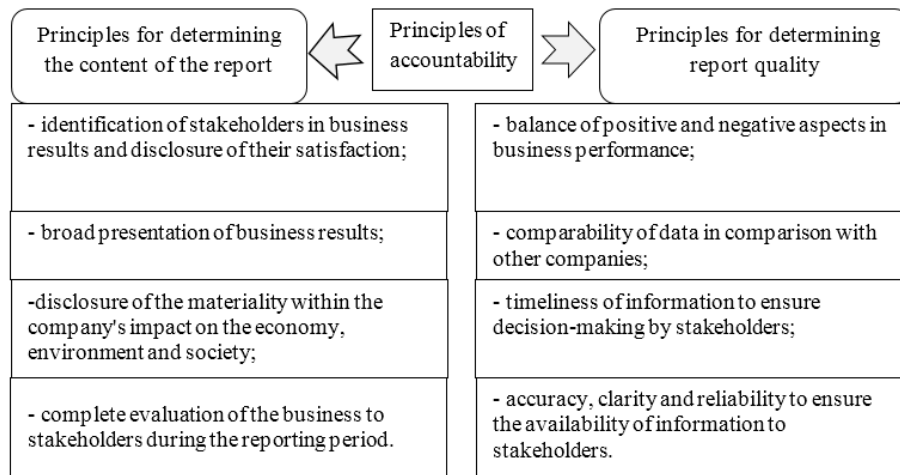
Social reporting is typical for almost all sectors of the economy, the essence and purpose of which is to disclose information about the use of the company’s social resources, the formation of social capital and its participation in the overall value chain. Social reporting can be classified as corporate reporting because its data characterize the results after studying corporate governance, corporate responsibility, human capital creation, socio-economic development. Foreign companies do not prepare social reporting arbitrarily but regulate the content of reports, their structure, collection and compilation of information in accordance with the requirements of international standards. The key items that are reflected in foreign reports include: the purpose and objectives of the company’s social policy; management system and directions of its implementation; key performance indicators of the company, revealing labor relations, job safety, environmental restoration, directions of social programs in conjunction with contractors.

The analysis of social reporting in the Russian practice shows that its preparation has no legal basis, a number of companies are guided by the international standard with reflection in the report of social, economic and environmental information. For example, according to the results of 2017 ‘Novolipetsk

steel’ registered two separate reports – environmental and social ones in the National Register of non-financial reports. The content of the social report reveals the results of the company’s activities in 2017; the values of the plant; human rights protection; sustainability priorities; dialogue with stakeholders; company employees; job safety; community development. The priority of the disclosure statements is informative for the creation of human capital and its impact on the production development, improvement of processes and technologies for the steel production, the implementation of which aims to improve the quality of life. Measures to create social capital within the internal environment of the organization include: equal conditions for professional development, career and creative growth of staff, motivation of employees, initiative and innovation, support of employees with wage supplements in the form of indirect material and intangible incentives, which is one of the factors of productivity growth.

‘Novolipetsk steel’ defines the company’s employees as the main value of the company and considers job safety to be the priority of production activity. The strategy of social capital development provides for a wide range of public relations, cooperation with state regulators, regional authorities, civil society institutions, which is a positive factor in the integrated socio-economic development of the territories, as well as the creation of a favorable business climate. A similar nature of the information is disclosed in the social reporting of the Magnitogorsk iron and steel works with a broader view to the company’s corporate policy, the disclosure of programs to stimulate the birth rate and support young and large families, provide with housing, support non-working pensioners and socially vulnerable population, develop the sanatorium and resort area. Thus, the information about social reporting of the studied companies characterizes the relationship of human capital with the directions of production and environmental capital in relation to corporate and public interests.

Much wider study of the value chain allows non-financial reporting in the field of sustainable development, the activity of which is observed in Russia from 2009 up to now. Such reporting covers both economic, environmental and social aspects of the organization’s activities and it is more structured. In other words, the sustainable development report is a tool to disclose information about the use of resources (capital), the company’s positive or negative impact on the environment, society and economy. In international practice, the most common non-financial reporting methodology is considered to be the global sustainability reporting initiative - GRI-Global Reporting Initiative (the original GRI version is the 2000 edition). In 2013 the fourth version of GRI G4 was released, which takes into account the ten principles of the UN global compact (Solonenko and Perekrestova, 2013) (Figure 4).

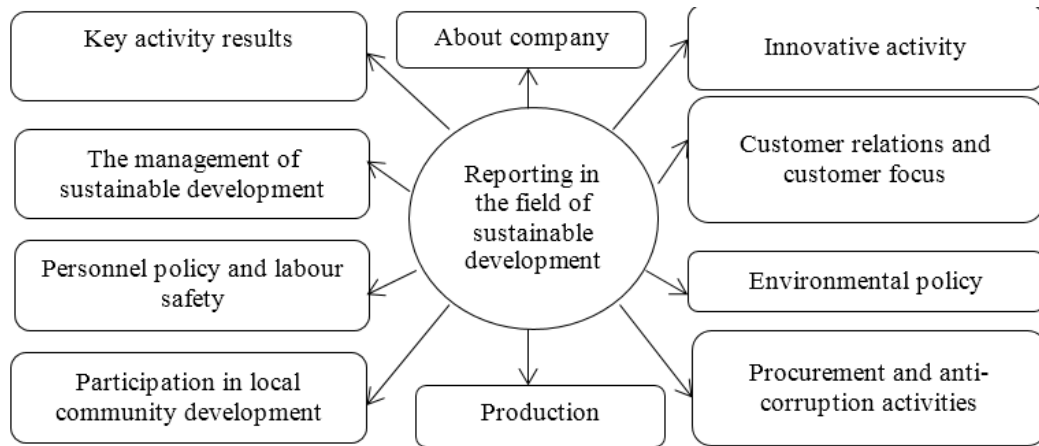


**Fig. 4: Principles of sustainable development reporting.**

Source: *The Global reporting initiative in sustainable development* ([www.globalreporting.org](http://www.globalreporting.org)).

The guide assists companies in defining business goals, measuring results, conducting the reform of the corporate, finance, social policy, sustainability of economic activities. Creating sustainability reporting defines the company's vision of its business strategy. The sustainability reporting guidelines define: the purpose of reporting, the criteria for assessing capital formation, the principles of reporting, the elements of the report, the relationship with regulations and standards. According to Korotkova (2012), the formation of reporting in the field of sustainable development should be based on a number of principles. Reporting guidelines for sustainability reporting are divided into two groups: principles for determining the content of the report and principles for ensuring the quality of the report.

The sustainable development reporting manual provides two options for reporting based on the volume of information: substantive and advanced. The main option reveals the main elements of capital, key reporting items in the field of sustainable development. The advanced option for presenting the company's business results requires additional information on the disclosure of the company's strategy, corporate governance and ethics. The study showed that in the Russian reporting practice most of the reports are based on financial indicators and to a small extent reflect the system of personnel management, environmental and social policy. Such companies as 'Gazprom', 'Gazprom Neft', 'LUKOIL', 'EuroChim', 'Norilsk Nickel' make advanced reports in the field of sustainable development with the opening of interrelated elements to create capital. For example, the reporting of 'Network' company in 2017 informed stakeholders about a wide range of aspects in the field of sustainable development and corporate social responsibility (Figure 5).



**Fig. 5: Elements of reporting in the field of sustainable development of 'Network' company**

Source: <http://pcnn.pcb/simplepage/157>.

Reporting in the field of sustainable development 'Rosneft' discloses summary information about social and environmental aspects, covering a wide range of issues on labor protection, environmental and industrial safety, personnel development, relations with authorities and the public.

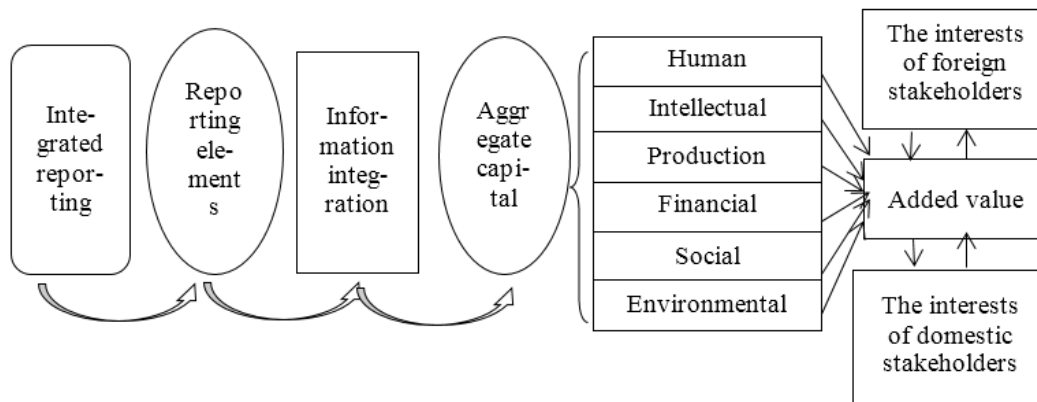
According to the study sustainable development reporting based on the GRI reporting system characterizes the achieved results of the created capital and the actual impact of the resources (capital)use that occurred in the reporting period, in the context of the company's strategy and approaches to the management system. Such reports do not reflect the investment risks, capital accumulation and forecast information to create additional value in the course of business taking into account the stakeholders' interests.



The reform of corporate reporting approaches indicates an active reorientation of Russian companies to the preparation of integrated reporting, which is recognized to reflect all business aspects and which form the structural elements of the company's total capital with an assessment of the entire value chain. This form of reporting is of interest to regulators and stakeholders, as it leads to open dialogue about the creation of additional value for each group of stakeholders. According to Malinovskaya (2013) a distinctive feature of integrated reporting is the inclusion of financial and non-financial information, so that investors can get a more accurate assessment of the business, the direction of capital creation and its effective use.

The international standard for integrated reporting provides for disclosure of information in the reporting on the following aspects: the business model used; the organizational structure and the external environment; opportunities and risks; the company's strategy and direction of resources use; results of activities; prospects for the future; corporate governance. The report provides for linking all components to have a complete view of the business. Kogdenko V.G. and Melnik M.V. determine the composition of integrated reporting by comparing traditional and integrated reporting, they disclosed the main directions of the data transformation into key performance indicators for management decision-making (Kogdenko, 2014a).

The main leaders to create corporate integrated reporting for a number of years are: 'Atomenergomash', 'Tatneft', 'Rosenergoatom', 'Atomenergoproekt', 'Techsnabexport', 'Atomenergomash', 'OKBM by I.I. Afrikantov', 'Uralkali' and other companies. The created corporate integrated reporting ensures the improvement of information quality taking into account the interests of stakeholders which contributes to the adoption of operational decisions for cooperation with the company (Figure 6).



**Fig. 6: Information establishment to create the total capital of the company in the overall value chain taking into account the interests of stakeholders**

*Source: compiled by authors.*

The main purpose of the corporate integrated report is to increase the information content about the resources (capital) of the company and the relationship arising in the process of implementing the business model which is influenced by the company. Total capital is characterized as the set of its structured components at different stages of the value chain: human capital, intellectual capital, production capital, financial capital, natural and social capital. The interest of the company is to present its interaction with the external environment and the capital used to create additional value over the short, medium and long term. Within information in the integrated reporting capital should be understood as the created increase in value which will be subject to changes in the growth or decline direction and can also be transformed in the course of business functioning. In our view the report should structure information on capital in conjunction with the directions of the organization strategy.

## Conclusion

The results of the study devoted to the information content of the companies' capital in the corporate integrated reporting shows that the world practice carries out the conceptual development of the stakeholder theory in the management of modern business. Despite the slow pace, Russian companies have come to the need to create an innovative model of modern reporting for the full disclosure of the value chain, taking into account the interests of stakeholders, to improve the quality of information about the effective creation of capital in the context of its main components. This will ensure the development strategy of companies in the face of uncertainty and increased competition in the external business environment. If you want to evaluate the company's capital, value creation, taking into account stakeholder interests in the financial statements it is necessary to disclose the model of critical features, characterizing the efficiency of this creation, the ability of the company to accumulate capital in a promising future in connection with the interests of stakeholders for managerial decision-making.

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## References

- Blank, I.A. (2008) Managing capital formation. Moscow, Nika-Tsentr.
- Corporate reporting: the international study by KPMG. Improving the quality of corporate reporting. [Online]. Available: <https://home.kpmg.com/xx/en/home/services/audit/better-business-reporting.html>
- Feoktistova, E.N., Alenicheva, L.V., Dolgikh, E.I., Kopylova, G.A., Ozeryanskaya, M.N. and Konakova, N.V. (2017) Analytical review of corporate non-financial reports: 2015-2016, Moscow, RSPP. 136 p.
- Freeman, R.E. (2004) 'The stakeholder approach revisited,' *Zeitschrift für Wirtschafts- und Unternehmensethik*, 5, 228–254.
- Guseva, E.S. (2013) 'Features of integrated reporting development in the context of globalization,' *Nauchno-tekhnicheskie Vedomosti SPbGPU. Economics*, 5 (180), 15-18.
- Kogdenko, V.G. and Melnik, M.V. (2014) 'Integrated reporting: the issues of formation and analysis,' *International financial accounting*, 10, 2-14.
- Korotkov, A.V. (2012) 'The principles of the integrated accounting system,' *Economics*, 6 (91), 159-162.
- Kyshtymova, E.A. (2015) 'The Concept of integrated accounting for equity elements of commercial organizations,' *News of Tula State University. Economic and Legal Sciences*, 4-1, 111-120.
- Leadership* of the global sustainable development reporting initiative. [Online]. Available: [www.globalreporting.org](http://www.globalreporting.org).
- Libert, B. and Bonchek, M. (2017) 'To change your strategy, first change how you think,' *Harvard Business Review*, May.

- Lytneva N., Parushina N., Polyanin, A., Kyshtymova, E. and Vertakova, Y. (2017) 'Methods of complex analysis in management of commercial organizations owned capital,' Proceedings of the 29th International Business Information Management Association Conference (IBIMA), 2126-2134.
- Malinovskaya, N.V. (2013) 'Integrated reporting innovative corporate reporting model,' *International financial accounting*, 38, 12-17.
- Non-financial reports of companies operating in Russia: practice of social reporting development. [Online]. Available: <http://RSPP.RF/12/4005.pdf>.
- Parushina, N.V. and Lytneva, N.A. (2016) 'System of cost and financial results indicators in the concept of lean accounting and management,' *Fundamental research*, 12 (1), 202-206.
- Polyanin, A., Pronyaeva, L., Golovina, T., Avdeeva, I., Polozhentseva, Y. (2017) 'Administrative and managerial approaches to digital economy development in Russia,' Proceedings of the 29th International Business Information Management Association Conference (IBIMA), 2166-2179
- Solonenko, A.A. and Perekrestova, L.V. (2011) Evolutionary development of accounting types and their integration in the accounting system of commercial organizations. Volgograd, Volgograd scientific publishing house.
- The international Integrated reporting Council (2013). A consultation Draft of the International Integrated reporting framework. 40 p.
- Tikhomirov D. and Plotnikov V. (2018) 'The minimisation of risks in project finance: approaches to financial modelling and structuring,' MATEC Web of Conferences, 193, 05069. <https://doi.org/10.1051/mateconf/201819305069>.
- Vermeulen, E.P.M. (2015) 'Corporate Governance in a Networked Age,' *Tilburg Law School Legal Studies Research paper series*, 16, 1– 23.
- Surgutneftegas (2017) Environmental report-2017.
- Vertakova, Yulia; Polozhentseva, Yulia; Klevtsova, Maria (2015) 'The Formation of the Propulsive Industries of Economic Development Acting as the Growth Poles of Regions,' *Procedia Economics and Finance*, 24, 750-759.

## **The Factor Analysis Technique of Stakeholders' Influence to Form Companies' Shareholder Value**

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### **Abstract**

The problem of increasing the value of the company is relevant not only for shareholders and owners, but also for all stakeholders in the business. The shareholder value of the company is the result of activities that will ensure the solution of financial, social, environmental problems at all levels of management. It is proved that the shareholder value is changeable under the influence of various factors. They are financial and non-financial in nature, reflect the quantitative and qualitative assessment of changes in shareholder value from the perspective of the sustainable development within the company, industry, region and country. The article discusses the method of factor analysis to form the shareholder value of the company. The authors offer to make a grouping of factors affecting shareholder value, taking into account the interests and needs of stakeholders. The market capitalization of securities in the stock market was chosen as the effective indicator reflecting the real assessment of the shareholder value. The authors show the formation concept of the companies' joint-stock cost and research the pharmaceutical market and market capitalization of pharmaceutical manufacturers. The study, as well as the experience of international companies in the study of the pharmaceutical market, allowed to classify and systematize the company's stakeholders. The results of the analysis demonstrate the shareholder value under the influence of selected factors. The construction of the factor model depends on the characteristics of the production business model, so the results are shown on the example of the pharmaceutical company.

**Keywords:** analysis, shareholder value, methodological tools, stakeholders, factor analysis.

### **Introduction**

The concept of sustainability has been widely developed in recent years. It is based on the relationship between the financial, social and environmental components of the business. This concept implies ensuring the growth of the company's value through the influence of financial, social and environmental factors. A number of factors affect the quality of the company's activities, and some of the factors have a quantitative impact on the company's value increment. This ensures the value of the firm to all stakeholders. And this value is not only commercial value for owners, but also

qualitatively endowed with public content. Therefore, the company becomes "valuable" for the state, partners, staff, consumers, public and charitable organizations, media groups, innovation centers and platforms. All these structures are a part of stakeholders in the business creating and increasing the shareholder value of the company.

The increase in shareholder value through the development of a methodology for factor analysis under the stakeholders' influence is of great practical importance. The choice and grouping of factors are based on the peculiarities of the business model formation. For each company, the construction of a business model has its own characteristics. Hence, the factors for selection are chosen individually. Although a unified scientific and methodological approach to the formation of stakeholder maps can be developed taking into account the practical study of the stakeholders' potential interests in the development of the company and its competitive position in the global and domestic markets. Since stakeholders do not have only commercial interests in business development, the factors are grouped as financial and non-financial, quantitative and qualitative ones. Factor analysis is of prognostic and strategic importance and allows us to assess the degree of influence from various financial, environmental and social indicators on the company's value increment, primarily for shareholders and owners. This will consider the interests of all other users. The concept of sustainability in its modern representation has been chosen as a vector to develop the future shareholder value which is formed not only through the solution of tactical management tasks but also strategic priorities.

The main problem of forming a factor model to influence interests of all parties in business for the shareholder value is to obtain information and consolidate it in a single reporting document. Such document regarding the demand of international standards for integrated reporting can be a report about sustainable development for the year. Nowadays, such reports are only made by a few companies. Reporting is often presented in annual reports which contain mainly financial indicators, supply chain, risks. Sometimes business models are disclosed to describe the factors affecting the cost. But there is no clear understanding of what the cost is and how it is formed in the value dimension. Of course, the source of information for factor analysis of shareholder value is accounting and the results of information operational analysis. But the problem of identifying documents for collecting data on business processes and disclosing them in the sustainable development report in a certain format remains up-to-date. Today data have to be obtained from various sources to build a factor model for the analysis of the company's shareholder value. These include annual reports, investment reports, social reports, financial statements, static materials, information of ministries, departments, information of professional portals and stock exchanges.

The discussion devoted to the concept of shareholder value in the company determines the variety of methodological approaches to factor analysis taking into account the interests of stakeholders.

### **The Formation Concept of the Companies' Joint-Stock Cost**

Shareholder value has traditionally been considered as the value formed for owners. In recent years, in connection with the revision of priorities towards a long-term vision of business development and ensuring its sustainable competitive advantages in the global community, new definitions of companies' shareholder value have been introduced.

There is an interpretation of shareholder value from the standpoint of accounting and international financial reporting standards. In this concept, value is considered as fair value. This definition is given by Vakhrushina M.A. (2012), Rozhnova O.V. and Markov V. V. (2013) on the basis of international financial reporting standards. The fair value is the price received to sell an asset or paid to transfer a liability in conducting market operations on a voluntary basis between market participants at the measurement date under current market conditions.

From the standpoint of management, the founders of the fundamental management theory determined the shareholder value. Scott M. (2005) defines the shareholder value of the company from the perspective of shareholders' interests. According to the author, this is the cost for shareholders. The author understands shareholder value as the value of the company's share capital or market capitalization of shares. It is noteworthy that Scott M. sees shareholder value as not "the price of the

company" but its value to the owners. The value is determined by quality rather than by quantity. This confirms the modern theory of formation analysis for shareholder value, which is not only a quantitative assessment of the public company but its qualitative characteristics.

The founder of the shareholder value theory (SHV) and the shareholder value added (SVA) is Rappaport A. (2007). He defines the shareholder value of the company as the value that shareholders receive in the form of income generated by a set of management decisions. According to the theory of Rappaport A. shareholder value is linked to income. The author notes the interest not only of the company's shareholders but also of employees. The creation of shareholder value, according to Rappaport, is already beneficial not only to the owners of the share capital, but also to all those who have an indirect interest in the shares of the company, that is stakeholders.

A number of authors consider shareholder value in relation to the fundamental economic theory, understanding economic value added under this category. These include D. Roche (2008), J. Abrams (2010), S. Benning (1996). G. Hall (2002) supposes that various factors influence the process of shareholder value formation. It should be noted that G. Hall studied the impact of financial factors on the shareholder value. According to modern understanding the value of the company should not only bring commercial financial benefits but also be significant for society as a whole in solving social and environmental problems.

Modern authors in the field of management also confirm the need to take into account a set of external and internal factors for the development of companies. In his practice-oriented works R. Abrams (2016) points to the importance to analyze the current conditions of activity and the need to predict future conditions, thereby emphasizing the need to introduce a development strategy taking into account the factor influence. In addition, A. Weiss (2016) draws attention to consider the views of stakeholder. W. Taylor (2016) connects the new trends with the new era of business and management. The author notes that the era is characterized not so much by advanced technologies but by ever-growing competition. M. Bernard (2016) thinks it is necessary to develop a new management strategy which would affect the result.

Developing the theory of shareholder value from the perspective of economic analysis Kogdenko V.G. and M. V. Melnik (2012) in their work mark the irreversibility of the transition process to the traditions and values of company management. The authors focus not only on the value of the company. They understand the value as an abstract unit, meaning not a quantitative indicator, but the value of the company estimated by its owners and investors. At the same time, Kogdenko V.G. and Melnik, M. V. see the importance of the all indicators analysis which are listed as the following: the added market value, the added monetary value, the added shareholder value and the added economic value. The economic purpose of all these indicators, according to scientists, is to capture the absolute and relative results of the company in the value chain. It is acceptable to use different indicators meters for factor analysis.

Therefore, according to the results of scientific discussion, at the beginning of the XXI century there is a clear tendency not to determine the value of the company only in order to maximize the income of its investors. It becomes obvious that the potential for increasing the value of the company can be found in the strategy to meet all the needs without any exception involved in the value chain of stakeholders. This approach is closely linked to stakeholder theory, proposed by E. Freeman in 1984, and is supported by T. Donaldson, L. Preston, R. Mitchell, B. Eglon, D. Wood, S. Miles and R. Phillips. According to E. Freeman (2004), the key idea of capitalism is the creation of value by an entrepreneur or manager taking into account the common interests of stakeholders. The author argues that from time to time the interests of the people concerned are in conflict with each other, but in the long term they should be turned into the same direction. Thus, E. Freeman links the long-term sustainability of the company with the success to meet the requirements of stakeholders in the current period.

In domestic science, the stakeholder approach to the formation and valuation of the company is developed in the works of V. I. Barilenko, O. V. Efimova and R. P. Bulyga (2012), who attempt to adapt the accounting and analytical system to meet the requirements of the company's stakeholders.

The principles of sustainability management based on the growth of the company value in the long-term aspect with the involvement of stakeholders in the creating process, building mutually beneficial relationships within the stakeholder community and with owners are the basis for the formation of sustainability management for small and medium-sized businesses. Lytneva N.A. and Parushina N.V. have the same opinion (2017). A. V. Polyanin gives preference to the information component of business development (2014, 2017). Vertakova Yu. V. (2016, 2017) focuses on the development and expansion of innovative management technologies.

For the purposes of its analysis, the company's shareholder value is understood to be the value created to meet the needs of all those involved and interested in the business. This value should represent the real value of the company, which has developed under the influence of market regulation towards business activities. For the purposes of factor analysis, a reliable assessment of the company's shareholder value is provided by the market capitalization of securities based on the results of trading on the stock market. The process of shareholder value formation is influenced by the business model of a particular company. The business model has branch features which are connected with the sphere of business activity and stakeholders. For the successful process to form a model of analysis and manage shareholder value based on the influence of financial and non-financial factors in quantitative and qualitative terms it is necessary to collect, group and summarize analytical information.

### **Analysis of the Pharmaceutical Market and Market Capitalization of Pharmaceutical Manufacturers**

Pharmaceutical industry manufacturers have been selected to test the method of factor analysis for the company's shareholder value formation. The development of the pharmaceutical industry is one of the world's priorities. Innovative methods of treatment, increased access to drugs are needed to treat and prevent such serious diseases of the Millennium as HIV, diabetes, melanoma, lung cancer, multiple sclerosis, endometriosis, spinal muscular atrophy, hereditary angioedema, Lennox — Gasto syndrome.

According to the forecasts of the world analytical company "EvaluatePharma" the pharmaceutical industry is developing with an optimistic attitude. New drugs are entering the market faster than ever before, in the past few years large and small drug developers have been successfully researching their products in a number of therapeutic areas, investors are actively supporting companies in the health care sector. The scope of bio-information is at its peak. Among the most promising areas for the development of innovative drugs is oncology.

It is expected that 43 new drugs that in 2017 were approved by the Management for control over foodstuff and medicines in the USA (Food and Drug Administration — FDA) will bring their developers up to 31.6 billion dollars 5 years after the launch. As for the EU, the relocation of the European Agency for medicines (EuropeanMedicinesAgency — EMA) to Amsterdam can potentially cause delays in the market entry of the new developments that are in the final stages of research. Nevertheless, it is expected that in 2018 the world pharmaceutical market will also be replenished with promising novelties for the treatment of HIV infection, diabetes, multiple sclerosis, orphan diseases. The table shows the TOP 10 promising pharmaceutical products of the world's largest pharmaceutical companies.

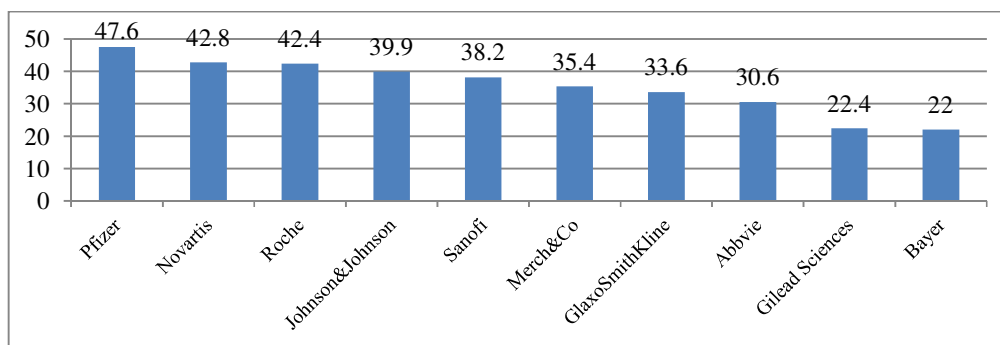
**Table 1: Top 10 most promising products which are planned to be launched in 2018, the projected volume of sales in monetary terms in 2022\***

Product	Company	Therapeutic area of drugs application	Projected sales in the world market in 2022, billion dollars.
Biktegravir/emtricitabine/tenofovirafemid	GileadSciences	HIV	5,05
Semaglutid	NovoNordisk	Diabetes	2,72
Epakadostat	IncyteCorporation	Melanoma	1,94

Rova-T (rovalpituzumabtesirin)	Abbvie	Lung cancer	1,44
Ozanimod	Celgene Corporation	Sclerosis	1,27
Apalutamid	Johnson&Johnson	Prostate cancer	1,24
Elagolix	Abbvie	Endometriosis	1,21
AVXS-101	AveXis	Spinal muscular atrophy	1,14
Lanadelumab	Shire	Hereditary angioedema	1,12
Epidiolex (kannabidiol)	GW Pharmaceuticals, plc.	Lennox — Gusto Syndrome	0,96

\* Source: report «EP Vantage 2018 Preview» of analytical company «Evaluate» <http://www.evaluate.com/>

It is important to note that in the next year in the United States it is expected to end the term of patent protection for some drugs of biological origin, which potentially opens the door to the market for biosimilars. As for the most profitable companies in the world market, in 2018 it is expected that the top three leaders from the list of top 10 will not change compared to previous years. The 1st place will still be for Pfizer with revenue from sales (prescription and over-the-counter drugs) at the level of 47.6 billion dollars, 2nd place will be taken by the company "Novartis" with a figure of 42.8 billion dollars, it will be close to "Roche" with an indicator of 42.4 billion dollars. Future expectations for a leading position in the pharmaceutical market indicate that Novartis will become the leading drug company for the prescription in 2024 with sales of \$ 53.2 billion ahead of Pfizer and Roche, both of which are closely competing for the second place.

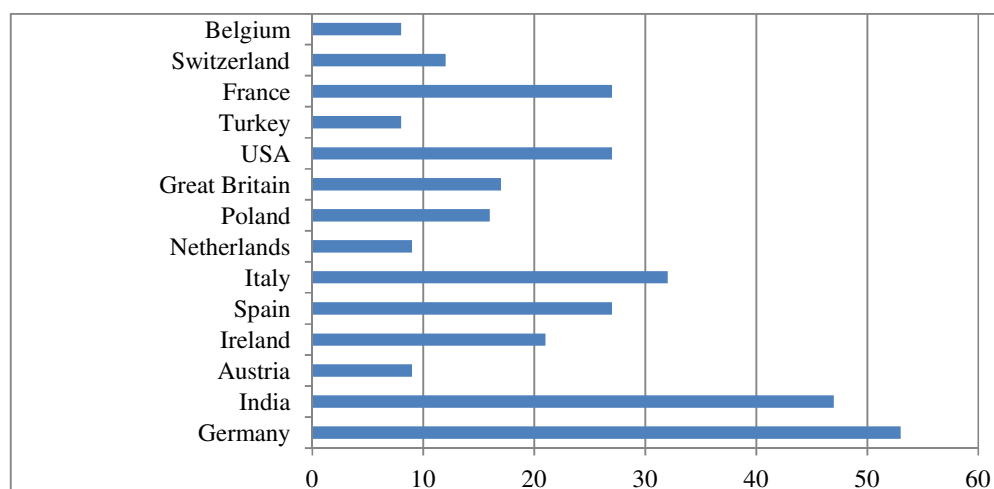


**Fig. 1: Top 10 global pharmaceutical companies with projected medicines sales (prescription and OTC) in monetary terms in the world market in 2018, billion dollars\***

\* Source: report «EP Vantage 2018 Preview» of analytical company «Evaluate» <http://www.evaluate.com/>.  
 Pharmaceutical industry development in 2018 <https://gmpnews.ru/2017/12/tendencii-razvitiya-farmaceuticheskoi-industrii-v-2018-godu/>

Analytical reviews of the pharmaceutical market in Russia according to DSM Group demonstrate the growth of production and sales of domestic production drugs. At the end of June 2018 59.4% of the drugs sold on the market were domestic (in natural units of measurement), but due to their low price relative to imported drugs in value terms, they occupied 27.9%. Bayer headed rating of companies by sales value in June 2018, Sanofi-Aventis was in second place, Novartis was in third place. TOP 3 brands of LP in terms of the pharmaceutical sales value in Russia by the end of June 2018 consisted of "Detralext" (0.9%), "Xarelto" (0.8 per cent), "Nurofen" (0.8 per cent). The manufacture activity of the world countries for the medicines production is characterized by the data presented by the register of the Pharm Ministry in Russia. The figure shows only the country leaders in the development of pharmaceutical production. The leading position of development in the pharmaceutical industry are noted in Germany, India, Spain, Italy, USA and France.





**Fig. 2: Medicines manufacturers whose the production is carried out outside the territory of the Russian Federation, having valid GMP conclusions**

\* Source: Conclusions register GMP <http://minpromtorg.gov.ru/>

In Russia, the development of pharmaceutical production is facilitated by the adoption and implementation of the state program № 394 "development of health care" approved by the government from 31.03.2017. About 266 joint-stock companies-producers of medicines and medical preparations are registered in Russia. Russian Ministry of industry and trade issues opinions on compliance of the manufacturer of medicines with the requirements in accordance with the approved Rules of the organization and inspection of medicines manufacturers for compliance with the requirements of good manufacturing practice, as well as the issuance of conclusions on compliance of the medicines manufacturer with these requirements. These rules were approved by the government of the Russian Federation on December 03, 2015 (№ 1314). In 2017 public and non-public joint-stock companies (64), limited liability companies (70) and budget institutions (6) have received the current conclusion of the GMP. One of the largest pharmaceutical manufacturers of drugs by the expert rating of Agency RAEX includes R-Pharm, Pharmstandard, Nizhpharm, KRKA Pharma. The table indicates the place of the company in the ranking of the TOP 600 major manufacturers in all spheres.

**Table 2: Rating of the largest pharmaceutical companies in Russia in terms of sales (RAEX - 600)\***

Place at the end of 2016	Place at the end of 2015	Company name	Sales volume in 2016 (mln. RUB.)	Sales volume in 2015 (mln. RUB.)	Growth rate, %	Sales volume in 2016 (mln. RUB.)	Profit before tax in 2016 (mln. RUB.)	Net profit in 2016 (million rubles)	Accountability
168	158	R-Pharm	71149,8	68743,4	3,5	1064,6	N.d	N.d.	IFRS
185	213	Pharmstandard	61786,4	47194,9	30,9	924,5	10752,8	8002,3	IFRS
465	361	Nizhpharm	23796,7	26813,0	11,2	356,1	-574,7	-848,2	SSR
580	549	KRKA Pharma	18730,8	17530,6	6,8	280,3	427,2	311,5	SSR
		Total	175463,7	160281,9	9,5	2625,5	10605,3	7465,6	x

\* Source: Rating of the largest pharmaceutical companies RAEX -600 <https://raexpert.ru/>

Information on the market capitalization of securities on the results of trading on the stock market of PAO Moscow Exchange MICEX-RTS is presented by only one Russian company (PAO PharmSintez). This allows to collect data for factor analysis of the company's shareholder value,

identifying it with the market capitalization of the company's securities (category of securities is ordinary shares) in the long term.

**Table 3: Information about the market capitalization of securities in PAO Pharmsintez after trading on the stock market by PAO Moscow Exchange\***

State registration number of issue (additional issue)	Issue volume, units	Market price, RUB	Capitalization, RUB. (Performance indicator Y)
<b>30.03.2018 г.</b>			
1-02-09669-J	301 010 754	8,5	2 558 591 409,94
<b>29.12.2017 г.</b>			
1-02-09669-J	301 010 754	11,5	3 461 623 672,27
<b>29.09.2017 г.</b>			
1-02-09669-J	301 010 754	12,4	3 732 533 350,96
<b>30.06.2017</b>			
1-02-09669-J	301 010 754	12,2	3 672 331 200,14
<b>31.03.2017 г.</b>			
1-02-09669-J	151 724 392	13,55	2 055 865 513,09
<b>30.12.2016 г.</b>			
1-02-09669-J	151 724 392	16,4	2 488 280 030,60
<b>30.09.2016 г.</b>			
1-02-09669-J	151 724 392	14,6	2 215 176 124,81
<b>30.06.2016 г.</b>			
1-02-09669-J	151 724 392	16,25	2 465 521 371,79
<b>31.03.2016 г.</b>			
1-02-09669-J	151 724 392	18,3	2 776 556 375,61
<b>30.12.2015 г.</b>			
1-02-09669-J	151 724 392	11,05	1 676 554 532,82
<b>30.09.2015 г.</b>			
1-02-09669-J	151 724 392	11,85	1 797 934 046,50
<b>30.06.2015 г.</b>			
1-02-09669-J	151 724 392	12,65	1 919 313 560,19
<b>31.03.2015 г.</b>			
1-02-09669-J	151 724 392	12,25	1 858 623 803,35
<b>30.12.2014 г.</b>			
1-02-09669-J	151 724 392	12,35	1 873 796 242,56

\* Source: The market capitalization of the securities at the end of stock market trading at PAO Moscow Exchange in the first quarter of 2018 <https://www.moex.com/a4318>

The effective indicator of the market capitalization of securities (ordinary shares) will allow to give an objective assessment to the degree of factor characteristics influence under the impact of the stakeholders' interests for the shareholder value. In this way, it will be possible to identify those groups of stakeholders and indicators that will have a greater impact on the growth of the company's value in the long term.

### **The Method of Factor Analysis to Form the Shareholder Value of a Pharmaceutical Company under the Influence of Factor Characteristics**

To form the factor model within the analysis it is necessary to correlate the interests of stakeholders in the business with their influence on the business model of a pharmaceutical company. The table presents the results of the identification and grouping of stakeholders influencing the key business

processes of a pharmaceutical company, using the methods of hypothesis, analysis of information disclosed by pharmaceutical companies, study of analytical reports published by specialized information agencies.

**Table 4: The results of the stakeholders selection influencing key business processes of a pharmaceutical company**

Business process	Stakeholders influencing the business process
Production	<ul style="list-style-type: none"> <li>- Owners and potential investors;</li> <li>- Top-management;</li> <li>- Employees involved in production;</li> <li>- Raw material suppliers and contractors;</li> <li>- Environmental organization;</li> <li>- Local community</li> </ul>
Logistics and storage	<ul style="list-style-type: none"> <li>- Employees involved in logistics and storage;</li> <li>- Suppliers and contractors;</li> <li>- Distributors and wholesale buyers.</li> </ul>
Distribution and sales	<ul style="list-style-type: none"> <li>- Buyers;</li> <li>- Patients;</li> <li>- Pharmacy chain;</li> <li>- Advertising and marketing agencies;</li> <li>- Top-management;</li> <li>- Employees responsible for sales and marketing.</li> </ul>
Regulatory compliance monitoring	<ul style="list-style-type: none"> <li>- Regulatory authority;</li> <li>- Bodies of state supervision;</li> <li>- Top-management;</li> <li>- Workers.</li> </ul>
Quality control	<ul style="list-style-type: none"> <li>- Workers;</li> <li>- Top-management;</li> <li>- Regulatory authority;</li> <li>- Patients;</li> <li>- Attending physicians</li> </ul>
Registration and certification	<ul style="list-style-type: none"> <li>- Regulatory authority;</li> <li>- Health workers;</li> <li>- Distributors and agents;</li> <li>- World health organizations;</li> <li>- Supranational organizations.</li> </ul>
Tender sales	<ul style="list-style-type: none"> <li>- Distributors;</li> <li>- State;</li> <li>- Regulatory authority;</li> <li>- Health workers.</li> </ul>
Innovation and development	<ul style="list-style-type: none"> <li>- Owners and potential investors;</li> <li>- Health workers;</li> <li>- Patients;</li> <li>- Suppliers and contractors;</li> <li>- Regulatory bodies (e.g. Ethics committees);</li> <li>- Workers;</li> <li>- Scientific medical communities and associations of professionals.</li> </ul>
Brand loyalty	<ul style="list-style-type: none"> <li>- Patients;</li> <li>- Buyers;</li> <li>- Suppliers;</li> <li>- Health workers;</li> <li>- Potential buyers;</li> </ul>

	- Recipients of sponsorship and charitable assistance.
Professional development and training	- Educational organizations; - Workers; - Attending physicians; - Doctors-scientists; - Non-profit associations and professional associations
Finding patients and interacting with healthcare professionals	- Patients; - Attending physicians; - Non-profit associations and professional associations; - Employees responsible for sales and marketing.

The study, as well as the experience of international companies in the study of the pharmaceutical market, allowed to classify and systematize the company's stakeholders. Groups of stakeholders include: patients, customers, healthcare professionals, state staff, providers, community organizations, property owners and investors. There are 8 stakeholder groups in total. The selection of factors was carried out related to the probabilistic influence of interested stakeholders for the formation of the shares market price.

**Table 5: Grouping factors according to stakeholder in pharmaceutical companies**

Stakeholders	Factors influencing shareholder value
Patients	X1 Number of submitted for registration drug dossiers, pieces
	X2 Number of new drugs that have passed the test and registration, pieces
	X3 Number of potential patients receiving drug treatment, people.
Buyers	X4 Drugs wholesale with discounts to customers, thous. RUB
	X5 Share of pharmaceutical sales value for anticancer drugs and immunomodulators,%
	X6 Commercial costs, RUB.
	X7 Number of large buyers.
Health workers	X8 Sales, R & d, thousand rubles
	X9 Number of medical institutions conducting trials, pieces
	X10 Total number of clinical trials accredited to the drug by medical institutions, pieces
	X11 Number of patients participating in clinical trials, people
State	X12 Share of exports in total revenue,%
	X13 Income tax payments, RUB.
	X14 Share of tax expenses, %
	X15 Number of competitions for the state task, pieces.
	X16 Amount of state contracts /budget funds, RUB.
Staff	X17 Payments for wages, RUB.
	X18 Percentage of deductions for social needs,%
	X19 Average number of employees, people.
	X20 Loans to employees, thousand rubles.
	X21 Training and conferences, thousand rubles.
Suppliers	X22 Payments to suppliers, RUB
	X23 Cost of sales, RUB.
Public organizations	X24 Energy production capacity, kW/h
	X25 Fuel costs,%
	X26 Drugs sale through the system of state procurement, RUB.

Owners and investors	X27 Value of the net assets, RUB.
	X28 Long-term liabilities, RUB.
	X29 Revenue from sales, RUB.
	X30 Number of actually placed securities, pieces.

Background information for making and evaluating multivariate regression model contains quarterly data for the period from 2011 to 2018. To analyze factors influence on a productive indicator (the market capitalization of the securities) it was necessary to use the method of correlation and regression analysis.

**Results of factor characteristics selection by stakeholder groups and determination of their impact on the shareholder value of a pharmaceutical company**

Initially, there was a selection of factors for the groups of stakeholders most affecting the shareholder value of the company, represented by market capitalization of securities in the stock market.

As a result of the correlation and regression analysis by stakeholder groups, the greatest impact on the following indicators was revealed.

Group 1: patients. The greatest positive effect was noted by the factor X3 (Number of potential patients receiving drug treatment, people). **(+X3)**

Analysis tool „Correlation“

	Y	X1	X2	X3
Y	1			
X1	-0.577774358	1		
X2	0.615761266	-0.226960791	1	
<b>X3</b>	<b>0.836407067</b>	-0.65017244	0.55830659	1

Analysis tool „Regression“:

Multiple R (correlation index) = 0.860

Regression equation:

$$Y_{x_1 x_2 x_3} = -6548452633 - 50939669,19x_1 + 180539457,5x_2 + 14598,209x_3$$

The regression equation in a standardized form:

$$t_Y = -0,114t_{x_1} + 0,238t_{x_2} + 0,628t_{x_3}$$

Group 2: buyers. The greatest positive impact was noted on the factor X4 (Medicines wholesale with discounts to customers, ths. RUB). **(+X4)**

Analysis tool „Correlation“

	Y	X4	X5	X6	X7
Y	1				
X4	<b>0.800645223</b>	1			
X5	-0.54651011	-0.37506587	1		
X6	0.341107748	0.40910146	-0.29015132	1	
X7	0.732887001	0.69164094	-0.57294783	0.549372	1

Analysis tool „Regression“:

Multiple R (correlation index) = 0.859; Regression equation:

$$Y_{x_4, x_5, x_6, x_7} = 620149572,3 + 3,712466906x_4 - 169806451x_5 - 1,95431316x_6 + 89693031,32x_7$$

The regression equation in a standardized form:

$$t_y = 0,577t_{x_4} - 0,202t_{x_5} - 0,105t_{x_6} + 0,274t_{x_7}$$

Group 3: health workers. The greatest negative impact was noted for the factor X10 (Total number of clinical trials accredited to the drug by medical institutions, pieces) (- **X10**)

Analysis tool „Correlation“

	Y	X8	X9	X10	X11
Y	1				
X8	0.598540574	1			
X9	0.618658173	-0.86688	1		
X10	<b>-0.729059049</b>	-0.86408	0.986481	1	
X11	0.708630147	-0.92859	0.955447	0.953985	1

Analysis tool „Regression“: Multiple R (correlation index) =0.769;

Regression equation:

$$Y_{x_8, x_9, x_{10}, x_{11}} = 2352880538 - 4,90743411x_8 + 18189782,55x_9 - 515528,897x_{10} + 8427047,147x_{11}$$

The regression equation in a standardized form:

$$t_y = -0,399t_{x_8} + 0,289t_{x_9} - 1,021t_{x_{10}} + 1,006t_{x_{11}}$$

Group 4: the state. The greatest positive impact was noted for the factor X 12 (Share of exports in total revenue, %) (**+X12**)

Analysis tool „Correlation“

	Y	X12	X13	X14	X15	X16
Y	1					
X12	<b>0.726768237</b>	1				
X13	-0.73826747	0.844745	1			
X14	-0.750443956	0.896044	0.828275837	1		
X15	-0.426161137	0.484842	0.355881494	0.16799862	1	
X16	-0.657451174	0.744226	0.653428071	0.55622412	0.84930131	1

Analysis tool „Regression“:

Multiple R (correlation index)=0.839;

Regression equation:

$$Y_{x_{12},x_{13},x_{14},x_{15},x_{16}} = 4400518451 + 132490280,8x_{12} - 54,71981178x_{13} - 1891156063x_{14} - 283149627,1x_{15} + 0,470595817x_{16}$$

The regression equation in a standardized form:

$$t_Y = 0,703t_{x_{12}} - 0,270t_{x_{13}} - 1,116t_{x_{14}} - 0,563t_{x_{15}} + 0,096t_{x_{16}}$$

Factors X12, X13, x14 showed almost the same degree of tightness with Y, preference was given to X12 according to standardized regression equation

Group 5: employees. The largest positive impact observed on the X factor 21 (Training and conference, thousand rubles) (**+X 21**)

Analysis tool „Correlation“

	Y	X17	X18	X19	X20	X21
Y	1					
X17	0.06984588	1				
X18	-0.61682783	-0.4600313	1			
X19	0.284565303	0.59460719	0.270354	1		
X20	-0.79169575	-0.7280227	0.521347	-0.37911	1	
<b>X21</b>	<b>0.783979497</b>	0.24141524	0.700295	0.757202	0.077043	1

Analysis tool „Regression“:

Multiple R (correlation index)=0.882;

Regression equation:

$$Y_{x_{17},x_{18},x_{19},x_{20},x_{21}} = 3679930826 + 4,518128071x_{17} - 529657552x_{18} - 7956987,12x_{19} - 218,09482x_{20} + 147,9261921x_{21}$$

The regression equation in a standardized form:

$$t_Y = 0,241t_{x_{17}} - 0,493t_{x_{18}} - 0,237t_{x_{19}} - 0,481t_{x_{20}} + 0,497t_{x_{21}}$$

Factors X20, X21 showed almost the same degree of tightness with Y, preference was given to X20, X21 according to standardized regression equation

Group 6: suppliers. The greatest positive impact was noted by the factor X 23 (Cost of sales, RUB). (**+x 23**)

Analysis tool „Correlation“

	Y	X22	X23
Y	1		
X22	0.221823356	1	
<b>X23</b>	<b>0.58005743</b>	0.02704199	1

Analysis tool „Regression“:

Multiple R (correlation index)=0.635;

Regression equation

$$Y_{x_{22},x_{23}} = 1063417983 + 1,566683218x_{22} + 2,37451009x_{23}$$

The regression equation in a standardized form:

$$Y_{x_{22},x_{23}} = 0,212t_{x_{22}} + 0,374t_{x_{23}}$$

Group 7: public organizations. The greatest negative impact was noted on the factor X 26 (Drugs sale through the system of state procurement, RUB). (-X26)

Analysis tool „Correlation“

	Y	X24	X25	X26
Y	1			
X24	-0.403790491	1		
X25	-0.240539807	0.864862	1	
X26	<b>-0.649808705</b>	-0.19971	-0.39844	1

Analysis tool „Regression“:

Multiple R (correlation index)=0.859

Regression equation

$$Y_{x_{24},x_{25},x_{26}} = 4360172639 - 1635,48194x_{24} - 1886774395x_{25} - 4,15531778x_{26}$$

The regression equation in a standardized form:

$$t_Y = -0,297t_{x_{24}} - 0,302t_{x_{25}} - 0,835t_{x_{26}}$$

Group 8: owners and investors. The greatest positive impact was noted by the factor X 27 (Net asset value, RUB). (+X27)

Analysis tool „Correlation“

	Y	X27	X28	X29	X30
Y	1				
X27	<b>0.87471382</b>	1			
X28	0.78466433	0.814217	1		
X29	0.43151663	0.571469	0.613178	1	
X30	0.83645671	0.894376	0.95065	0.642188	1

Analysis tool „Regression“:

Multiple R (correlation index)=0.894;

Regression equation



$$Y_{x_{27}, x_{28}, x_{29}, x_{30}} = 543762459 + 0,39791087x_{27} + 17,11183815x_{28} - 0,804549x_{29} + 2,61150734x_{30}$$

The regression equation in a standardized form:

$$t_y = 0,656t_{x_{27}} + 0,141t_{x_{28}} - 0,177t_{x_{29}} + 0,229t_{x_{30}}$$

When estimating the parameters of the multiple regression model, the following conclusions are obtained:

The regression coefficient  $b_3 = 8376,767$  shows that with the increase in the number of potential patients receiving drug treatment per 1 person, the market capitalization of valuable booms will increase by 8377 rubles.

The regression coefficient  $b_4 = 5,149$  shows that with the increase in the volume of medicines wholesale, taking into account discounts to buyers, the market capitalization of valuable booms will grow by 5,149 rubles.

The regression coefficient  $b_{10} = -306718,966$  indicates that with the increase in the total number of clinical trials accredited by medical institutions for 1 unit of drug, the capitalization will decrease by 306,719 rubles.

The regression coefficient  $b_{12} = 1366638373$  reflects that with an increase in the share of exports in total revenue by 1%, the market capitalization of valuable booms will increase by 13,666,384 rubles.

The regression coefficient  $b_{21} = 23,648$  shows that with an increase in training costs and conference staff by 1 RUB., capitalization will increase by 24 RUB.

The regression coefficient  $b_{23} = 2,411$  reflects that with an increase in the cost of sales by 1 RUB., capitalization will increase by 2,411 RUB.

The regression coefficient  $b_{26} = -3,233$  shows that with the growth of products sales through the system of public procurement for 1 RUB., the capitalization will decline to 3 rubles.

The regression coefficient  $b_{27} = 0,445$  shows that with the growth of net assets of the organization by 1 RUB, the capitalization of securities will increase by 0.445 RUB.

As a result of using the "Regression" MS "Excel" analysis package according to the data of the studied organization, the values of balances were obtained, which reflect the deviations of the real values tion for the company's shares.

Since the average approximation error (approximation) does not exceed the critical value up to 15%, the regression model is recognized as qualitative.

As a result, the regression equation is obtained in a standardized form:

$$t_y = 0,360t_{x_3} + 0,801t_{x_4} - 0,599t_{x_{10}} + 0,727t_{x_{12}} + 0,069t_{x_{21}} + 0,381t_{x_{23}} - 0,649t_{x_{26}} + 0,734t_{x_{27}}$$

Since the standardized regression coefficients can be compared with each other, it can be concluded that the factors that have the greatest impact on the shareholder value are: the volume of medicines wholesale taking into account discounts to buyers, the net assets of the organization, the share of exports in total revenue, the volume of drugs sales through the public procurement system, the volume of clinical trials accredited by medical institutions.

## Conclusion

Effective interaction with stakeholders will allow to achieve growth of shareholder value of the company, thereby increasing the value of the business for all stakeholders and bringing additional income to owners.

The method of factor analysis can form the shareholder value of a pharmaceutical company under the influence of factor characteristics.

As a result of the correlation and regression analysis by stakeholder groups, the greatest impact on the following indicators was revealed.

Management strategy based on the stakeholder approach using the methods of economic analysis contributes to the competitive advantages of the world economy.

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## References

- Abrams, R. (2016) 'Business plan=100% Successful Business Plan: Secrets & Strategies: the strategy and tactics of effective business' / R. Abrams. - Moscow: Alpina publisher, 486 p.
- Abrams, J.B.(2010)' Quantitative Business Valuation' Wiley. 667 p.
- Bakhrushina, M. A. and Borodin, O. A. (2012) 'Problems of the initial valuation for investment property: a comparative analysis of the IFRS principles and accounting standards: international accounting' 23 (221), 2-12
- Barilenko, V. I., Bulyga R. P., Gerasimova E. B., Yefimov O. V. and Berdnikov, V. V. (2012) 'Introduction to business analysis'. Moscow. 195 p.
- Bernard Marr (2016) 'Key Performance Indicators: The 75 Measures Every Manager Needs to Know' A. Shavrin. - Moscow : Binom. Laboratory of knowledge, 344 p.
- Benninga, S.(1996) 'Corporate Finance: Valuation Approach'.McGraw-Hill Companies,Incorporated. 446 p.
- Freeman, R.E.,Wicks, A.C.and Parmar B. (2004) 'Stakeholder theory and the Corporate Objective Revisited, Organization Science, 15(3), 364-369
- Gretchin, V. V. and Polyanin, A. V. (2014) 'Conceptual regulations to use electronic administration in management. Economic and human Sciences, 11 (274), 112-118.
- International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, 2017, 2166-2180
- John, H.Hall(2002) Dissecting EVA: The Value Drivers Determining the Shareholder Value of Industrial Companies SSRN, 1-21.
- Kogdenko, V. G. and Melnik, M. V. (2012) 'Cost management of the company: value based management': Moscow, Unity – Dana. 448 p.

Sutyagin, V.Yu., Radyakova, Ya.Yu., Kolesnichenko, E.A. (2017) 'Systemic Crisis of the World Economy or the "Bourgeois Mode of Production"', *European Research Studies Journal*, Vol. XX, Issue 3(B), URL: [https://www.ersj.eu/index.php?option=com\\_content&task=view&id=928](https://www.ersj.eu/index.php?option=com_content&task=view&id=928)

Lytneva, N., Parushina, N., Polyenin, A., Kyshtymova, E. and Vertakova, Y. (2017) 'Methods of complex analysis in management of commercial organizations owned capital', *Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth*, 2126-2134

Parushina, N.V., Lytneva, N.A. and Parshina, O.V. (2017) 'Problems of professionalization in management and planning of sustainable development of agricultural entrepreneurial structures', *Russian Journal of Agricultural and Socio-Economic Sciences*, 11, 324-329

Polyenin, A., Golovina, T., Avdeeva, I., Dokukina, I., Vertakova, Y. 'Digital strategy of telecommunications development: Concept and implementation phases', *Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth*, 2017-January, 1792-1803

Rappaport, A. (2007) 'Creating shareholder value: A Guide for Managers and Investors', 11

Roche, J. (2008) 'The value of the company: from the desired to the actual' / Juliana Roche; transl. E. I. Niedbalska; scientific. edited by P. V. Lebedev. – Minsk: Gribovalle, 352 p.

Rozhnova O. V. and Markov, V. V. (2013) 'The use of fair value for the valuation of assets and liabilities of economic entities', *Izvestiya MGTU "MAMI".4(18)*. 355-359

Scott, M. (2005) 'Cost factors: the management for managers for revealing the levers to create the cost' / Transl. from English. – Moscow: ZAO "Olympus-Business".432.

Taylor, W. (2016) 'Just brilliant! What great companies do not do like all the rest' / W. Taylor — "Mann, Ivanov and Ferber (MYTH)»

Vertakova, Y., Plotnikov, V. and Leontyev, E. (2016) 'Methods of assessment the effectiveness of small business management in the telecommunications industry', *Proceedings of the 28th International Business Information Management Association Conference - Vision 2020: Innovation Management, Development Sustainability, and Competitive Economic Growth 2016*. 1391-1399

Vertakova Yu., Plotnikov V. (2016) 'Innovative and industrial development: specifics of interrelation', *Економічний часопис-XXI*, 156 (1-2), 37-40

Weiss, A. (2016) '101 the idea for the growth of your business: the results of the latest research on the effectiveness of people and organizations' / A. Weiss; translated by E. Vinogradova. - Moscow: Alpina publisher, 398 p.

## **Approaches to Assessing the Investment Attractiveness of the Regions through Interaction with Transnational Companies**

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### **Abstract**

In this article, the formation of the region's investment attractiveness through interaction with TNCs is considered. TNCs can play both a positive role and a negative one. TNCs, actually, working in the region, redistributing financial flows, act as one of the factors of shaping the investment attractiveness of the region. However, regions can also influence the activities of TNCs. This interaction is considered in the article.

**Keywords:** TNCs, investment attractiveness, investment attractiveness of the region, formation of investment attractiveness of the region

The subject of investment attractiveness, the approaches to its definition were repeatedly touched upon by the leading specialists engaged in regional studies. Evaluation of the development success depends on many diverse factors, ranging from natural to infrastructure.

At the same time, when assessing the investment attractiveness, one can speak not only about the factors themselves, but also about the emphasis on which to analyze them. So, when assessing the natural factor, we can talk about the presence of natural resources, and about the recreational relevance of this factor, or the recreational potential. In case of the evaluation of natural resources, we can talk about established confirmed and potential reserves, if we are talking about a recreational component, then its effective use directly depends on the management factor.

The management factor is one of the most difficult to assess. At one time, management quality assessment was proposed to be carried out through the most unprotected, economically active entities, such as small and medium-sized enterprises.

In this article, we would like to touch upon the interaction of regions and transnational companies through the formation of investment attractiveness of the regions. The result of this interaction is largely a result of the quality of the region's management.

In our opinion, the approaches to the evaluation of criteria and the selection of these criteria for assessing the investment attractiveness are (formed) dictated and determined in many ways by the same companies. Assessment of the investment attractiveness and creditworthiness is usually carried out by companies that are included in the system of interaction between the TNCs and in fact are the spokesmen for the ideas of that largest business. The TNCs are a certain regulator, redistributing investment emphasis. The authors of the work confirm the same point of view (Kosevich, Kozhina, 2016).

In addition, a significant aspect in the technology of assessing the investment attractiveness is expert opinions, through which the hard-to-formalize factors of the investment attractiveness are assessed, while experts are usually represented by the leaders and managers of large or transnational companies. The choice of this group as experts is largely justified by the experience gained by these managers in solving development problems typical for these companies, but it does not eliminate existing corporate standards, approaches dictated in turn by the size of the company, the possibilities, the available administrative and financial resources.

There are different criteria for classifying companies as transnational. For example, one of the authors cites the annual turnover, branches in other countries, existing share of foreign assets, the share of revenues from foreign markets as criteria. However, in our opinion, at present it is important for the TNCs not only to conduct international activities on an appropriate scale, but also to influence the standards of activity, the formation of development directions. (The largest TNCs in the world) In our opinion, to ensure the ability to influence the assessment of the investment attractiveness, companies must meet the following criteria:

1. Scale of operation

This factor implies the implementation of transnational projects related to the broad attraction of funds for the financing of international companies of subcontractors, the attraction of companies with developed competencies.

2. Involvement.

Involvement implies not so much the joint implementation of projects as the joint business management with incorporation of the existing competencies of partner companies into the technological process, involving the distribution of profit and costs of the project, or commitments to attract resources with a participation of a wide range of individuals, both project participants and a wide number of persons involved in the implementation. Interaction is of a frequent nature with a possible change of roles.

3. Media.

This factor is the ability to report to a wide range of persons the criteria of optimality, performance standards, indicative directions and priorities of activities. Important is not so much the report of the above indicators as the active formation of a professional and public point of view on aspects of various areas of the company's activity.

Defining the criteria for the investment attractiveness, we can conclude that the TNCs are in a privileged position; in many respects, they dictate the standards and criteria for the "success" of the regions.

In the process of analyzing the investment attractiveness, a quite natural question arises: to what extent are the applied criteria for assessing the investment attractiveness objective and adequate. Is there any distortion in the assessment of the investment attractiveness of the region due to the specificity of the interests of the persons conducting the assessment and the valuation methods used? Is there a shift in the objectivity of the criteria for assessing the investment attractiveness towards the interests of the TNCs and distortion of real indicators of the investment attractiveness?

If large companies have the opportunity to influence the assessment of the investment attractiveness of the region, then the regions should have such opportunities too. Neither many companies can influence the investment attractiveness of regions, nor all regions have the ability to influence the TNCs. In order to be able to influence the TNCs, regions should have critical factors that can influence the success of TNCs' development, or be crucial not only for the development, but also for the very existence and functioning of the company on its scale of operation.

Of the many factors of the investment attractiveness, in our opinion, the most important ones that are of critical importance for the TNCs, the possession of which gives regions the opportunity to influence, are:

#### 1. The market.

The higher the solvency of the population, the more attractive the market looks for companies. The companies specializing in products focused primarily on the population have an active competitive struggle for the solvent markets. This position is also confirmed by the authors of the report of the World Economic Forum. (World Economic Forum, 2010). This struggle is especially acute among companies specializing in retail. Providing preferences for one company in terms of access to the market can change the situation in the whole industry, because due to profits in one market, it dumps in other markets, adversely affecting competitors. Dependence of companies on the sales market and solvent population can be critical, so the RF ban on fish-canning products of the Baltic companies put them on the brink of survival. You can give other examples of pressure on the business through a ban on the presence on the market. This concerns German car manufacturers in relation to the North American market, the European banks in relation to the same market.

#### 2. Finances

The second group of factors is a Financial group, characterizing the possibility of providing regions with an investment resource. The TNCs, implementing large-scale projects, also need appropriate large-scale financing. Only powerful financial centers have the ability to meet such significant requests. Without the possibility of attracting serious financial resources, the TNCs will quickly lose their dominant position. The possibility of implementing large projects is a characteristic that actually distinguishes the TNCs from large companies. In fact, any TNC implements major investment projects. Thus, Gazprom is implementing the Nord Stream-2, the Power of Siberia, BP is implementing the Southern Gas Corridor. Competitive advantage here is the ability to carry out emissions, while the emission centers have significant preferences. In addition, the financial factor is estimated as a factor contributing to the increase in effective demand in the region.

#### 3. Resources

The resource factor is a factor that shows the dependence of companies on a particular type of resource. Given the overall limited resource base, this factor is crucial for mineral companies, however, this dependence can also be manifested for manufacturing, technology companies that use rare resources in their activities. Thus, for Boeing, it is important to have titanium and titanium alloys. There is also dependence on nickel, aluminum, copper, and other rare-earth metals. However, the critical dependence is demonstrated first of all by the mineral companies, so, Aramco company depends on oil deposits in the regions of Saudi Arabia, Gazprom company implements the main production on the Yamal Peninsula, the Russian Nickel company depends on the deposits on the Taimyr Peninsula.

#### 4. Infrastructure

This factor implies the existence of the created production facilities that allow companies, when using them, to significantly benefit either in the creation of added value, or by saving money significantly. A similar example is the Suez or Panama canals, port structure, and advantageous location of the enterprise. This factor may be the key from the point of effectiveness of the company.

To the infrastructure factor, in our opinion, it is necessary to add competencies, since the modern economy is largely a knowledge-driven economy to a large extent, and a number of world TNCs demonstrate the success of the work, relying on competencies. However, competencies were created and formed by previous experience, accumulated knowledge; this process was based on the relevant institution and infrastructure.

Based on the above, we can conclude that from the point of view of the company's development, its activities, there are regions the dependence on which is crucial for functioning. This dependence can be critical if not for the existence of the company, then for the scale of its activities, undoubtedly. We call these regions the core ones. Working in the core region, the TNCs are interested in the forecasted future, the absence of social and economic tension, and the high quality work of social and economic

institutions. The authors of the work singled out in addition such a factor as the trust of individuals and legal entities of power. Companies are not limited to conducting business only, but implement various socially significant projects. (Davydova, Rybnikova, 2015)

In other regions where there is no such rigid dependence, let us call them partner regions, the companies, operating functionally; limit their activity to doing business. Limiting own activities by the current legislation, and in case of the need of assistance, limiting it by the company's common standard approaches. The basis for the decision-making is the profit.

Other groups of factors of the investment attractiveness for the TNCs have less critical impact, to a greater extent characterizing the comfort of functioning, with the possibility of replacing regions in implementation of the company's goal, rather than the possibility of existence and development itself. In fact, there is a situation in which the transnational companies, by the results of their activities, form the investment attractiveness of the region, in effect redistributing financial and other resources to core regions, including funds received in the partner regions. At the same time, the formation of the investment attractiveness occurs not only through financial means, but also through the formation of an appropriate point of view, investment standards, and public opinion. In fact, we are talking about the seized profits from the partner regions being subsequently redistributed, and the beneficiaries of this distribution are the core regions.

In these conditions (in cooperation with the TNCs), the partner regions need to take measures to move from the partner region category to the core region category, which implies the creation or development of factors that are the key to successful operation of the TNCs or successful development. The main theories of business transnationalization analyze the company's activities under conditions of transaction costs, asymmetry and imperfection of information on investment opportunities in host countries. Given this circumstance, namely the incompleteness and imperfection of information available to the TNCs, the regions, even in the absence of any competitive advantages, have opportunities to involve the TNCs in their own economic orbit, which in the future makes it possible to create and develop key factors of the functioning and development of the TNCs. (Cuervo-Cazurra, 2012)

Based on the above, it can be concluded that one of the approaches to assessing the investment attractiveness of the region can be an assessment of its significance for the work of the TNC. The change in this significance, in fact, is a characteristic of the quality of management of the region, its investment attractiveness. This characteristic for partner regions is a qualitative indicator of management, showing the ability to integrate the region into the international schemes of the movement of goods and capital.

## References

- Cuervo-Cazurra A. Extending theory by analyzing developing country multinational companies: solving the goldilocks debate. *Global strategy journal* 2012. N.2 P.159
- Davydova E.Y. Rybnikova M.A. Formation of a strategy for attracting investment in the Russian economy. *The territory of science* 2015 N 2 p. 93-96
- Kosevich A.V. Kozhina V.O. Features of the modern stage of the world economy transnationalization. *The Newsletter of the International Institute of Economics and Law* 2016 N 1 (22) p.7-13
- Puchkov A. The largest TNCs in the world. [www.slideshare.net/Alexey-Puchkov/ss-11875759](http://www.slideshare.net/Alexey-Puchkov/ss-11875759)
- World Economic Forum. *The global competitiveness Report 2010-2011*. Geneva, 2010

## The Oxymoron of Digitalisation – A Study of Critical Factors

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### Extended Abstract

**Research question and objective:** The exploratory nature of this study is guided by the following research question: How do Small and Medium-sized Enterprises (SMEs) in Gävleborg County perceive the prerequisites and critical factors of digitalisation. Thus, this paper aims to map SME's digital maturity and their views on how to manage the opportunities and challenges brought about by digitalisation in order to foster their competitiveness in local, regional, national and international contexts. This research does not conceptualise digitalisation as merely a technology issue – as most commonly envisaged. Digitalisation is about something else; it is an approach and a capability to create and make available values by means of existing technology in a global, but the capability to exploit its benefit and manage its challenges varies on a national and sectorial basis. That is to say, the capability of utilising gathered data for something more than just reducing production costs. Thus, the basic tenet upon which this paper rests is a recognition that digitalisation is an oxymoron. This is due largely to the fact that as long as its development is based on technology that is equally available all over the world, but simultaneously hampered by the capability to utilize it, might from a Swedish perspective be viewed as a threat, but it is also regarded as a great opportunity.

**Theoretical lens** for this paper builds on triadic as an interactive learning process, and happens in the interaction between actors as open innovation postulates (Chesbrough, 2003; Chesbrough et al., 2006; Fagerberg, 1995; Van de Ven et al., 1999; Waluszewski, Baraldi, Linné & Shih, 2009) and that innovation is born out of reshuffling resources inside and outside of the firm and considers the mutual value creation between those involved. This triadic logic is based on the assumption that the methods of strategy and its central questions follow from the definition that business strategy is concerned with the match between the internal capabilities of the company and its external environment (Hunt and Lambe, 2000; Chandler, 1962; Hamel and Prahalad, 1989). Consequently this paper draws on *resource-based perspective* which views the firm as a unique bundle of assets and resources that, if utilised in distinctive ways, can create competitive advantage (Barney, 1991 & 1995; Conner, 1991; Peteraf, 1993). Thus, key resources determine competitive advantage of firm that the firm is endowed with. According to Conner (1991) and Barney (1999), a resource with the potential to gain competitive advantage must exhibit VRIN attributes: Valuable, Rare, Imperfectly imitable and Non-substitutable. These attributes are at parity with *Dynamic capability* perspective that depicts the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece, Pisano and Shuen, 1997). Dynamic capabilities can be distinguished from operational capabilities, which pertain to the current operations of an organization. Dynamic capabilities, by contrast, refer to “the capacity of an organization to purposefully create, extend, or modify its resource base” (Helfat et al., 2007).

**Methodology:** To tackle the overarching research question that this study aims to answer – how the unit of analysis and unit of enquiry perceive the prerequisites and critical factors of digitalisation - qualitative approach was deemed most appropriate. It will facilitate deeper understanding of the actors' interactions, sentiments and behaviours occurring during the research process (Borghini *et al.* 2010). To achieve this, in-depth interviews were conducted at the premises of the companies and University of Gävle with highly knowledgeable informants who viewed the transformation process



from strategic and business perspectives (Eisenhardt and Graebner, 2007). Material for the case studies was both retrospective and real-time, as the investigated were ongoing during the time data collection took place. However, these face-to-face interviews enable us to ask follow-up and clarify questions and to record non-verbal clues. Moreover, experience experience-based seminars and workshops on how SMEs will be able to manage critical factors, thereby creating competitive values in the business processes, with digitalisation as a starting point. They will furthermore be able to create an understanding of how and what it is that creates competitiveness in each critical factor. The transcribed interviews were analysed by delineating keywords from the data collected.

**Preliminary Findings:** digital maturity is relatively low among majority SMEs in Gävleborgs län. But many companies are able to see the benefits of being/becoming digital in their operations. At the same time, there is a noticeable difference between companies. To many SMEs, digitalization equals technology or IT, and they do not understand how their operations would be influenced by digitalization since they do not develop technology or provide IT-solutions. Furthermore, SMEs are insecure about digitalization than about internationalization and sustainability reporting. Internationalization is associated with new opportunities in foreign markets, and is hence welcomed by the companies. Digitalization, on the other hand, is associated with insecurity as well as costs being part of the picture.

**Implications:** Preliminary findings from our unit of analysis and enquiry show that in order to succeed with a digital strategy, some characteristics are decisive: Deep understanding of the customer and a genuine desire to innovate in the company. Successful companies are customer-centric, and have found cheaper and smarter means to link supply with demand. Thus, digitalization need not be viewed as merely technology, but as a better way to run a business. The concept “digital transformation” can comprise very different elements. Findings from this study show that, the digital change is simply a consequence of the fundamental relationship between supply and demand. By means of digitalization, we are able to match supply and demand smarter, simpler, and cheaper, as well as more efficiently. Digitalization facilitates streamlining of value-chains by simultaneously lowering the transaction costs.

**Concluding Remarks:** Although Swedish industry has been automatized in living memory, extant literature and activities carried out in this study show that the most cataclysmic change since the industrial revolution is currently being experienced in all facets of the society (Hagberg *et al*, 2016; Holmlund, et al., 2017; Fremont, Eklinder-Frick, Åge & Osarenkhoe, 2017). How can companies benefit from the new development? It is apparent in this study that digitalization being a part of the societal development, also affects SMEs directly and indirectly. Some SMEs want to become digital and they discern the potential use of this. However, for SMEs with limited resources, digitalization is associated with insecurity about what it actually entails and exorbitant costs. Consequently, the next phase of this study will play a major role because its goal is to create business models that enable smart specialization that enhance inter-organisational collaborations that enable gaining access to resources and knowledge that a single organisation or SME cannot mobilize alone. Hence, the subsequent phase will explore avenues to support SMEs in their quest to develop business models that describe: WHAT is offered, WHO the customers are, WHAT is in demand, WHICH values that are created and HOW this is best achieved, and HOW monetization of business model is optimized.

## References

- Barney, J. B. (1991), Firm resources and sustained competitive advantage, *Journal of Management* 17(1), 99 - 120.
- Barney, J. B. (1995), Looking inside for competitive advantage, *Academy of Management Executive*, 9, pp. 49 - 61.
- Barney, J. B. (1995), How a firm's capabilities affect boundary decisions, *Sloan Management Review*, 40(3), 137 - 145.

- Borghini, S., Carù, A., & Cova, B. (2010) Representing B to B reality in case study research- Challenges and new opportunities. *Industrial Marketing Management*, 39(1), 16-24.
- Chandler, A. D. (1962), *Strategy and structure: Chapters in the history of industrial enterprise*, Cambridge, MA: MIT Press.
- Chesbrough, H. (2003). The era of open innovation, *MIT Sloan Management Review*, 44(3), 35-41.
- Chesbrough, H., Vanhaverbeke, W. & West, J. (2006). *Open Innovation: Researching a new paradigm*, London: Oxford University Press.
- Conner, K. (1991), a historical comparison of resource-based theory and five schools of thought within industrial organisation economics: Do we have a new theory of the firm? *Journal of Management*, Vol. 17 (March), pp. 121-154.
- David, J., Teece, D.J., Pisano, G. & Shuen, A. (1997), Dynamic Capabilities and Strategic Management, *Strategic Management Journal*, 18(7), 509-533
- Eisenhardt, K.M. (1989), "Building Theories from Case Study Research", *Academy of Management Review*, 14(4),532-550
- Fagerberg, J. (1995). User–Producer Interaction, Learning and Comparative Advantage. *Cambridge Journal of Economics*, 19(1): 243–256.
- Fremont, V., Eklinder-Frick, J. Åge, L-J. & Osarenkhoe, A. (2017), “Interacting through boundary objects - Digitalization and resource interfaces”, 22nd CBIM (Center for Business & Industrial Marketing) Academic Workshop Hosted by Stockholm Business School, Stockholm University, 19-21 June 2017
- Hagberg, Johan, Sundstrom, Malin & Egels-Zandén, Niklas (2016), The digitalization of retailing:an exploratory framework, *International Journal of Retail & Distribution Management*, Vol. 44 Issue 7, pp. 694-712.
- Hamel, G. & Prahalad , C . K. (1989), To revitalize corporate performance, we need a whole new model of strategy: Strategic intent, *Harvard Business Review*, 67(3), 63 - 76.
- Helfat, C.E, Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H. Teece, D. & Winter, S.G. (2006), *Dynamic Capabilities: Understanding Strategic Change in Organizations*, New York: USA: Wiley-Blackwell.
- Holmlund, M., Strandvik, T. & Lähteenmäki, I. (2017), "Digitalization challenging institutional logics: Top executive sensemaking of service business change", *Journal of Service Theory and Practice*, 27(1), 219-236
- Hunt, S. & Lambe, J. (2000), Marketing’s contribution to business strategy: Market orientation, relationship marketing and resource-advantage theory, *International Journal of Management Reviews*, 2(1), 17 - 43.
- Peteraf, M. A. (1993), The cornerstones of competitive advantage: A resource-based view’, *Strategic Management Journal*, 14(3), 179 - 191.
- Prahalad, C. K. & Hamel, G. (1990), The core competence of the corporation, *Harvard Business Review*, 68(3), 79 – 91.
- Van de Ven, A., Polley, D., Garud, R. & Venkataraman, S. (1999) *The innovation journey*, New York:Oxford University Press.
- Waluszewski, A., Baraldi, E., Linné, Å. & Shih, T. (2009). Resource interfaces telling other stories about the commercial use of new technology: The embedding of biotech solutions in US, China and Taiwan. *The IMP Journal*, . 3(2): 86-123.

## **Sustainability of Development of Industrial Enterprises Depending on the Level of Their Manufacturability**

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### **Abstract**

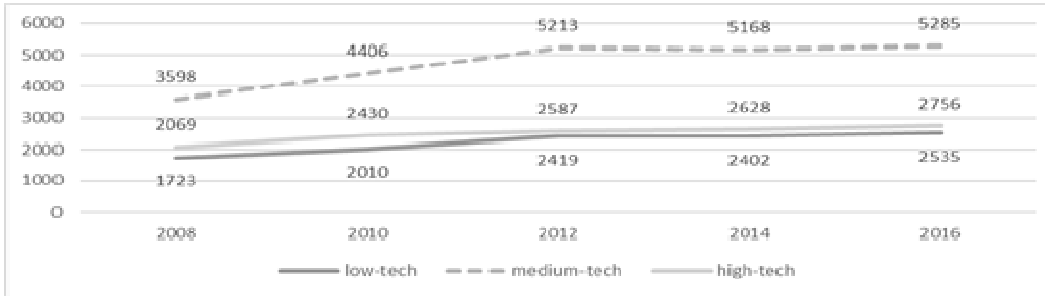
Today the structure of the world economy is undergoing through significant changes, due to the processes of globalization and the transition to a new technological order. In this regard, ensuring the sustainability of development of the key industries is becoming a vital task. At the same time, industrial sector is a dynamically linked system, and fluctuations in the sustainability of the development of some of its representatives can have a multiplicative effect on the others. First of all, these interrelationships are manifested in the division of industries by the level of manufacturability. The objective of this study is to determine key factors ensuring the sustainability of development of industrial sectors in terms of their level of manufacturability. The research methodology is based on cluster and correlation and regression analysis. The object of the study is Russian industrial sector. The official statistics on the development of Russian and world industry in open access serve as a base for the study. Cluster analysis clearly demonstrated that the distribution of industries depending on the level of their manufacturability in Russia is quite identical to the global classifications. Investigation of the factors ensuring sustainability demonstrated a clear increase in the dependence on innovation activity with an increase in the level of manufacturability, while with a decrease in this level, the dependence between the sustainability of development and the financial stability is growing. Thus, the tools for ensuring the sustainability of development for low-tech industrial enterprises should be based on the principles of increasing their financial stability, while the toolkit for ensuring the sustainability of high-tech industry representatives should be based on increasing the efficiency of generation and integration of innovative solutions (technological and non-technological).

**Keywords:** low-tech industry, high-tech industry, the intensity of innovation, sustainability of development.

### **Introduction**

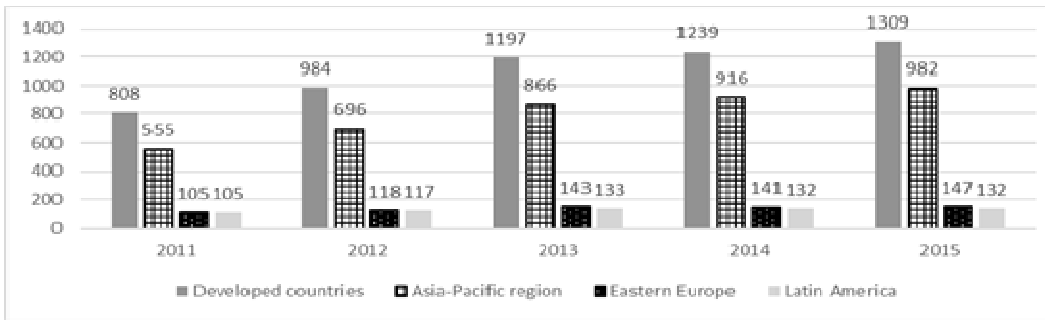
Despite the development of the concept of postindustrial economy, industrial sector continues to play a backbone role in the Russian economy with the "share in gross profit" of 23.87% and the "share in gross value added" of 29.3% [18]. The role of the manufacturing industry is particularly high: it is the leader in terms of "share in gross value added" (15.6% in 2017) and is one of the leaders in terms of "share in gross profit" (along with mining and trade).

Though the rapid development of the high-tech industry and the opinion of many researchers and practitioners that the future of industry lies solely in the field of high technologies, current statistics indicate the opposite. If we look through the shares of different sectors of industry in the technological structure of world exports in 1990 and 2016 [1], it can be seen that the share of the high-tech sector increased from 18 to 24%, while the low-tech sector (the share of research and development costs in which is less than 1.5% [17]) remained virtually unchanged (20% in 1990 year against 18% in 2016). Considering this indicator in absolute values (Figure 1), in recent years the growth rates of low-, medium- and high-tech sectors of the economy are practically the same (with almost 50% of the medium-tech sector in absolute terms).



**Fig 1: World industrial exports by sectors, 2008-2016, \$ bln.**

If we analyze the same indicator in terms of particular countries, groups of countries and regions (Figure 2), more than half of industrial exports in the low-tech sector fall on a group of economically developed countries, which casts doubt on the thesis that developed countries retain leading roles in the manufacturing industry only because of medium and high-tech sectors.



**Fig. 2: Industrial exports in the low-tech sector by grouping countries and regions, 2008-2016, \$ bln.**

However, in developing countries, low-tech industrial exports are also growing: by 76% over the last five-year period in the APR countries, by 26% in Latin America, and by 40% in Eastern Europe. However, according to industry specifics on a global scale, the situation will differ [1,2]:

In large countries, food and textile industries show marked differences in employment growth, factor productivity growth and sustainability growth. The food industry can sustain the increment in value added over a wide range of income, due to a combination of continued productivity growth at a rate similar to

GDP per capita growth and a very slow decline in employment. The textile industry demonstrates a similar development model with an increase in value added, but textiles have fewer opportunities to increase employment. The growth of this industry depends on the growth of labor productivity, but since it is stable or very slowly declining with high incomes, the decrease in the value added per capita is mainly due to the reduction in employment. The textile industry has great potential for creating jobs with low and medium incomes. Due to the limited space for productivity growth, the rapid decline in employment growth leads to a rapid decrease in the growth of value added as incomes in the country grow, which greatly limits the opportunities for technological changes in this sector.

In recent years, economically developed countries have a negative growth in the production of textiles, leather and footwear, which is explained by the fall in the share of employed. In the developing countries, on the contrary, both textiles and food have grown: the largest contribution to production growth is the energy factor, investment and labor factors play the smaller part, while the growth in factor productivity has made a positive contribution only in the textile industry. Overall, productivity has made less contribution to the growth of labor-intensive industries in developing countries than in high-income countries.

Generally, in low-tech industries, labor productivity growth rates are small for almost all developing countries but vary greatly in countries where the rate of growth in value added is high which are growing in a laborious manner. In developing countries, the variability in the growth rates of value added is also high, although it is lower than for productivity growth. For the moderately developed and highly developed countries, the productivity growth curve follows the S-shaped pattern: the variability in labor productivity growth rates gradually decreases with the growth of the country's economy. While the growth of labor productivity increases, the growth rate of value added falls monotonously, which means that as the level of development increases, it becomes more technologically productive. In the richest countries, there is a decline in employment, because productivity is growing faster than added value, that is, the variability in the growth of value added also falls with development, but only slowly.

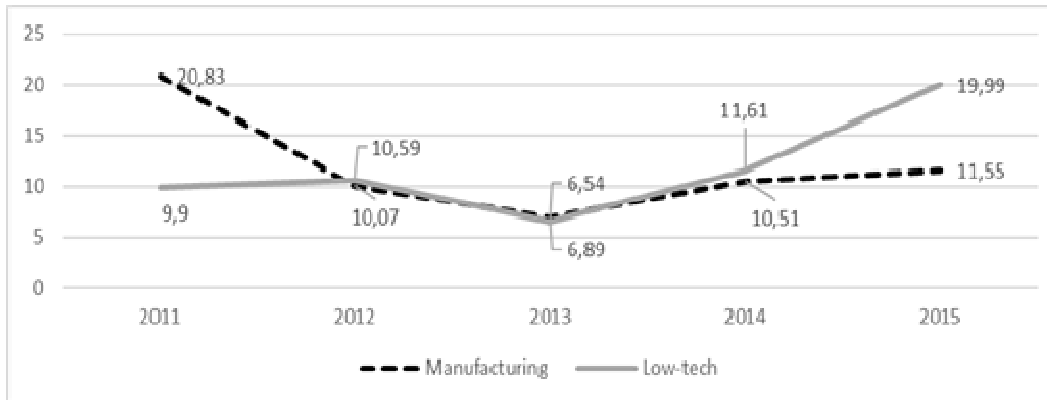
In developing countries, low-tech industries (especially those with a long-life cycle) are rapidly growing at the initial stages of development, but with the growth of the country's economic development as a whole, the growth of low-tech industries continues, but more slowly. The latter description accurately reflects the situation with the development of low technologies in Russia. The period that began in the Russian economy in 2010 and continues to the present time is traditionally understood as a recession marked by the following [3]:

1. The share of industrial production in Russia's GDP fell from 28.2% (2010) to 26.7% (2017);
2. GDP fell by 3.7% from 2015 to 2017;
3. Industrial production is falling starting from 2010, and the main contribution to the slowdown in production was made by the manufacturing industry. In 2013 the index of industrial production fell from 102.6% to 99.9%, and from then the growth of industrial production was replaced by a fall. As a result, in 2014, Russia ranked 32nd in the rating of industrial competitiveness with an index equal to 0.1211 (for comparison, Germany (1st place) - 0.5539; United States (3rd place) - 0.4374; China (5th place) - 0.3462) [4].

In Russia the worst situation is with such indicators as the volume of industrial production (added industrial value per capita); the volume of industrial exports per capita; the contribution of high- and medium-tech products in the added industrial value (only 28.08%, the rest goes for mining and low-tech).

Thus, today Russian economy and industry remain focused on commodities exports and low technologies that determine the country's competitiveness, which encourages Russian researchers, managers and practitioners to seek growth and development points in these sectors. And if the extractive industry is traditionally formulated in Russia as a factor of economic stability [5], low-tech industry is regarded as a subject of scientific discussions to a lesser degree.

The low-tech industry in Russia has shown more sustainable growth rates in recent years than the manufacturing industry as a whole (Figure 3), reaching 19.99% in 2015. Low technology accounts for 23.1% of the manufacturing turnover, the core of which is food production (17.7%).



**Fig. 3: Annual growth rates of manufacturing and low-tech industries, 2011-2015, %**

The economy of low-tech sector is characterized by a fairly high level of profitability in all industries, albeit lower than in extractive industries (24.9% in 2015). On the opposite, the profitability in almost all low-tech industries is growing grows at a fairly high rate over the analyzed period (while from 2011 to 2015 the profitability of the extractive industry fell by 6.5% and the same indicator of the manufacturing industry as a whole fell from 13.2% to 11.9%). A similar trend is observed in the indicator of "innovation activity": the low-tech industry is growing faster than the manufacturing industry as a whole (1.62% growth from 2011 to 2015 against 0.8% in manufacturing). All branches of the low-tech sector separately (except for pulp and paper production) also show a positive trend in the indicator of "innovation activity". However, Figure 4 shows a clear trend: if analyze the "innovation activity" and "product profitability" indicators in low-tech industries together, we can see that in those sectors where profitability is higher, innovation activity is lower and vice versa.



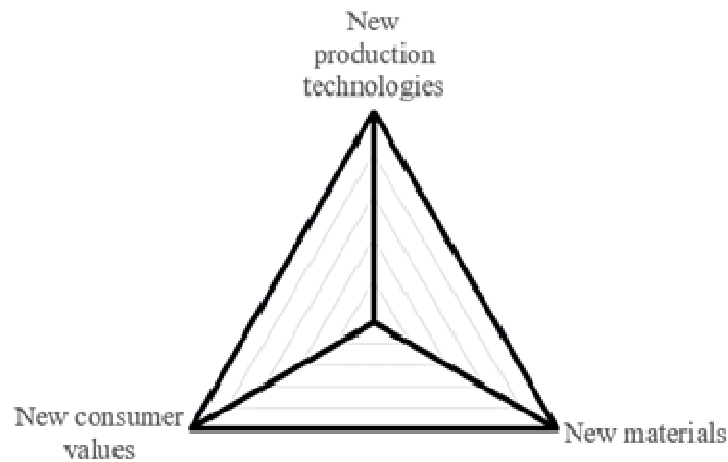
**Fig. 4: Innovative activity and profitability in low-tech industries, %, 2015**

This trend makes it possible to put forward a hypothesis that high profitability in low-tech is not a consequence of innovation activity of the industry, but on the contrary, innovative activity is a brake factor for achieving high profitability of the low-tech sector. At the same time, sales growth lags behind R & D spending gives opportunity to a number of authors [3, 6, 7, 8, 9] to assume that the innovative activity of the Russian low-tech sector is due to marketing reasons, not the adoption of innovations as a competitiveness factor that can be observed in economically developed countries [10, 11, 12]. The state supports investments in expansion of production in the form of subsidizing interest on loans, commercial expenses and other benefits. But the enterprises of the low-tech sector themselves do not support investments in R & D, and innovative developments are realized through the purchase of foreign technologies, intellectual property included in the "package" when acquiring equipment. In 2015, the import of technologies in the low-tech industry amounted to 912 million dollars (while exports only 96.3 million dollars).

The above analysis made it possible to establish that the low-tech industry today is the basis for the Russian economy. Consequently, the possibility of implementing long-term development strategies for both the country as a whole and the real sector of economy in particular as well as the development of medium- and high-tech sectors, is possible in Russia only with the sustainable development of low technologies.

## **Literature Overview**

The engine for enterprise development is always a certain qualitative change. Many researchers have investigated this issue with regard to industrial enterprises. Some of them singled out the process of integrating new production technologies (additive technologies, computer engineering, etc.), as key qualitative changes that ensure the sustainability of development of an industrial enterprise. In particular, Gressa & Kalafsky [13] investigate the influence of additive technologies on the global structure of demand and consumption. The subject of the study is the long-term economic effect from the introduction of additive technologies in production. Other researchers see the process of integrating new materials as a source of qualitative changes. In particular, Menshutina and Lebedev [14] focus on the capitalization of enterprises of high-tech industries, leading developments in the field of new materials. Slyusar [15] is conducting research on the future long-term effect of introduction of such materials in the production structure. Another group of researchers identify the process of creating new consumer values as a source of qualitative changes. For example, Leiserowitz [16] wrote about the relationship between sustainable production and consumption, and the achievement of a corresponding long-term economic, social and environmental result. The mentioned academic trends can be combined and presented in the form of a universal scheme (Figure 5).



**Fig. 5: Tetrahedron of qualitative changes**

This scheme consists of 3 areas, each of them is the direction of qualitative changes that can ensure the development of an enterprise. These three directions can be implemented in any combination. Consequently, there are 8 possible scenarios which fully reflect the set of directions of qualitative changes that can ensure the sustainability of the development of an industrial enterprise. However, the possibility of applying any scenario is differentiated depending on the level of manufacturability of an enterprise. Small research and development costs in the budget of low-tech enterprises lead to the limited quality of changes in accordance with possible scenarios. In order to confirm or refute this hypothesis, as well as to determine the ways and mechanisms for ensuring the sustainability of the development of low-tech industrial enterprises, it is necessary to investigate the influence of internal factors on the sustainability of development of industrial enterprises at various levels of manufacturability.

### **Research Methodology and Data Analysis**

Since the structure of the world economy is not homogeneous, the differentiation of industries in accordance with the level of manufacturability cannot be the same for different countries and regions. Therefore, it is necessary to cluster the selected set of manufacturing industries in Russia in accordance with the level of their manufacturability. For the purposes of this study, a necessary and sufficient sample was formed, represented by the following industries:

- Manufacture of pulp, wood pulp, paper, and cardboard;
- Chemical production;
- Manufacture of electrical machines and electrical equipment;
- Production of coke and petroleum products;
- Textile production;
- Manufacture of machinery and equipment (excluding production of weapons and ammunition);

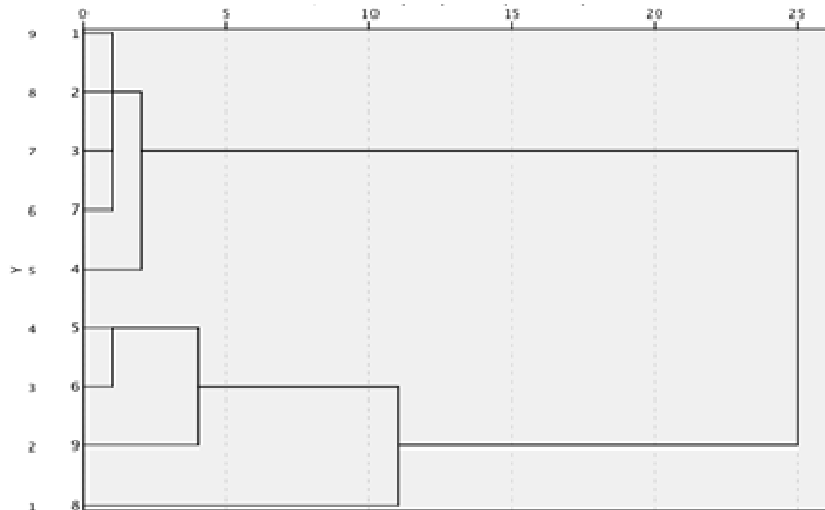


- Wood processing and production of wood and cork products, except furniture;
- Manufacture of food products, including beverages;
- Production of aircraft and space vehicles.

As a measure of clusterization, the specific weight of costs for technological innovation in the total volume of shipped goods was used (data for the period 2010-2016) [18]. Cluster analysis was performed in IBM SPSS 24. The method of hierarchical clustering was applied, because it was not known exactly in advance how many clusters could be obtained as a result of the research. To determine the number of clusters, the table "agglomeration schedule" (Table 1) and the dendrogram graph (Figure 6) were displayed. The Ward's method and Squared Euclidean distance were used as the clustering method and the measure of clustering respectively.

**Table 1: Agglomeration schedule**

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	1	2	,485	0	0	4
2	6	7	1,020	0	0	6
3	3	5	3,485	0	0	4
4	1	3	7,160	1	3	5
5	1	4	11,623	4	0	8
6	6	9	25,388	2	0	7
7	6	8	65,791	6	0	8
8	1	6	163,642	5	7	0



**Fig. 6: Dendrogram using Ward Linkage**

According to Table 1, it is clear that the largest jump in the coefficient indicating the distance between the clusters at the moment of unification appears at the final stage, which indicates the most probable existence of two clusters in the sample. It is also confirmed by the dendrogram. When the procedure of

hierarchical clustering with the already known number of clusters (two) was repeated, the following results were obtained (Table 2).

**Table 2: Division of nine industries into two clusters**

Industry	Cluster
Manufacture of food products, including beverages	1
Textile production	1
Wood processing and production of wood and cork products, except furniture	1
Manufacture of pulp, wood pulp, paper, and cardboard	1
Production of coke and petroleum products	2
Chemical production	2
Manufacture of machinery and equipment (excluding production of weapons and ammunition)	2
Manufacture of electrical machines and electrical equipment	2
Production of aircraft and space vehicles	2

Cluster analysis clearly showed the separation of nine industries into a cluster of "low technologies" (cluster 1), which includes food production, textile production, wood processing and pulp production; and a cluster of "high technologies" (cluster 2), which includes the production of coke and petroleum, chemical production, the production of machinery and equipment, the production of electrical machines and electrical equipment, the production of aircraft and space vehicles. This division corresponds to the global classification. [2] In order to confirm the division of the selected manufacturing industries into "low-tech" and "high-tech" (1st and 2nd clusters, respectively), the average values of the indicator "specific weight of costs for technological innovations in the total volume of shipped goods" were calculated within the clusters (for each year and average for the whole period under review, see Table 3).

**Table 3: Average values of the clustering index within the selected two clusters**

Nº	Period	Cluster 1 – «low-tech»	Cluster 2 – «high-tech»
1.	2010	0,6	2,4
2.	2011	0,9	2,3
3.	2012	1,0	2,6
4.	2013	0,9	3,5
5.	2014	0,7	3,4
6.	2015	0,6	3,3
7.	2016	1,0	3,6
Average 2010 - 2016		0,8	3,0

The data presented shows significant differences between the two clusters. For a final confirmation, ANOVA test was performed (see Table 4). The results of the Welch's Robust Tests of Equality of Means showed statistically significant differences between the mean values for the indicator for all the periods included in the study.

**Table 4: Results of the ANOVA test for two clusters**

		Sum of Squares	df	Mean Square	F	Sig.
2010	Between Groups	6,689	1	6,689	14,278	,007
	Within Groups	3,280	7	,469		
	Total	9,969	8			
2011	Between Groups	6,161	1	6,161	18,918	,003
	Within Groups	2,280	7	,326		
	Total	8,440	8			
2012	Between Groups	7,938	1	7,938	16,627	,005
	Within Groups	3,342	7	,477		
	Total	11,280	8			
2013	Between Groups	20,672	1	20,672	63,190	,000
	Within Groups	2,290	7	,327		
	Total	22,962	8			
2014	Between Groups	18,818	1	18,818	45,391	,000
	Within Groups	2,902	7	,415		
	Total	21,720	8			
2015	Between Groups	18,496	1	18,496	11,162	,012
	Within Groups	11,600	7	1,657		
	Total	30,096	8			
2016	Between Groups	19,078	1	19,078	3,330	,111
	Within Groups	40,098	7	5,728		
	Total	59,176	8			

Since global classification can also be presented in four groups of industries ("low-tech", "high-tech", "medium-high-tech" and "medium-low-tech") [2], an additional division of the analyzed nine industries into four corresponding clusters was performed (see Table 5).

**Table 5: Division of nine industries into four clusters**

Industry	Cluster
Manufacture of food products, including beverages	1
Wood processing and production of wood and cork products, except furniture	1
Manufacture of pulp, wood pulp, paper, and cardboard	1
Textile production	2
Production of coke and petroleum products	2
Manufacture of machinery and equipment (excluding production of weapons and ammunition)	3
Manufacture of electrical machines and electrical equipment	3
Chemical production	4
Production of aircraft and space vehicles	4

Hierarchical clustering in this case also confirmed the global classification, dividing all branches into a cluster of "low-tech" (cluster 1: food production, wood processing, pulp production), cluster "medium-low-tech" (cluster 2: textile production and production of petroleum products), cluster "medium-high-tech" (cluster 3: production of machines and equipment, production of electrical machines and electrical equipment), cluster "high-tech" (cluster 4: chemical production, production of aircraft and space vehicles). For the four clusters, the average values of the indicator "specific weight of costs for

technological innovations in the total volume of shipped goods" were also calculated within the clusters (for each year and average for the entire period under consideration, see Table 6).

**Table 6: Average values of the clustering index within the selected four clusters**

№	Period	Cluster 1 «low-tech»	Cluster 2 «medium-low-tech»	Cluster 3 «medium-high-tech»	Cluster 4 «high-tech»
1.	2010	0,6	1,2	2,3	2,9
2.	2011	1,0	1,4	2,0	2,8
3.	2012	1,1	1,6	2,5	2,8
4.	2013	1,1	2,3	2,8	3,9
5.	2014	0,9	2,1	3,3	3,3
6.	2015	0,5	1,5	3,5	3,7
7.	2016	1,2	1,0	5,4	2,8
Average 2010 - 2016		0,9	1,6	3,1	3,2

The analysis of the mean values shows that the division into four clusters is also justified, but there are a number of periods in which the values of the analyzed indicator are similar between the "nearest" clusters (cluster 1 and cluster 2 in 2016, cluster 3 and cluster 4 in 2014-2015). Nevertheless, the ANOVA test (the results of the Welch's Robust Tests of Equality of Means) showed statistically significant differences between the mean values for the considered indicator for all periods included in the study (from 2010 to 2016, see Table 7).

Thus, cluster analysis of the nine industries studied in terms of the "specific weight of costs for technological innovations in the total volume of shipped goods" (for 2010-2016) confirms the possibility of dividing the industries into two clusters ("low-tech" and "high-tech"), and into four clusters as well ("low-tech", "medium-low-tech", "medium-high-tech" and "high-tech") which proves the global classifications.

**Table 7: Results of the ANOVA test for four clusters**

		Sum of Squares	df	Mean Square	F	Sig.
2010	Between Groups	8,872	3	2,957	13,479	,008
	Within Groups	1,097	5	,219		
	Total	9,969	8			
2011	Between Groups	7,508	3	2,503	13,426	,008
	Within Groups	,932	5	,186		
	Total	8,440	8			
2012	Between Groups	9,068	3	3,023	6,832	,032
	Within Groups	2,212	5	,442		
	Total	11,280	8			
2013	Between Groups	20,797	3	6,932	16,010	,005
	Within Groups	2,165	5	,433		
	Total	22,962	8			
2014	Between Groups	20,103	3	6,701	20,720	,003
	Within Groups	1,617	5	,323		
	Total	21,720	8			
2015	Between Groups	29,064	3	9,688	46,937	,000

	Within Groups	1,032	5	,206		
	Total	30,096	8			
2016	Between Groups	56,608	3	18,869	36,739	,001
	Within Groups	2,568	5	,514		
	Total	59,176	8			

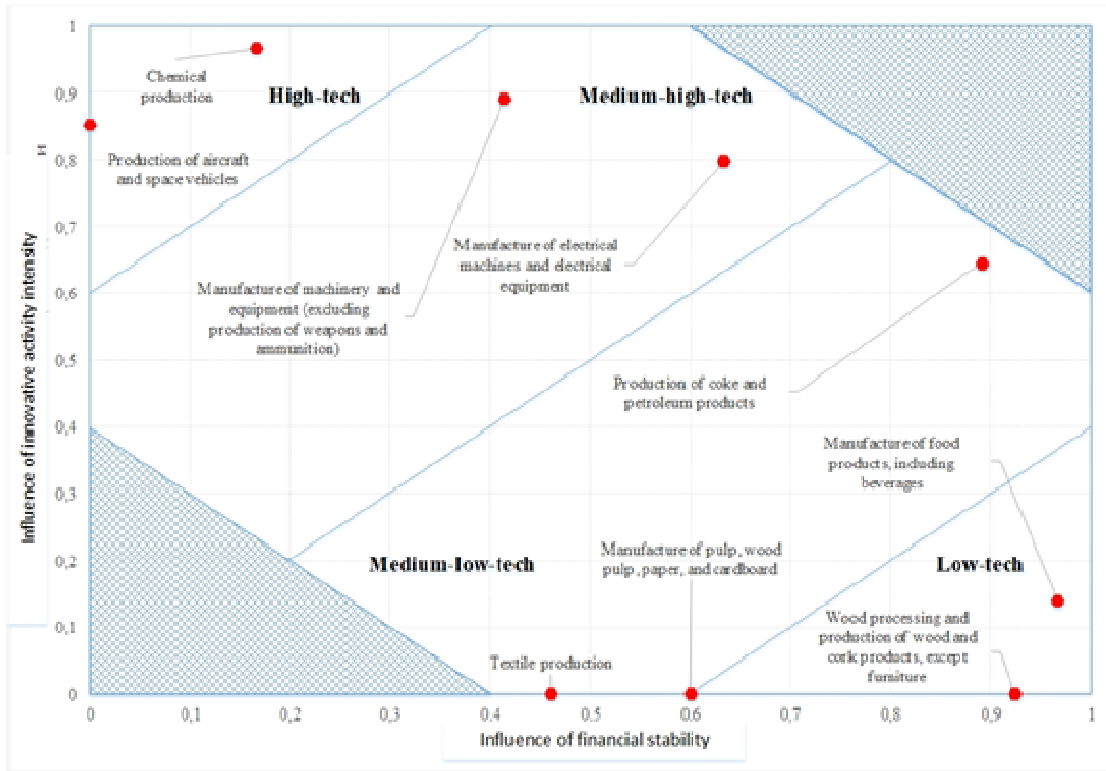
## Discussion

Representatives of each of the studied industries are characterized by their own internal factors that affect the sustainability of their development. It is the possibility of applying different development scenarios (Figure 5) that is the key difference between the sustainability of development of the representatives of the cluster "low-tech" and of the other clusters. The smallest share of spending on research and development implies comparative limited implementation of qualitative changes in accordance with possible scenarios. The key influencing factors of the internal environment for the low-tech are the characteristics of the company's financial stability, such as dependence on debt capital, solvency, etc. In the case of representatives of the "high-tech" cluster, the situation is the opposite. The development potential of representatives of these industries is based on the generation of innovations and their integration into the production process [19]. The key influencing factors of the internal environment for the high-tech are the intensity of innovation, expressed in both financial and non-financial indicators.

The allocated factors can be expressed by the following indicators:

1. Financial stability of an industrial enterprise:
  - a. a set of liquidity indicators;
  - b. a set of indicators of financial independence;
  - c. complex of indicators of turnover.
2. Intensity of innovative activity of an industrial enterprise:
  - a. share of costs for technological innovation in the total volume of shipped goods;
  - b. the share of personnel engaged in research and development;
  - c. the share of innovative products in the company's commodity nomenclature.

One of the key features of these indicators is the differentiation of their regulatory values depending on the industry, which makes it impossible to apply most of them in the current experiment. But the following indicators have the most uniform sectoral nature: the autonomy ratio as an indicator of the impact of financial stability (indicator X1) and the share of costs for technological innovation in the total volume of shipped goods as an indicator of the impact of innovation activity intensity (indicator X2). The resultant indicator in this case is the number of initiated insolvency (bankruptcy) cases in each of the investigated industries. It is necessary to consider the time lag of the influence of the allocated factors on the resulting indicator. The resulting correlation coefficients have, as a rule, a negative value, which confirms the nature of their influence on the stability of the development of an industrial enterprise. Figure 7 shows the distribution of the studied industries in accordance with the obtained indicators.



**Fig. 7: Distribution of researched industries in accordance with the established correlation of the number of initiated insolvency (bankruptcy) cases with the indices X1 and X2**

The investigated industries can be divided into 4 groups, duplicating the previously identified clusters. Also, it should be noted that none of the studied industries demonstrates both a high correlation value with the indices X1 and X2, and at the same time a low value. The graph clearly demonstrates the decrease in the impact of financial stability with the increase of the intensity of innovation activity at the same time, while the degree of technological manufacturability is growing.

### Conclusion and Directions for Future Research

Within this paper the differentiation of the nature of sustainability of development of an industrial enterprise depending on the level of its manufacturability is clearly demonstrated. Consequently, the toolkit for ensuring the sustainability of development should also vary. In the case of low-tech industrial enterprises, an exceptional role is played by the enterprise's ability to forecast possible unfavorable changes in the external environment, as well as to respond to them in a timely manner. Consequently, forecasting tools will be the key tools for ensuring the sustainability of development, whose tasks will include assessing the impact of external environment, determining the directions of influence, and forming recommendations for making a managerial decision on the necessary changes. In the case of high-tech industrial enterprises, the integration of innovation inevitably involves many kinds of risks. Therefore, one of the most relevant tools for ensuring sustainability of development in this case will be a tool assessing the level of prospects for possible innovative solutions.

## References

Industrial development report 2016: the role of technology and innovation in inclusive and sustainable industrial development. 2017. Vienna: United Nations Industrial Development Organization.

World Bank gross national income per capita operational guidelines and analytical classifications: UNIDO 2015, World Bank 2015. Access: <https://www.datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries>

Fomin E.P., Fomina N.E., Alekseev A.A., Konnikov E.A. 2017. Factors of competitiveness of Russian low-tech industry: entrepreneurship and innovation [Economic sciences], 5 (150): 29-34 (in Russian).

Competitive Industrial Performance Report 2014 // RESEARCHGATE. Access: [https://www.researchgate.net/publication/279175722\\_Competitive\\_Industrial\\_Performance\\_Report\\_2014](https://www.researchgate.net/publication/279175722_Competitive_Industrial_Performance_Report_2014)

Speech by V. Putin at the "Russian Energy Week - 2017" (in Russian).

Pakhomova N.V., Kazmin A.A. 2013. Interrelation of market structure and innovative activity of firms: new results taking into account technological possibilities of branches [Problems of modern economics]. 4 (48): 53-60 (in Russian).

Kudryavtseva T. J., Ivanova E. A., Kozlova E. A., and Skhvediani A. E. 2017. Pricing and assessment of competitiveness of innovative medical devices in the context of commercialization strategy. Academy of Strategic Management Journal, 16 (Specialissue, 1): 110-122.

Rudskaia I. 2017. A regional innovation system: Formation features and growth areas (case study: St. Petersburg). In the Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, pp: 541 - 547.

Sokolitsyn A. S., Ivanov M. V., and Sokolitsyna N. A. 2017. Corporate Governance: Estimating Resource Providing Corporative Industrial Organization. In the Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, pp: 191-200.

Hirsch-Kreinsen H. 2008. "Low- technology": a forgotten sector in innovation policy. Technol. Manag. Innov, vol. 3, is. 3.

Demidenko D. S., Malinin A. M., and Litvinenko A. N. 2017. Optimization of the enterprise value on the basis of value added. In the Proceedings of the 30th International Business Information Management Association Conference IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, pp: 3017-3021.

Liliyana F. N., Svirina A. A., Polina O. R., Garanin D. A., Lukashevich N. S., and Leventsov V. A. TechnoMOOC development of the basis of remote lab access. In the Proceedings of the 2017 International Conference "Quality Management, Transport and Information Security, Information Technologies" (IT&QM&IS), pp: 680-684.

Gressa D.R., Kalafsky R.V. 2015. Geographies of production in 3D: Theoretical and research implications stemming from additive manufacturing. *Geoforum*, March 2015.

Menshutina N.V., Lebedev E.A. 2016. Highly porous nanostructured materials for high-tech industries [Bulletin of the chemical industry] (in Russian).

Slyusar, V. 2009. Metamaterials in Antenna Engineering: History and Basic Principles. [Electronics: Science, Technology, Business], 7: 70-79 (in Russian).

Leiserowitz A.A. 2006. Sustainability values, attitudes, and behaviors: a review of multinational and global trends. *Annual Review of Environment and Resources*, 31: 413-444.

Hatzichronoglou, T. 1997. Revision of the High-Technology Sector and Product Classification, OECD Science, Technology and Industry Working Papers, No. 1997/02. doi: 10.1787/13433730-7632.

Russian Federation: Federal State Statistics Service // The share of costs for technological innovation, in the total volume of shipped goods, works performed, services of industrial production organizations. Access: [www.gks.ru/free\\_doc/new\\_site/business/nauka/pril4/13.xls](http://www.gks.ru/free_doc/new_site/business/nauka/pril4/13.xls)

Gkypali A., Tsekouras K. 2015. Productive performance based on R&D activities of low-tech firms: an antecedent of the decision to export? *Economics of Innovation and New Technology*, 24, 8: 801-828.



## **Estudio Prospectivo De Felicidad Organizacional Aplicado En Una Universidad Pública Chilena**

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### **Abstract**

La Gestión de la Felicidad es un tema tan ajeno en Chile, ya que se ha aplicado con éxito en empresas del sector privado, sin embargo, el sector público carece de estas medidas, sobretodo en el ámbito académico. El objetivo de esta investigación, ha sido estudiar prospectivamente dimensiones de felicidad organizacional, aplicada a funcionarios de una Universidad pública chilena. Para esto, se ha utilizado la metodología de matrices de impacto cruzado. Primero, ha sido necesario realizar un cuestionario a un número de funcionarios, lo que arrojó el insumo inicial de diagnóstico. Luego, previa generación de escenarios futuros, consultar a expertos acerca de la probabilidad de ocurrencia de tales eventos. Los resultados obtenidos han servido para generar los tres escenarios más probables de ocurrencia, lo que ayudó a entender la realidad organizacional en un contexto de Felicidad.

**Palabras clave :** Felicidad, Desarrollo Organizacional, Metodología Prospectiva, Dirección Estratégica.

### **Introducción**

Toda organización desea alcanzar objetivos estratégicos, que se traducen en la búsqueda de un desempeño superior de sus utilidades, rentabilidad, imagen positiva, productividad, percepción de los clientes entre otras.

Por esta razón, las organizaciones han comenzado a incorporar métodos de gestión innovadores con el propósito de generar un crecimiento integral de quienes participan en ella. Uno de ellos, ha sido la gestión de la felicidad, pues se ha entendido que las personas están sometidas a un vertiginoso cambio del entorno y a los efectos de nuevos escenarios. De hecho, la Organización Mundial de la Salud, de acuerdo a lo declarado por Moccia (2016), estima que para el año 2020 la depresión será la segunda causa de inhabilidad laboral.

Las instituciones de educación pública no están ajenas a este nuevo escenario, debido a que juegan un rol clave en la generación de capacidades competitivas de los países, el crecimiento económico y su desarrollo social, según lo afirma Parra et al (2010).

En esencia, la aplicación de nuevos modelos admite la posibilidad de ser implantados en organizaciones tanto públicas como privadas, que apunten a articular y fortalecer una temática original como es la Felicidad Organizacional. Entonces, realizar investigación prospectiva relacionada a esta temática, se puede traducir en un insumo inicial para esa toma de decisiones.

### **Fundamentos Teóricos**

Rojas y Marín (2010), afirman que la felicidad se puede entender como el estado que conjuga el bienestar y los sentimientos positivos, y que lleva a la persona a sentirse auto-realizada y a

posicionarse con una actitud diferente ante la vida. De acuerdo con Salazar et al (2009), un trabajador es un ser biosicosocial, pues su salud, bienestar y felicidad son partes integrantes del trabajo.

La gerencia de personas entonces, debe escalar hacia una evolución de oferta de valor organizacional para sus trabajadores, según lo planteado por Velásquez y Rascón (2012). De esta manera, la gestión de la felicidad puede aportar en esta etapa. De hecho, Seligman (2016) reconoce que la felicidad debía contener aspectos relacionales y sociales.

En este contexto y frente a necesidades humanas de búsqueda de sentido y felicidad, se empuja a las organizaciones a comprometerse con estrategias de cambio y felicidad organizacional en sus programas, para así, alinearlos a los diferentes procesos y sub-procesos tradicionales, como lo declara Gutiérrez (2015).

La Felicidad Organizacional, según Fernández (2015), apunta a la generación de capacidades de una organización para ofrecer y facilitar a sus trabajadores las condiciones y procesos de trabajo que permitan el despliegue de sus fortalezas individuales y grupales.

Una manera de aportar, es la investigación prospectiva que da la posibilidad de visualizar las tendencias dominantes. De acuerdo con Arapé (2000), la técnica de matrices de impacto cruzado es una herramienta prospectiva con una lógica básica subyacente, que consiste en hacer una exploración del futuro sobre la base de una serie de eventos (Ei), los cuales pueden o no ocurrir dentro del horizonte temporal considerado. El vocablo evento se refiere a una hipótesis que puede o no ser cierta.

La metodología aludida se refiere a un enfoque analítico de las probabilidades de un acontecimiento en un conjunto pronosticado. La mayoría de los eventos y evoluciones de alguna manera se relacionan con otros eventos y evoluciones. Numerosas ocurrencias aparentemente distintas y sin relación, permiten o dan lugar a eventos y evoluciones singulares. Esta interrelación entre los eventos y evoluciones se denomina Impacto cruzado, según lo plantea Cañizares (2015).

## **Dimensiones De Felicidad Organizacional**

Esta investigación, ha sido realizada utilizando las dimensiones PERMA propuestas por Fernández (2015), cuya definición comprende seis componentes que son: Positividad, Sentido, Relaciones confiables, Desarrollo profesional y personal, Compromiso y Logro y reconocimiento.

Positividad se refiere a la posibilidad de experimentar emociones positivas, más que las emociones negativas; Sentido, como el grado en el que una persona comprende el significado de su vida y siente que tiene un propósito; Relaciones confiables, como el cultivo y cuidado de relaciones significativas con otros; Compromiso, como un conjunto de intereses y focos con los que las personas se comprometen con ideas, propósitos y causas significativas para ellos. Logro y reconocimiento, representa las metas alcanzadas, para desarrollar habilidades y sentirse competentes. Así mismo, el Desarrollo Profesional y Personal, donde la organización se hace cargo de generar estrategias y prácticas que permitan el crecimiento y desarrollo de sus colaboradores, como una preocupación ética, de acuerdo con Tarragona (2013).

Esta estructura de dimensiones es la fuente primordial de medición prospectiva que será aplicada a funcionarios de la Universidad, pues son dimensiones susceptibles de ser gestionadas en el futuro.

## **Metodología**

Haciendo uso de la metodología de matrices de impacto cruzado propuesto por el Programa de Prospectiva Tecnológica de la Secretaría de las Naciones Unidas para el Desarrollo Industrial, presentado por Arapé (2000), se confeccionó en una primera instancia, un cuestionario basado en las seis dimensiones, para desplegar la base fundamental en la formación de escenarios futuros. Cada

dimensión considera afirmaciones, que deben ser respondidas basándose en una escala Likert, donde, (1) se expresa con un completamente en desacuerdo y (4) con un completamente de acuerdo.

El cuestionario, fue elaborado basado en instrumentos que cuentan con validación académica internacional como ha sido el cuestionario de Gallup, expuesto por Rath et al (2010); el cuestionario Utrecht Work Engagement Scal, expuesto por Spontón et al (2012); el cuestionario Overall Life Satisfaction Index, expuesto por Zegers et al (2009) y el cuestionario Personal Well-being Index, expuesto en Oyanedel et al (2015).

En esta instancia, el panel fue compuesto por funcionarios Académicos y No Académicos de la Universidad, en calidad de planta o contrata, en 2 campus diferentes de la institución. El cuestionario, fue entregado a 471 personas de las cuales se recibió respuesta de 303 funcionarios cumpliendo con la muestra esperada. Esto, dentro de un período de cuatro meses.

Como una segunda etapa y producto del procesamiento de las respuestas recibidas, se dedujeron las variables clave para construir los escenarios futuros. Bajo esta premisa, la elaboración de eventos según el diseño de argumentos a favor y en contra, ha permitido tener una visión panorámica de los problemas que fueron detectados en el diagnóstico. A su vez, ha permitido captar situaciones con un mayor nivel de detalle, presentando un sistema con interdependencia, cuyos elementos se encuentran articulados unos con otros. En consecuencia, se identificaron las dimensiones que ejercían mayor influencia sobre las demás, para los próximos diez años.

El panel de expertos fue seleccionado de acuerdo a características especiales, siendo éstos funcionarios de la Universidad con cargo de directivos de departamentos, con años de servicios, con estudios relacionados al ámbito de la gestión de empresas, psicología y desarrollo organizacional y con nivel de estudios de Postgrado. Esta etapa, fue apoyada con entrevistas que ayudaron a orientarlos en el horizonte temporal que abarca el estudio. El número total de participantes expertos fue de 12 personas, cuya mirada prospectiva se conformó para el año 2026.

Para el análisis de los datos, se ha utilizado el software de Sistema de Matrices de Impacto Cruzado denominado SMIC. Esta herramienta, ha permitido determinar las probabilidades simples, condicionadas y de combinaciones, que teniendo en cuenta las interacciones entre ellas, ha relacionado los eventos elaborados.

Como no basta con identificar un conjunto de eventos, cuyas combinatorias de ocurrencia especifiquen los escenarios futuros posibles, fue necesario establecer las interrelaciones en cuanto a la ocurrencia entre unos y otros. Entonces, se estudió cómo la ocurrencia de un evento dado ( $E_i$ ) puede impactar positiva o negativamente en la ocurrencia de otro evento dado ( $E_j$ ). Esto, ha permitido determinar el escenario más probable de los escenarios contrastados.

En consecuencia, al haber seis eventos caracterizadores de ese futuro posible, hubo  $2^6$  escenarios. Es decir, 64 escenarios probables. Lo anterior, se refiere a probabilidades condicionadas, que se expresan en la ecuación (1):

$$P\left(\frac{E_i}{E_j}\right) \text{ O } P\left(\frac{E_i}{-E_j}\right) \quad (1)$$

De acuerdo a Arapé (2000), el proceso prosigue, pues es necesario suministrar por parte del grupo de expertos, las probabilidades simples de ocurrencia de cada uno de los eventos identificados como los eventos caracterizadores de ese futuro explorado. Tales probabilidades suelen anotarse de la forma que muestra la ecuación (2):

$$P^0(E_1), P^0(E_2), P^0(E_3), P^0(E_4), P^0(E_5), \text{ y } P^0(E_6) \quad (2)$$

Por lo tanto, las probabilidades condicionadas entre esos eventos, quedaría expresado como se muestra en la ecuación (3).

$$\begin{aligned}
 &P^0\left(\frac{E_2}{E_1}\right), P^0\left(\frac{E_3}{E_1}\right), P^0\left(\frac{E_4}{E_1}\right), P^0\left(\frac{E_5}{E_1}\right), P^0\left(\frac{E_6}{E_1}\right), \\
 &P^0\left(\frac{E_1}{E_2}\right), P^0\left(\frac{E_3}{E_2}\right), P^0\left(\frac{E_4}{E_2}\right), P^0\left(\frac{E_5}{E_2}\right), P^0\left(\frac{E_6}{E_2}\right), \\
 &P^0\left(\frac{E_1}{E_3}\right), P^0\left(\frac{E_2}{E_3}\right), P^0\left(\frac{E_4}{E_3}\right), P^0\left(\frac{E_5}{E_3}\right), P^0\left(\frac{E_6}{E_3}\right), \\
 &P^0\left(\frac{E_1}{E_4}\right), P^0\left(\frac{E_2}{E_4}\right), P^0\left(\frac{E_3}{E_4}\right), P^0\left(\frac{E_5}{E_4}\right), P^0\left(\frac{E_6}{E_4}\right), \\
 &P^0\left(\frac{E_1}{E_5}\right), P^0\left(\frac{E_2}{E_5}\right), P^0\left(\frac{E_3}{E_5}\right), P^0\left(\frac{E_4}{E_5}\right), P^0\left(\frac{E_6}{E_5}\right), \\
 &P^0\left(\frac{E_1}{E_6}\right), P^0\left(\frac{E_2}{E_6}\right), P^0\left(\frac{E_3}{E_6}\right), P^0\left(\frac{E_4}{E_6}\right), P^0\left(\frac{E_5}{E_6}\right).
 \end{aligned} \tag{3}$$

De esta manera, se ha procedido a la simulación estocástica de ocurrencia o no ocurrencia de los eventos, a través de la generación de números pseudo-aleatorios. A partir de los resultados obtenidos, se ha hecho un ajuste a los valores asignados a priori, para con ello obtener los llamados valores ajustados tanto de las probabilidades simples como de las probabilidades condicionadas, las que generaron las simulaciones de los 64 escenarios probables que había que concretar, para determinar la probabilidad de ocurrencia de cada uno de ellos.

Tal ajuste, se ha efectuado con la utilización de un generador de números aleatorios entre 0 y 1. En este caso, si P es la probabilidad inicial de ocurrencia (simple) de este evento: entonces, si el valor Random generado es  $\leq P$  el evento ocurre. En caso contrario, no ocurre.

## Resultados

De las dimensiones estudiadas, ha resultado la elaboración de las hipótesis sobre la evolución de las variables clave, bajo el contexto de escenarios. Para esta evaluación, se presenta la opinión de expertos en base a probabilidades simples, cuyos resultados se muestran en la Tabla 1.

**Tabla 1: Probabilidades simples netas según valoración de expertos**

Evento	Probabilidad
E <sub>1</sub>	0,528
E <sub>2</sub>	0,57
E <sub>3</sub>	0,511
E <sub>4</sub>	0,526
E <sub>5</sub>	0,492
E <sub>6</sub>	0,508

De acuerdo a la metodología y aplicando un cuestionario con escenarios de ocurrencia o no ocurrencia del evento, se muestran los resultados en las Tablas 2 y 3 respectivamente. Esto, con la ayuda de la valoración de expertos.

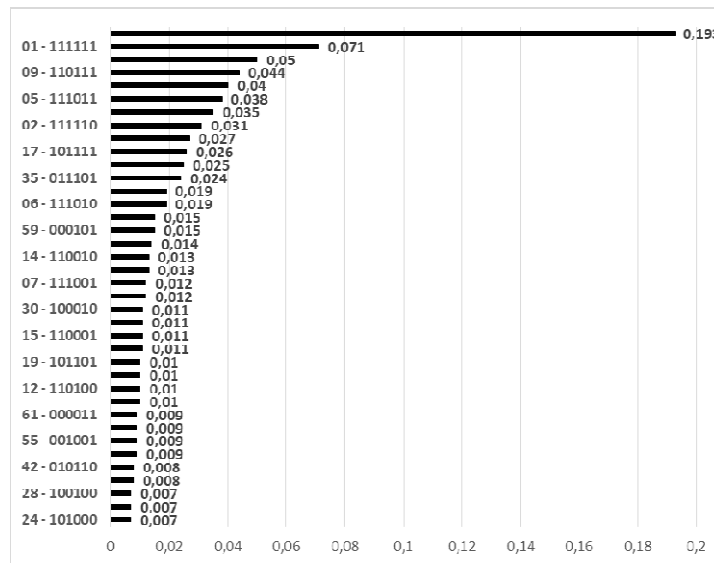
**Tabla 2: Probabilidades condicionales netas, en el caso que ocurre el evento**

i	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>
E <sub>1</sub>	0,528	0,69	0,659	0,676	0,64	0,644
E <sub>2</sub>	0,746	0,57	0,57	0,75	0,741	0,746
E <sub>3</sub>	0,638	0,7	0,7	0,659	0,653	0,641
E <sub>4</sub>	0,674	0,692	0,692	0,526	0,636	0,686
E <sub>5</sub>	0,596	0,639	0,639	0,593	0,492	0,623
E <sub>6</sub>	0,62	0,665	0,665	0,662	0,644	0,508

**Tabla 3: Probabilidades condicionales netas, en el caso que no ocurre el evento**

i	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	E <sub>4</sub>	E <sub>5</sub>	E <sub>6</sub>
E <sub>1</sub>	0	0,312	0,391	0,363	0,42	0,408
E <sub>2</sub>	0,374	0	0,351	0,371	0,405	0,389
E <sub>3</sub>	0,369	0,261	0	0,347	0,374	0,377
E <sub>4</sub>	0,361	0,307	0,378	0	0,421	0,362
E <sub>5</sub>	0,375	0,296	0,349	0,378	0	0,356
E <sub>6</sub>	0,383	0,3	0,373	0,337	0,377	0

El resultado ha arrojado calificaciones disímiles, pues se identificaron escenarios con probabilidades más elevadas que otras. Estos, se detallan en los gráficos de las Figuras 1 y 2.



**Fig. 1: Histograma de probabilidad de los escenarios.**

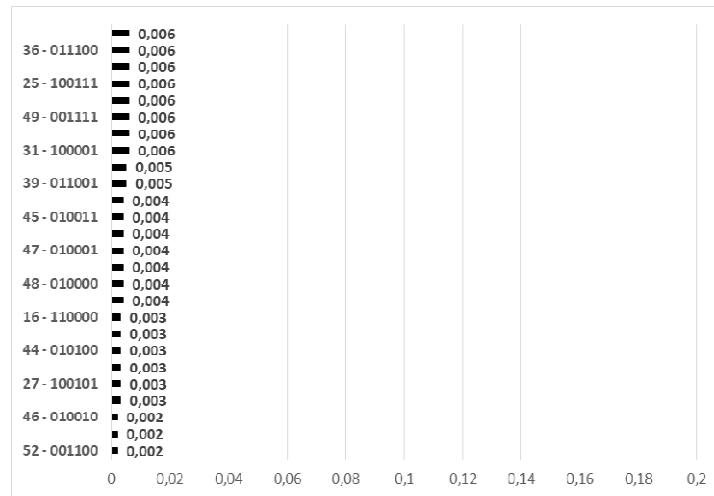


Fig. 2: Continuación Histograma de probabilidad de los escenarios.

De acuerdo a lo mostrado anteriormente en las Figuras 1 y 2, el escenario 64 tendría una probabilidad de 0,193, donde no se cumplen ninguna hipótesis. Éste, ha sido considerado el peor escenario, debido a que implica un ambiente que demandaría pocos retos y que contribuiría a prolongar el enfoque tradicional.

En cambio, en el escenario 01 se cumplirían todas las hipótesis con una probabilidad de 0,071, escenario escogido como el preferido. Esto, fundamentado por la calidad de las opiniones y por encontrarse en un rango validado por otros estudios prospectivos, de acuerdo a lo planteado por Arapé (2000). Este escenario, cuenta con una baja probabilidad, pero hipotéticamente en esta situación se encontraría un grato ambiente laboral, con una excelente gestión interna y en donde existe una alta cooperación entre funcionarios.

Por otro lado, el escenario 03 es donde se cumplen todas las hipótesis, con una probabilidad de 0,05, excepto  $E_5$ . Este escenario, se ubica con la más alta probabilidad, pero sus condiciones implicarían que no se cumpla  $E_5$ , lo que conllevaría limitaciones en el desarrollo de la gestión de la felicidad.

Los resultados arrojan las probabilidades máxima y mínima que pueden afectar a cada escenario, lo cual se muestra en los gráficos de las Figuras 3 y 4.

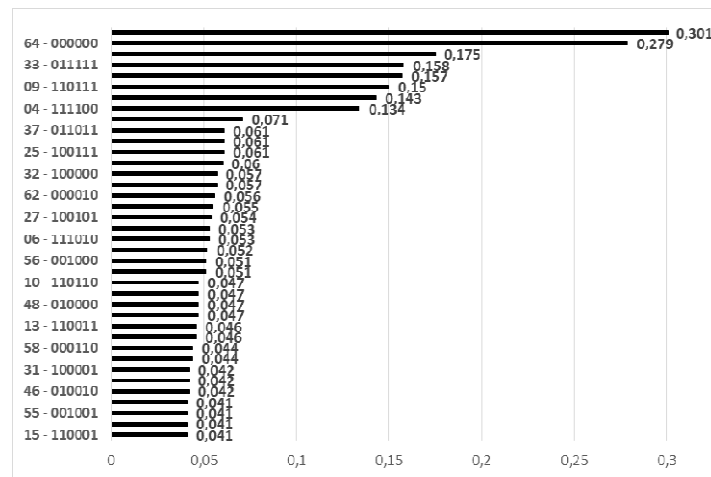
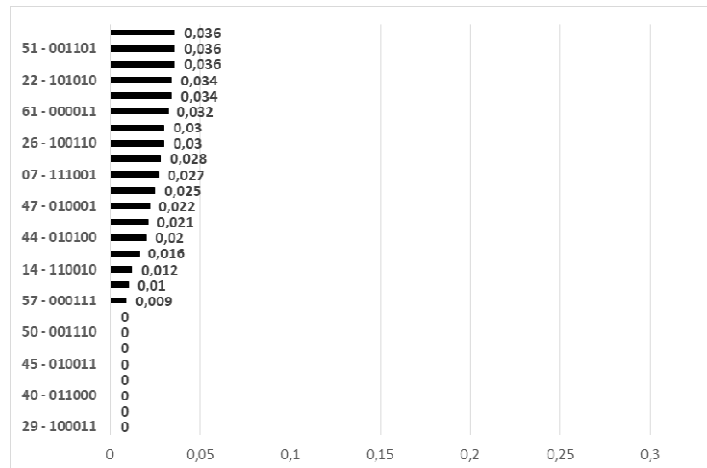
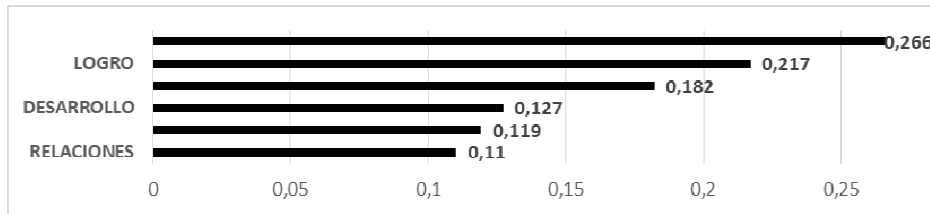


Fig. 3: Probabilidades máximas y mínimas que pueden afectar a cada escenario.



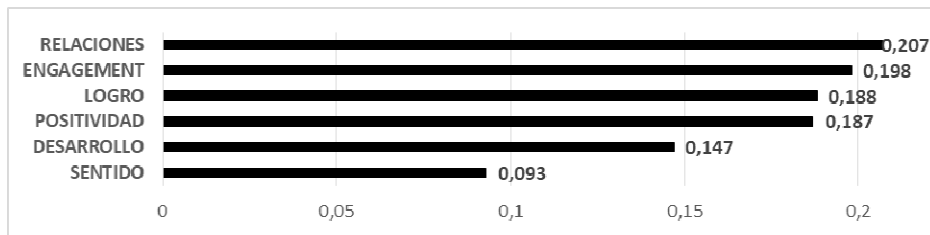
**Fig. 4: Continuación probabilidades máximas y mínimas que pueden afectar a cada escenario.**

En el gráfico de la Figura 5 se muestra la sensibilidad de las hipótesis de acuerdo a su influencia. Esto, basado en los datos de la Tabla 1, demostrando que las dimensiones más influyentes funcionan como mecanismos de arrastre para la ocurrencia de las demás dimensiones y por ende, sus hipótesis.



**Fig. 5: Histograma de sensibilidad de influencias.**

De los mismos resultados de la Tabla 1, se ha podido deducir acerca de la sensibilidad de dependencia entre dimensiones, pues bajo un concepto de elasticidad se muestra las dimensiones que dependen de las más influyentes para que éstas ocurran. Esto, se muestra en el gráfico de la Figura 6.



**Fig. 6: Histograma de sensibilidad de las dependencias.**

Los esfuerzos de gestión en esta materia deberían enfocarse en las más influyentes para que éstas, empujen a las más dependientes. Estas gráficas, muestran resultados cuantitativos, para aportar a la temática de Felicidad Organizacional y reflexionar acerca de la resolución de problemas organizacionales.

**Conclusiones**

Los resultados obtenidos del estudio prospectivo, han permitido sacar conclusiones derivadas de la percepción de una gran parte de los funcionarios de la Universidad, a través de la medición de la ocurrencia de ciertos escenarios para los próximos 10 años.

Si bien, los antecedentes del estudio revelan que la Universidad no ha desarrollado una gestión de la felicidad, se deduce que se encuentra en un estado favorable para desarrollarla. Las dimensiones estudiadas se encuentran en condiciones óptimas, lo que facilitaría la incorporación de un modelo para ser alineado a objetivos estratégicos de la Universidad.

La dimensión con mayores índices positivos es la dimensión Sentido Organizacional, puesto que los funcionarios declararon que su trabajo tiene un propósito, el cual se complementa con el de otros y hacia un fin superior. Al ser una organización educacional se entiende que el propósito es colaborar en la formación de futuros profesionales.

La dimensión con peores indicadores es la de Relaciones Confiables. Si bien, se declara que dentro de la Universidad se encuentra un alto grado de respeto entre funcionarios, y se percibe colaboración, no confían en las personas que lo rodean. Hoy, no hay prácticas para incentivar y mejorar las relaciones interpersonales.

El interés de los funcionarios en este estudio, cooperó en la identificación del diagnóstico lo que facilitó la elaboración de las 6 hipótesis que finalmente, con la valoración de los expertos, condujeron a la determinación de los 3 escenarios más probables donde: Se cumplen todas las hipótesis (Escenario 01 con probabilidad de probabilidad 0,071); Donde se cumplen todos los escenarios menos E5 (Escenario 03 con probabilidad de 0,05); Y donde, no se cumple ninguna hipótesis (Escenario 64 con una probabilidad de 0,193), considerado esto como el peor escenario.

Son resultados de investigación relevantes para los investigadores, puesto que se ha demostrado a través de la teoría, que la gestión de la Felicidad en la organización está en una etapa muy incipiente. Más aún, si se deduce que la temática no es muy conocida y que no existen políticas de gestión de personas en el desarrollo del bienestar en Instituciones de educación pública.

Creemos que esta investigación, contribuye al avance de dejar en evidencia, la opinión de la percepción de dimensiones de Felicidad Organizacional, que se pueden gestionar en algún momento. Si así fuera, se podría mejorar los ambientes de bienestar, considerando la ardua tarea que corresponde a la misión de una Universidad pública.

Si bien, existió una limitación importante al no poder tomar la encuesta a un cien por ciento de los funcionarios, la muestra lograda cumple con la representatividad necesaria que exige la metodología.

## Referencias

Arapé, J. (2000) Manual De Metodologías Tomo IV: Técnica De Las Matrices De Impacto Cruzado, Programa de Prospectiva Tecnológica para Latinoamérica y el Caribe, ONUDI.

Cañizares Arévalo, J. D. J., Cárdenas García, M., and Velasco Burgos, B. M. (2015) 'Impacto de la violencia política en la gobernabilidad del municipio de Ocaña (Colombia)', *Pensamiento & Gestión*, (39), 102-121.

Fernández, I. (2015) Felicidad Organizacional: Como construir felicidad en el trabajo, Ediciones B, Santiago de Chile.

Gutiérrez Torres, V. M. (2015) Principios de la Felicidad Organizacional, Ediciones Granica, Buenos Aires.

Moccia, S. (2016) Felicidad en el trabajo, *Papeles del Psicólogo*, 37(2).

Oyanedel, J. C., Vargas, S., Mella, C. and Páez, D. (2015) 'Validación del índice de bienestar personal (PWI) en usuarios vulnerables de servicios de salud en Santiago, Chile', *Revista médica de Chile*, 143(9), 1144-1151.



- Parra, P. A. M., Serna, M. D. A. and Botero, S. B. (2010) 'Análisis del valor agregado del conocimiento. Caso aplicado en una institución de educación superior'. *Revista Facultad de Ciencias Económicas*, 18(2), 95-105.
- Rath, T., Harter, J. K. and Harter, J. (2010) 'Wellbeing: The five essential elements', Simon and Schuster.
- Rojas, H. Y. A. and Marín, D. E. S. (2010) 'El papel de las emociones positivas en el desarrollo de la Psicología Positiva', *Wimbu*, 5(1), 65-83.
- Salazar, J., Guerrero, J., Machado, Y. and Cañedo, R. (2009) 'Clima y cultura organizacional: Dos componentes esenciales en la productividad laboral', *Revista Cubana de Información en Ciencias de la Salud (ACIMED)*, 20(4), 67-75.
- Seligman, M. E. (2016) *Florecer: La nueva psicología positiva y la búsqueda del bienestar*. Editorial Oceano.
- Spontón, C., Medrano, L. A., Maffei, L., Spontón, M. and Castellano, E. (2012) 'Validación del cuestionario de Engagement UWES a la población de trabajadores de Córdoba', Argentina. *Liberabit*, 18(2), 147-154.
- Tarragona, M. (2013) 'Psicología positiva y terapias constructivas: una propuesta integradora'. *Terapia psicológica*, 31(1), 115-125.
- Velázquez, R. P. and Rascón, O. C. A. (2012) 'La felicidad como elemento del desarrollo sostenible desde la organización', *Revista del Centro de Investigación de la Universidad la Salle*, 10(37), 83-94.
- Zegers Prado, B., Rojas-Barahona, C. and Förster Marín, C. (2009) 'Validez y confiabilidad del índice de satisfacción vital (LSI-A) de Neugarten, Havighurst & Tobin en una muestra de adultos y adultos mayores en Chile', *Terapia psicológica*, 27(1), 15-26.

## **Chosen aspects of building purchasers' experiences in the context of marketing partnership with offerors**

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### **Abstract**

The article is of theoretical and empirical character. In the theoretical part, chosen aspects concerning creating by offerors the experiences of final buyers were presented on the basis of the results of cognitive-critical analysis of world literature. So far, they were analysed mainly with reference to shopping behaviours. They were rather not researched from the point of view of non-shopping behaviours, which suggests the existence of a gap in this field. In the article it was strived to define the specificity of buyers' experiences and their significance in fulfilling by them the role of partners to offerors. In the empirical part, the results of primary questionnaire research were presented. The opinions of respondents that concern their market experiences, especially those connected with offerors' actions within the range of stimulating buyers and taking advantage of their willingness to cooperate, were analysed. The results show that respondents did not have positive experiences, which makes it difficult to establish marketing partnership between offerors and purchasers.

### **Keywords:**

building experiences, purchaser, offeror, marketing partnership

### **Introduction**

The needs and expectations of contemporary consumer can be satisfied thanks to buying products. It is connected with fulfilling the traditionally understood role of a buyer, or by participating in creating products, which in turn is connected with fulfilling the role of a prosumer that is the so called active buyer or active consumer [Alderete, 2017, pp. 1-12; Bednarz, 2017, pp. 7-24] . However, in both cases, market activity is undertaken which manifests itself in shopping behaviours or/and non-shopping behaviours that encompass communication and creative behaviours. Each of them contributes to appearing different experiences [Kumagai, Nagasawa, 2015, pp. 24-34], the evaluation of which done by a buyer enables them to become a marketing partner of an offeror or hinders establishing partnership relations between them.

On the base of the results of cognitive-critical analysis of world literature one can state that purchasers' experiences and their creating were analysed rather with reference to shopping behaviours so far. They were not researched in the context of other forms of market activity of buyers, which proves the existence of a cognitive and research gap in this field. Striving to reduce it

through defining the specificity of buyers' experiences and their significance in fulfilling by them the role of partners to offerors was the main objective of this article. In the process of its realization, apart from the abovementioned method of cognitive-critical analysis of subject literature used in the theoretical part, in the empirical part a method of questionnaire research (to collect primary data) and the method of quantitative analysis (to analyse the data gathered) were used. Their results allowed to verify two research hypotheses formulated on the base of effects of theoretical analysis.

## Literature review

“Experience” can have many meanings and be interpreted in the different way. The definition presented in the dictionary [<https://dictionary.cambridge.org...>] includes four interpretations of this category:

- 1) the whole of information and skills gathered on the basis of observations and own experiences,
- 2) event, especially a sad one, which influenced somebody's life,
- 3) evoking or reconstructing a phenomenon in artificial conditions,
- 4) the whole of the process of perceiving the reality or the whole of facts perceived.

Among different groups of experiences market experiences can be indicated. In relation to these experiences gathered by buyers (both passive and active ones), the first of the abovementioned ways of interpretation can be applied above all. Moreover, it seems that the second way of interpreting the “experience” applies to them as well, especially in case of using by offerors an incorrect attitude towards buyers. If they at least came across unethical or controversial actions of producers, tradesmen or service providers, then it could be spoken of their participation in market situations that they experienced as unfavourable for themselves, which could influence their future decisions connected with shopping and non-shopping behaviours that encompass communication and creative behaviours which create together prosumeric behaviours. These decisions may concern behaviours taken up towards a specific offeror or a make or market behaviours understood in general.

The second interpretation can also refer to events perceived by purchasers as favourable. Such situations also contribute repeatedly to existing specific changes in the life of a given person who can much more actively participate in market actions, taking them up together with other buyers or/and together with offerors. They are the foundation of establishing partnership relations between offerors and purchasers, which could not have rather any chance to appear in case of existing in the past events perceived by consumers as unpleasant.

The next key category from the point of view of approach presented in this article is “partner”. According to the dictionary definition [<https://dictionary.cambridge.org...>] a partner means: a person treated equally as themselves or co-participant of a game, conversation, play or some undertaking.

Both ways of interpreting the notion 'partner' are strictly connected with fulfilling by a buyer the role of a partner in relation to an offeror. Since, on the one hand, they have to prove through their actions that they consider the buyer as an equal subject (the first meaning) with whom it is worth undertaking mutual marketing undertaking (the second meaning). While, on the other hand, a buyer must have the feeling of being treated equally and assess positively actions done by an offeror with whom it is worth cooperating since it will bring profit to both parties.

In the author's opinion cooperation of offerors with buyers on a truly partnership basis can be identified with a stage of development of creating experiences' process. It appeared after the stage of creating experiences of buyers by offerors through taking up actions from the field of experiential marketing and relationship marketing that refers to buyers or actions from the field of consumer experience management. Then, it comes to mutual creating of mutual experiences that enrich the collection of experiences of each of the partners and thus contribute to enlarging their marketing potential. It becomes their mutual potential.

It is worth noting that experiential marketing, similarly to many other notions from the field of management or marketing, is interpreted in many various manners, starting from its identifying with the process of recognising and fulfilling the buyers' needs [Smilansky, 2009, pp. 3-36], through its identifying with the process of creating buyers' emotions [Snakers, Zajdman, 2010], ending with its interpreting as a method of communication between an offeror and buyers [You-Ming, 2010, pp. 189-209]. Each of the ways of understanding this concept that were mentioned does not include experiences as a common property of offerors and buyers which is worth creating and using in cooperation. The second mentioned concept which is relationship marketing, according with its name, bases on creating relationships with various stakeholders [Lo, 2012, pp. 91-94], also with buyers, but it does not include their participation in creating an offer together with the offeror. Consumer experience management serves to evoke buyer's engagement on various fields: rational, emotional, sensory, physical and spiritual [Cantone, Risitano, 2011, pp. 1-33]. In this concept experiences are considered a buyers' "property". Thus, it does not concern as if a higher level of mutual relationships that is connected with treating market experiences as co-property of offerors and buyers.

Purchaser's experiences can be perceived positively or negatively. Regardless of the attitude towards given experience it emerges during an interaction between an offeror and a buyer. That's why it can't exist without mutual relations. A close connection between buyer's experiences and relationships between them and an offeror is emphasized among others by Gentile, Spiller and Noci [2007, pp. 395-410]. The mutual relations can be of direct or indirect character when a product or non-product elements of marketing offer are a carrier of a specific load of values transferred by an offeror to a buyer. However, in practice, also specific emotions and associations appearing in buyer's consciousness and sub-consciousness refer not only to the product that the buyer had a contact with, but simultaneously to its offeror, including producer and possibly tradesman that participated in making a product accessible for a receiver. Establishing and maintaining partnership relations

between them requires positive perception of previous experiences by a buyer. Therefore their importance is so great.

It must be underlined that so far in the subject literature, actions from the field of creating buyers' experiences were analysed above all in relation to shopping behaviours, so within the frames of a traditional approach to the buyer's role as a subject making mainly shopping decisions. In such an aspect they were presented among others by K. Kumagai and S. Nagasawa [2015, pp. 24-34] (in the context of attitudes towards luxury products); T. Gilovich, A. Kumar and L. Jampol [2015, pp. 152-165] (they stated that experiences connected with buying give more satisfaction than material products bought); B. Schmitt, J. J. Brakus and L. Zarantonello [2015, pp. 166-171] (they claimed that experiences connected with buying should not be treated in opposition to material products but as an advantage gained parallel with them); E. Pantano and C.-V. Priporas [2016, pp. 548-555] (in the context of influence of using the mobile technologies in retail on buyers' experiences); M. Bakator and S. Borić [2017, pp. 11-19] (in the context of influence of promotional actions and the quality of product bought on buyers' satisfaction, treating these feelings as shopping and non-shopping experiences); S. N. Mohd and S. N. Mohd [2017, pp. 8170-8174] (in the context of purchase decisions related to green products), etc. But purchasers' experiences weren't analysed in the context of their non-shopping activity, especially creative one, undertaken within the frames of partnership with offerors.

Therefore, one can notice that a cognitive gap and a research gap exist in this field. Striving to decrease them was the basis to make an attempt to achieve the following research aims:

- 1) identify respondents' experiences that concern actions taken up by offerors within the frames of activating buyers and using their spontaneous activity;
- 2) compare experiences of respondents who represent various age groups;
- 3) specify the character and the range of respondents' activity which reflects their marketing potential as key partners for offerors.

In the process of realization of these research aims, two research hypotheses were verified:

H1 – the respondent's age is the feature differentiating the way of perceiving their market experiences connected with offerors' actions undertaken to activate purchasers;

H2 – there is a relationship between the lack of trust towards offerors' promotion actions and the intensive use of the Internet.

### **Characteristic of empirical research**

While striving to achieve research aims and to verify hypotheses formulated, primary research were conducted. They were realized within the frames of the research project 2013/11/B/HS4/00430 financed by NCN. The due research were conducted on the area of the whole Poland in the third quarter of 2015 among 1200 people representing Polish adult final buyers. Primary data were gathered by means of a questionnaire research method. For statistical analysis

there were 1012 questionnaires qualified that were correctly completed. Non-random selection of research sample was applied. In M. Szreder's opinion, striving to apply a random selection is not always necessary. What is more, often and often, non-random selection can be treated as a chance for the researcher [Szreder, 2010, pp. 168-174).

In the population researched 61% were women. Among respondents 24,5% people were 18-30 years old; 26,1% - 31-43 years old; 24,8% - 44-56 years old and 24,6% - over 56 years old. The research was of direct character that requires a personal contact of an interviewer with respondents. It enabled to achieve a high value of the return rate of fully completed questionnaires. Primary data gathered were used in further stages of the research process, which consisted in conducting an analysis of average notes, analysis of semantic profiles and analysis of Spearman's correlation.

In case of Spearman's correlation it is conventionally accepted, in the statistical analysis, to apply the following scale [Analiza korelacji]:

- 1)  $r_{XY} = 0$  variables are not correlated,
- 2)  $0 < r_{XY} < 0,1$  faint correlation,
- 3)  $0,1 = < r_{XY} < 0,3$  weak correlation,
- 4)  $0,3 = < r_{XY} < 0,5$  average correlation,
- 5)  $0,5 = < r_{XY} < 0,7$  high correlation,
- 6)  $0,7 = < r_{XY} < 0,9$  very high correlation,
- 7)  $0,9 = < r_{XY} < 1$  almost complete correlation

Statistical analysis of primary data gathered during questionnaire research was conducted by means of Statistica 8.0 packet.

## Results of empirical research

On the base of the data presented in table 1 one can state that respondents did not have positive experiences in contacts with offerors. According to almost 1/3 of people researched, offerors encourage buyers effectively to cooperate, and this percentage in case of representatives of the youngest and the oldest age group was even lower and did not exceed 30%. Relatively slightly better the people questioned assessed other aspect of relations with offerors. It is proved by the fact that over 39% of people researched confirmed that they listen to suggestions of buyers and use their spontaneous willingness to cooperate. Relatively the best in this role offerors were assessed by the youngest respondents. This was the only age group, in case of which the percentage of such answers exceeded 40%. However, it does not change the fact that the majority of the people questioned in both analysed areas assessed offerors negatively, which indicates negative experiences in this field.

The biggest difference, if it comes to negative opinions of offerors, appeared in case of people aged 18-30. Between the percentage of the people questioned who think that offerors do not encourage purchasers effectively and the percentage of the people questioned in this group who claim that offerors do not listen to buyers' opinions there was as much as 13,3% difference, although in

both cases the percentage of these people exceeded significantly 50%. Then, a conclusion can be drawn that by the majority of the people questioned, regardless of the age group, offerors were perceived as subjects that not only did not undertake appropriate actions heading to stimulate buyers but also at the same time they did not take into consideration buyers' opinions. Such an image of offerors did not let the respondents feel as their marketing partners.

Table 1. Respondents' opinions reflecting their experiences in relations with offerors (in %)

Age group	Offerors encourage buyers effectively to cooperate in preparing an offer		Offerors listen to buyers' opinions and use their spontaneous willingness to cooperate	
	yes	no	yes	no
Total	31,1	68,9	39,2	60,8
18 – 30 years old	28,9	71,1	42,2	57,8
31 - 43 years old	34,7	65,3	39,6	60,4
44 - 56 years old	32,7	67,3	38,2	61,8
Over 56 years old	27,8	72,2	36,7	63,3

Source: own study.

Respondents assessed relatively better activating actions taken up by offerors that concern encouraging buyers to communication behaviours connected with expressing opinions and asking questions as for products and to creative behaviours concerning designing chosen elements of promotion (table 2). Among 5 analysed areas of activating buyers, average notes in their case amounted at least 3,00 and with reference to communication behaviours they were slightly higher than in case of creative behaviours connected with taking part in creating promotional stimuli. On the other hand, worse were assessed activating actions undertaken by offerors in the field of encouraging buyers to participate in designing products and their marketing attributes and in designing elements other than the product and promotion. It is worth noticing, that for each of the 5 analysed areas, the percentage of unambiguously positive answers didn't exceed 8%. Moreover, the percentage of answers which definitely denied undertaking by offerors particular actions was significantly higher (in case of the worst assessed area it was over 2,5 times higher than the percentage of definitely positive answers).

Conclusions drawn earlier became thus confirmed. Hitherto experiences of the people questioned were not positive, which certainly contributed to the feeling of lack of equality in relations with offerors. Taking into consideration the criterion of respondents' age it can be noticed that offerors were assessed better by people representing both younger age groups than representatives of both older age groups (figure 1). Thus a division of the people questioned is visible into two groups encompassing two age groups each. Therefore the statement from the hypothesis H1 is true in case of the people questioned.

Table 2. Statements reflecting respondents' experiences connected with activating buyers by offerors

Statements assessed	Symbol	Indications in %					Average note
		5	4	3	2	1	
Offerors encourage buyers to undertake actions from the field of creating/modifying products and their attributes, e.g. brand, packaging, etc.	D1	5,82	29,71	23,00	32,97	8,29	2,91
Offerors encourage buyers to undertake actions from the field of designing promotional actions, e.g. advertising slogan or campaign, etc.	D2	5,33	33,86	24,19	29,12	7,40	3,00
Offerors encourage buyers to design / modify other elements of their offer apart from products or promotional actions	D3	4,44	22,41	29,42	32,08	11,45	2,76
Offerors encourage buyers to express opinions / giving advice connected with their products	D4	7,40	36,62	25,96	22,80	7,11	3,14
Offerors encourage buyers to ask questions concerning their products	D5	6,12	33,66	25,86	25,27	8,98	3,02

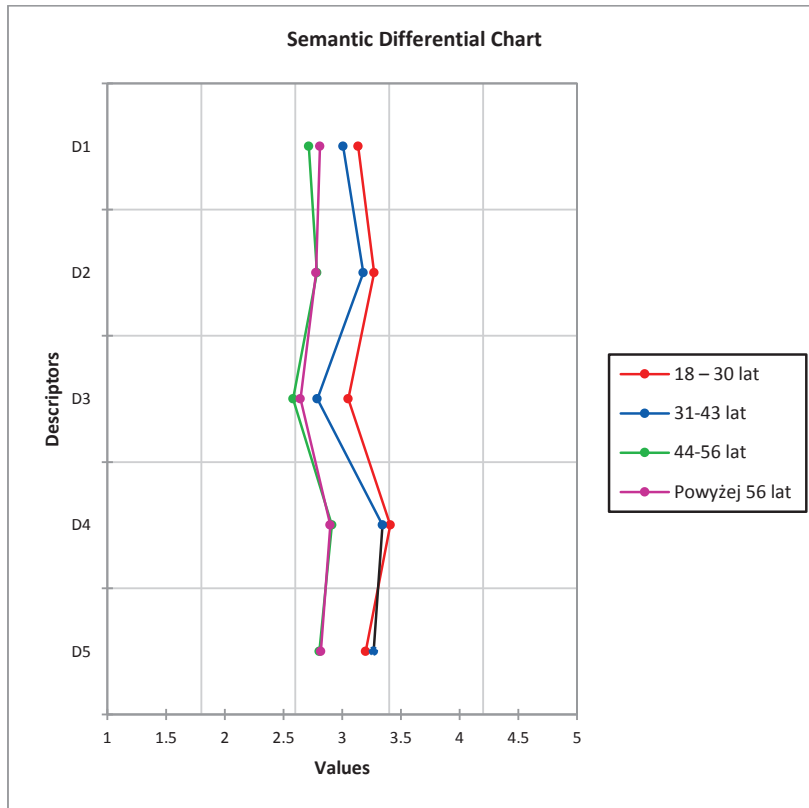
where: 5 means definitely yes; 4 – rather yes; 3 – neither yes, nor no; 2 – rather no; 1 – definitely no

Source: own study.

It is also worth paying attention to the fact, that in turn differences as for the opinions within each of these pairs were significantly bigger between people aged 18-30 and people aged 31-43 than between the representatives of the two remaining age groups. The youngest people assessed the offerors' actions relatively the best. Only in their case one of the actions, that is encouraging buyers to express their opinions, got an average note 3.50. All remaining actions got clearly lower average notes. The lowest note was 2,50 in case of people aged 44-56 and it was given to the action connected with encouraging buyers to design marketing stimuli other than the product and promotion. It is worth mentioning that it was the action assessed the worst also by the respondents as a whole and by representatives of each of the 4 age groups.

Respondents' market experiences should be analysed in the context of life experiences gathered also by entering relations with subjects other than offerors. Each person has also specific predispositions which together with life experiences can support market experiences, thus making a buyer even a more valuable partner for an offeror. The condition to achieve such an effect is, however, eliminating dysfunctions in relations between respondents and offerors, which was discovered during the research. It results from the hitherto deliberations that from the point of view of the people questioned, there did not appear a stage consisting in mutual building the experiences during the process of creating them. What is more, their creating by offerors was loaded with visible deficiencies.





where: the meaning of symbols D1 – D5 analogous to those in table 2

Fig. 1. Semantic profiles reflecting respondents' experiences connected with activating buyers by offerors

Source: own study.

Among attitudes and behaviours resulting from life experiences, it is definitely the search for the balance between professional and personal life that comes to the forefront (average note as much as 3,99 – table 3). Among two behaviours which got average notes exceeding 3,50 there were investing in one's own skills and competence. Apart from them, there were also other five attitudes and behaviours which got average note higher than 3,00 (but lower than 3,5) and the most of them concerned a great proficiency and intensity in using modern appliances and the Internet, whereas only one of them was of other character.

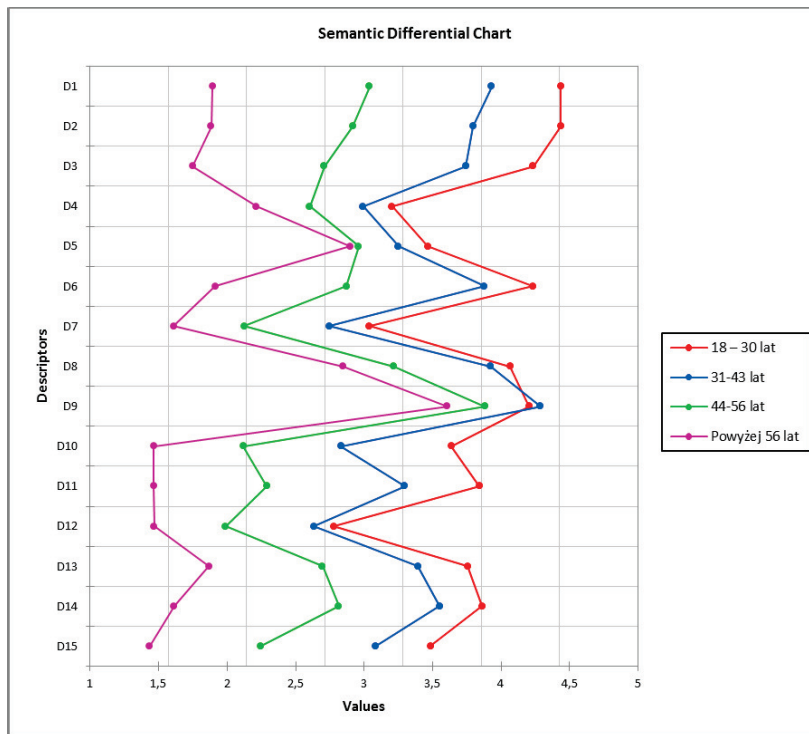
Table 3. Statements reflecting respondents' life experiences as a representation of their marketing potential

Statements assessed	Symbol	Indications in %					Average note
		5	4	3	2	1	
I use modern technologies, appliances, gadgets proficiently	D1	22,51	33,66	11,75	18,07	13,72	3,32
I use the Internet intensely	D2	23,59	28,04	14,41	18,36	15,30	3,25
I use modern appliances such as tablet, smartphone, etc. intensely	D3	21,13	26,46	13,33	20,43	18,36	3,11
I am sensitive to my peers' opinions	D4	6,52	19,55	31,00	28,33	14,41	2,75
I don't trust promotional contents (among others advertisements)	D5	11,45	26,95	33,66	19,55	8,09	3,13
I efficiently use such instruments as search engines, comparison websites in order to analyse various offers and to choose the best of them	D6	22,11	28,83	16,19	15,30	17,28	3,22
I express my opinions and views on the Internet forums willingly	D7	6,02	15,40	18,95	30,11	29,42	2,38
I invest in the development of my own skills and competences willingly	D8	19,94	40,38	18,95	12,73	7,80	3,51
Job is important to me but it isn't on the first place; it's a means to achieve other important life aims such as having a happy family, personal development, self-realisation	D9	34,55	43,73	12,14	5,43	3,85	3,99
I download music, films and games from the Internet willingly	D10	10,66	16,49	18,16	23,10	31,49	2,51
I get into relations with other people by means of social media, e.g. Facebook, willingly	D11	12,73	22,31	19,25	16,68	28,92	2,73
I get into relations with companies/institutions by means of the Internet willingly	D12	4,74	10,96	20,14	30,01	34,06	2,22
I want to be up-to-date with technical novelties	D13	11,35	30,60	20,43	15,20	22,31	2,93
I do shopping via the Internet willingly	D14	15,30	26,95	19,35	15,79	22,41	2,96
I watch television through the computer, telephone, tablet	D15	12,73	16,78	16,39	22,90	31,10	2,57

where: 5 means definitely yes; 4 – rather yes; 3 – neither yes, nor no; 2 – rather no; 1 – definitely no

Source: own study.

What is meant here is the lack of trust to promotional contents (visible for each age group of respondents – figure 2), which is of fundamental importance from the point of view of the effectiveness of creating buyers' market experiences by offerors. Since on the one hand we can speak of a barrier in this field, on the other hand, however, it can be accepted, that the lack of trust to the contents created by offerors can stimulate buyers to taking part in designing promotional actions, thanks to which they would become more reliable to buyers. However, in order to achieve such a situation, offerors have to create conditions favourable to participating buyers in marketing actions.



where: the meaning of symbols D1 – D15 analogous to those in table 3

Fig. 2. Semantic profiles reflecting respondents’ life experiences as a representation of their marketing potential  
Source: own study.

It is worth mentioning that the lowest average note was given to behaviour connected with establishing relations with companies through the Internet, which in turn can be interpreted as a clue for the offerors that it is particularly important to maintain relations with buyers in a real world. It was one of the two behaviours for which the average note did not exceed 2,50. The second one was expressing opinions on the Internet forums. This proves additionally that the buyers’ activity as potential partners for offerors takes place also in a real world and communication and creative behaviours are taken up even more willingly outside the Internet.

Moreover the lack of trust to promotional contents apart from sensitivity to peers’ opinions was not correlated with any of the attitudes and behaviours analysed (table 4), with an intensive use of the Internet neither. Statement included in H2 hypothesis in case of respondents was thus incorrect. The lack of glorification of work was in turn correlated with only one behaviour consisting in investing in one’s own development.

Table 4. Matrix of Spearman's rank correlation\*

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15
D1	1,000	0,839	0,820	0,363	0,247	0,811	0,597	0,563	0,350	0,698	0,736	0,612	0,694	0,701	0,669
D2	0,839	1,000	0,835	0,445	0,262	0,823	0,618	0,503	0,331	0,653	0,711	0,612	0,675	0,694	0,632
D3	0,820	0,835	1,000	0,419	0,180	0,779	0,604	0,506	0,334	0,635	0,703	0,592	0,682	0,688	0,648
D4	0,363	0,445	0,419	1,000	0,271	0,396	0,433	0,202	0,180	0,337	0,319	0,334	0,367	0,349	0,334
D5	0,247	0,262	0,180	0,271	1,000	0,299	0,141	0,269	0,278	0,224	0,219	0,177	0,249	0,212	0,101
D6	0,811	0,823	0,779	0,396	0,299	1,000	0,610	0,577	0,423	0,615	0,687	0,590	0,653	0,691	0,618
D7	0,597	0,618	0,604	0,433	0,141	0,610	1,000	0,408	0,220	0,530	0,568	0,701	0,519	0,536	0,531
D8	0,563	0,503	0,506	0,202	0,269	0,577	0,408	1,000	0,520	0,405	0,481	0,391	0,513	0,477	0,436
D9	0,350	0,331	0,334	0,180	0,278	0,423	0,220	0,520	1,000	0,246	0,350	0,217	0,336	0,336	0,246
D10	0,698	0,653	0,635	0,337	0,224	0,615	0,530	0,405	0,246	1,000	0,741	0,578	0,639	0,628	0,648
D11	0,736	0,711	0,703	0,319	0,219	0,687	0,568	0,481	0,350	0,741	1,000	0,642	0,651	0,709	0,650
D12	0,612	0,612	0,592	0,334	0,177	0,590	0,701	0,391	0,217	0,578	0,642	1,000	0,580	0,543	0,539
D13	0,694	0,675	0,682	0,367	0,249	0,653	0,519	0,513	0,336	0,639	0,651	0,580	1,000	0,679	0,600
D14	0,701	0,694	0,688	0,349	0,212	0,691	0,536	0,477	0,336	0,628	0,709	0,543	0,679	1,000	0,627
D15	0,669	0,632	0,648	0,334	0,101	0,618	0,531	0,436	0,246	0,648	0,650	0,539	0,600	0,627	1,000

\* essential correlations with  $p < 0,050$  were marked

where: the meaning of symbols D1 – D15 analogous to those in table 3

Source: own study.

All other attitudes and behaviours reflecting respondents' experiences were in strong correlation at least with 6 variables. Even establishing relations with companies by means of the Internet, the average note of which was the lowest, was correlated with 10 variables, while one of these variables was very strong (the value of Spearman's correlation rate exceeded 0,7). What is meant here is the correlation with expressing opinions on Internet forums, that means a variable, the average note of which was also relatively low. The attention has to be paid to the fact that both behaviours are of communication character and are connected with market activity which exceeds typical shopping activity ascribed to a typical buyer. It is worth mentioning that doing shopping via the Internet was correlated also with 10 variables (among them between two variables there was a very strong correlation) but this behaviour found its place among 8 attitudes and behaviours which got the average note lower than 3,00. It means that they didn't belong to key forms that shape the respondents' experiences.

## Conclusions

Presented considerations allow to state that respondents haven't very positive experiences connected with offerors' actions from the field of activating buyers and using their willingness to engage in mutual marketing undertakings. It can be a barrier which makes it difficult for the people questioned to fulfil the role of a partner for offerors who did not notice the respondents' marketing potential. The results of the research conducted show that the age of respondents does matter as far as the way of perceiving by them market experiences connected with offerors' actions taken up to activate buyers is concerned. Statement included in H1 hypothesis is thus true in case of the people questioned. Relatively the best, offerors' actions were assessed by the youngest people, although the highest average note amounted merely 3,50. Whereas H2 hypothesis which claims that there is a

relation between the lack of trust to offerors' promotional actions and intensive use of the Internet proved to be untrue in the case of respondents.

Of course the research conducted has certain limitations. They are for example involving in the research only Polish buyers or not taking into consideration the specificity of various products, in relation to which market experiences can be varied. Therefore, in the future it would be worth extending the geographical and subject area of the research and deepening them by taking into account in the research process specific products or at least groups of them. It'll allow to conduct the comparative analysis in the product dimension, in the national dimension, etc. Of course, this type of research should be realized regularly. It allows to identify and analyse the changes in the opinions of respondents from different countries related to different products, etc. The knowledge about these aspects is important for marketing theory and for marketing practice.

## References

Alderete, M. V. (2017) 'The Age of Prosumerism: Some Micro-Economic Analysis', *Journal of Theoretical and Applied Electronic Commerce Research*, 12 (3), 1-12.

Analiza korelacji. [On line], [Retrieved October 1, 2017],  
[http://wet.ur.krakow.pl/zasoby/65/biostatystyka\\_cw\\_9.pdf](http://wet.ur.krakow.pl/zasoby/65/biostatystyka_cw_9.pdf).

Bakator, M. and Borić, S. (2017), 'Consumer experience and the role of promotion on the mobile device market', *Journal of Engineering Management and Competitiveness*, 7 (1), 11-19.

Bednarz, J. (2017), 'Prosumpcja jako rezultat zmian zachodzących w zachowaniach konsumentów na przykładzie przemysłu spożywczego', *Studia Oeconomica Posnaniensia*, 5 (1), 7-24.

Cantone, L. and Risitano, M. (2011), Building consumer-brand relationships for the customer experience management, [in:] *The Proceedings of 10th International Marketing Trend Conference*, Andreani, J.-C. (ed.), ESCP-EAP, Paris-Venice.

Experience. [On line], [Retrieved September 11, 2018],  
<https://dictionary.cambridge.org/dictionary/english/experience>.

Gentile, C., Spiller, N. and Noci, G. (2007), 'How to Sustain the Customer Experience: An Overview of Experience Components that Co-create Value with the Customer', *European Management Journal*, 25 (5), 395-410.

Gilovich, T., Kumar, A. and Jampol, L. (2015), 'A wonderful life: experiential consumption and the pursuit of happiness', *Journal of Consumer Psychology*, 25 (1), 152-165.

Kumagai, K. and Nagasawa, S. (2015), 'Customer Experience and Determinants of Consumer Attitude Toward Luxury Brands: Observations in Japan And China', *Science Journal of Business and Management*, 3 (2-1), 24-34.

Lo, S.Ch. (2012), 'A Study of Relationship Marketing on Customer Satisfaction', *Journal of Social Sciences*, 8 (1), 91-94.

Mohd, S. N. and Mohd, S. N. (2017), 'Consumers' Experience of Green Product Purchases: Some Insights from Malaysia', *Advanced Science Letters*, 23 (9), 8170-8174.

Pantano, E. and Priporas, C.-V. (2016), 'The effect of mobile retailing on consumers' purchasing experiences: a dynamic perspective', *Computers in Human Behavior*, 61, 548-555.

Partner. [On line], [Retrieved September 11, 2018],  
<https://dictionary.cambridge.org/dictionary/english/partner>.

Schmitt, B., Brakus, J.J. and Zarantonello, L. (2015), 'From experiential psychology to consumer experience', *Journal of Consumer Psychology*, 25 (1), 166-171.

Smilansky, S. (2009), *Experiential Marketing: A Practical Guide to Interactive Brand Experiences*, Kogan Page, London.

Snakers, E. and Zajdman, E. (2010), Does experiential marketing affect the behavior of luxury goods' consumers?, Umeå Universitet, Umeå.

Szreder, M. (2010), 'Losowe i nielosowe próby w badaniach statystycznych', *Przegląd Statystyczny*, 4, 168-174.

You-Ming, C. (2010), 'Study on the Impacts of Experiential Marketing and Customers' Satisfaction Based on Relationship Quality', *International Journal of Organizational Innovation*, 3 (1), 189-209.

## **E-portal Design Implementation**

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### **Abstract**

The development of information technologies has driven to rapid advancement of information, generation of various data sources and the evolution of the new tools and technologies that improves the communication and distributes the information through several digital marketing platforms. These platforms support the businesses by accessing the data and information stored in various databases, servers, warehouses and perform data analysis including different data mining techniques, prototypes and programming languages that is cost effective for the organizations.

The present study aims to simplifies business marketing activities and keeping record of the data used and generated during business. The exploration of this system enables, streamlines and identifies the core functions of the marketing activities. However, the study conducted takes the approach of identifying the organization's requirements that suit appropriate type of e-portal, looking at the functions, main features and over all of the e-portal system. This study will cover the prototype design of e-portal, the main applications that meet the consumer preferences, and also determine the method of development of the electronic marketing system such as HubSpot, API, LARAVEL, PHP, MySQL database server and web design.

**Keywords:** e-portal, technology, digital marketing, platforms

## Introduction

In an article on optimizing order fulfillment by way of B2C horizontal portals, Bandopadhyay and Kumar (2017) asserted, Across the four crucial strategic quadrants that were identified in a survey on e-business models conducted by Sihare (2018), i.e. technology, brand, service and market, it was generally found that laggard companies who failed to implement an e-business strategy never made it past the technology quadrant. Leading and medium-performing organizations, on the other hand, quickly moved their focus from technology to business delivery aspects. They migrated toward a market strategy by concentrating either on a brand strategy or service strategy. Few migrated directly to a market strategy.

For successful businesses focused on customer satisfaction and customer loyalty through a dedicated service strategy, the e-portal has become a popular and useful support system Tojib, Sugianto and Sendjaya (2016); Wu and Cheng (2017). The business to employee (B2E) portal, the intelligent e-business portal, and the integrated information portal are examples of architecture for consumer-centric digital marketing and sales that enables accessibility and availability of customized, personalized employee and/or customer information (data), which in turn is prime for improving employee-customer interaction and increasing customer service, improving employee productivity through improved services and business processes which have become “better defined, structured, and measurable...” Bandopadhyay and Kumar (2017, p. 2), and improving customer loyalty Scheepers (2016); Sihare (2018); Tojib, Sugianto and Sendjaya (2016); van Brakel (2013); Wu and Cheng (2017). More specifically, according to Tojib, Sugianto, and Sendjaya (2016), the e-portal has advantages over web-based intranets, including that it uses user recognition technology that enables the retrieval of information personally tailored to employees [and/or customers] [and] provides integrated access and availability of customized and personalized information for employees” (p. 649).

The information-content portal is designed so it can be based on direct feedback data (in-app surveys or SMS surveys), web and system data logs, and indirect feedback data (social media and review sites) for the employees of the company to information-gather and report back on: the employees will log in to the portal page and then generate reports about their customers on a monthly basis. In this company, the employees ask the customers about the product [satisfaction], and while some of the customers come back to make future purchases, some others do not. With the company heavily dependent upon customer loyalty, we designed this e-portal for the manager of the company to be able to identify those customers who are return customers and those customers who do not return.

An information-content portal architecture is proposed and discussed in this paper. For this e-portal design implementation project, the project designed by students from Melbourne Institute of Technology (MIT), Sydney campus, gave them the opportunity to work on a real project, which is commissioned by a real commercial organization. Students were able to investigate and understand the business processes in the field of information technology and marketing, and practically provided a technical solution to solve problems. The cooperation between MIT and the commercial sector (EB Pearls) is very positive. It is beneficial that the space for cooperation on this project is not only for students enrolled bachelor degree, but also for students at master degree level.

## Literature Review

The section presents a critical review of literature concerning the concept of the marketing strategy, examining and discussing the customer’s and company’s viewpoint. This theoretical concept will focus on six main areas: Marketing Automation Software and tools, HubSpot API, Apache Web Server, PHP and LARAVEL, Database Schema and MySQL Database Server. This is followed by an elaboration of the client’s requirements and the plan design. All the topics explained have been used in the present world, hence all the concept is considered on the perspective of companies and customers.



Marketing Automation: Within several years, business-to-business sales and marketing intelligence are followed by marketing automation tools for the process of identifying, analyzing and increasing the services and products leading to customer satisfaction and technological advances. Marketing automation are the tools for managing large blocks of data, emails receiving and sending, business inquiries and so on that helps to improve customer relationship with generation of new business opportunities and increasing alignment between marketing activities and sales results Jena and Panda (2017, p. 35). It allows customers and companies to buy and sell products on online platform such as Amazon and other services that facilitates the companies for proper investment, real time marketing and several digital transformations Dania (2016, p. 2). HubSpot API is one of the main examples of the marketing automation software. Meanwhile, determining the business nature and its function of the e-portal is based on many factors such as the business unit processes, services offered, the technology implemented or automated, and the end users (employees). All these key elements will play significant role to identify and analyze business functions that will be developed in an e-portal environment.

HubSpot API: HubSpot is an open-source, cloud-based, inbound marketing automation software and a leading provider that consists of the suite of applications related to the customer relationship management, marketing and sales and allows huge transformations on the online marketing. It provides online access to the product contents, including publishing, email marketing, website content management, reporting, and analytics and monitoring of social media. They help to have better communications with the leads and prospects. Since the software configuration and customization, a common practice in HubSpot API helps the company to ensure delivery of quality products and services, be flexible and fast response based on market demand. They help to create functional, strong and diverse application providing CRM (Customer Relationship Management) that encompasses the needs and goals for different persona to tailor their content, messaging, product development and deliver a target-oriented personalized experience on a commodity level. Meanwhile, HubSpot allows authentication, deals, lead and opportunities to reach the specific target set by the business and offers scalable data storage and fetching services that encourages the companies to store their information secure and confidential.

Apache Web Server: The use of information technology can't be completed without the use of high performance of web server which is responsible for requesting and responding to the user's request Novak and Svagor (2016, p. 5). They run on the protocol and helps to access the documents such as images, graphics or plain ASCII files by web clients. Apache is the widely used free, open source web server software that delivers web content through Internet including the response time, CPU utilization and memory usage. It handles large amount of data traffic on a single server with higher content and minimal configuration D. S. and Aggrawal (2017, p.13). It is highly modular and functional including cryptographic protocols such as SSL, server-side programming language such as PHP and load balancing across multiple servers to handle large number of traffic. It can modify its configuration that may lead to the threat of security cases unless it is dealt properly and requires time-to-time updating of its policies and debuggers for debugging new bugs arise during creation of personalized protocol Dmytro and Kovaliuk (2018, p. 25). Although, the mentioned disadvantages, Apache web server is reliable and is widely used and adopted with maintained standard.

MySQL Database Server: Database Server refers to the hardware or software that provides services of retrieving and accessing data from database and deals with recovery security administrations of the DBMS Abubaker et al. (2017, p. 1). It gives services with better performance, disaster recovery, update and deletion of outdated and duplicate records and keeps the backup of the data. Moreover, with several advantages, few drawbacks take place. Database need to continue upkeep which is expensive and costly. It is complex and confusing for those who doesn't understand the system and is prone to spam or viruses if not secured and thus confidential information may be lost. Moving forward, different programming languages such as MySQL, Oracle and so on. MySQL provides simplified database design and maintenance, capabilities to improve communication, real time address validation and helps in database

management Mlynski and Rumik (2011, p. 55). SQL includes query, update and delete, schema creation, modification and data access control. The use of MySQL database Server provides the flexible and scalable environment for storing large data blocks and confidential information for the companies and provides high performance Deng (2016, p. 6011).

PHP and Laravel: Due to growth and expansion of use of Internet, new marketing challenges are faced, thus use of marketing automation software and different programming languages such as Laravel and PHP operates effectively for the enterprises to create web-based applications using MVC architect patterns Paul (2016, p. 26). LARAVEL is free, open-source PHP, straight-forward and intense that provides structure that gives authentication, routing, session, storing, astonishing database relocation instruments and support unit testing to enable assembling complex applications Paul (2016, p. 26).

The modularity, testability, configuration management are some features of LARAVEL that helps in providing security, password storage and encryption Sonia, Yadav and Kumari (2017, p. 15). PHP is a notable scripting module in Apache Server and shares the same process of the Web Server and helps to form Laravel framework. It is cost-effective and fits to market demand and helps to strengthen new market opportunities and focuses on business strategies Ripunjit Das (2016, p.48).

Web Design and Development: Web design is a key factor for acknowledgement and accomplishment of the sites and electronic business for getting positive response from end users' experience Latif (2017, p. 18). Different programming languages such as HTML, CSS are used for composing website pages, which handles the framework structure, styles and appearance of the web pages. All the required information is gathered, planned and assembled to better design the web pages as per the requirement of the company and these need to be updated and maintained for the correct information and the marketing and sales Almeida and Monteiro (2017, p. 65).

## **Information Portal Workflows**

The importance of the purpose and function of the information portal is defined by Hu and Zhong (2016), who provided a conceptual model for organizing multiple data sources for developing intelligent e-business portals using three levels of dynamic workflows: 1) data-flow, 2) mining-flow, and 3) knowledge-flow. These three levels correspond to the workflow grid and its three layers—the data-grid, the mining-grid, and the knowledge-grid, respectively—all of which are for transforming data to active knowledge in a unified portal such a would be the case for the company here. Operating on Grid-enabled applications deployed on Grid middleware, these workflows would be generated dynamically, depending upon conditions, data analysis, mining process, and available/accessible information sources. In the case of the company here, data-flow on the data-grid could involve customer direct feedback data such as that gleaned from in-app surveys or SMS surveys. Mining-flow on the mining-grid would involve indirect feedback data such as that gleaned from social media and review sites. Knowledge flow on the knowledge-grid would then involve web and system data logs. As Hu and Zhong (2016) conceptualized,

...[the]lower-level applications and services [would] provide middleware support for [the] higher level applications and services, thereby opening the door to developing more complex, flexible, and effective systems (p. 131).

## **Architecture**

To improve enterprise resource planning (ERP), which integrates internal and external information management processes across the business Lamey, Keshk and Mmoussa (2015), and to in turn improve business process management, etc. Lamey, Keshk, and Mmoussa (2015), the architecture can be deployed

on Grid middleware and services, can be based for implementation on any open source software for building grids—so that the Grid-enabled applications be available and to management (or other users) by way of a standard Web browser Hu and Zhong (2016), and would be built upon the information portal building blocks van Brakel (2013). This latter imperative begins with single sign-on (SSO) for multiple sites (where applicable). Localization and distribution of communication measures must also be established, as optimum performing portals will maintain sufficient web content management capabilities.

This will enable the company employees from different divisions or at different locations to report to their target audience (management), but to do so without having to separately email or text and without management having to seek out the information in anyplace but the central spot. A third building block will include the cross functionality of reusable components, whether for more than one site or for the company site and mobile apps. This means what might also be included is a guarantee the exchange of data between portal applications (apps) and the enterprise resource planning (ERP) system Lamey, Keshk and Mmoussa (2015) or a guarantee of a perpetual flow of data between systems, applications, and products (SAP) system and other software or systems Noorani and Kodandarama Setty (2017). Making the information portal pro-collaboration can also facilitate knowledge sharing, which is the backbone of such e-technologies.

## **Deployment/Implementation**

Noorani and Kodandarama Setty (2017) found that companies failing to successfully implement e-portals can follow three primary steps by 1) understanding and factoring the needs of the stakeholders; 2) communicating the goals and benefits to the channel partners; and 3) maintaining technological flexibility and simplicity. In understanding and factoring the needs of the channel partners, the portal set-up objectives, user roles, and responsibilities for data reporting would be clearly established; evaluation would be done to assess current company procedures with information management and the goals that the company has for new processes would be defined; decisions would be made regarding any offline processes that would benefit from online/portal applications; the information to be collected would be defined in terms of what parts or elements of that information could be used to better serve consumers; and any duplication of efforts being done at present would be identified and avoided in the future with the integration and alignment of processes through the e-portal.

In communicating the goals and benefits to the relevant stakeholders, management would especially communicate to employees, investors, and others the rationale and purpose of the information portal as it functions on the three workflows and workflow grids. The investors, if any, will want to see return-on-investment (ROI) improvement; cost-benefit analysis would be reported on; and any investments required will need to be clearly laid out and ultimately endorsed. and in maintaining technological flexibility and simplicity during the information portal implementation, management and team will need to ensure simplicity and user-friendliness, with insurance of efficient and effective data transfer, and with functionality based on seamless integration of systems/apps, first considered in the design and carried out in the implementation.

## **Issues in Implementation**

Issues and challenges around information portal implementation must also be considered, including performance issues HU and Zhong (2016); Lamey, Keshk and Mmoussa (2015), issues of acceptance Al-Mudimigh and Ullah (2015), usability and user satisfaction issues Bringula and Basa, (2016) Moraga, Calero and Piattini (2016); Shaltoni et al (2015), issues with user training to enable employees to get the optimum functionality out of an effective e-portal Scheepers (2016), and even confidentiality issues Tojib, Sugianto and Sendjaya (2016). However, in their research on user satisfaction of university portals in

developing countries, Shaltoni, Khraim, Abuhamad, and Amer (2015) cite the earlier work of Masrek (2014), who found that the effectiveness of university portal implementation from the perspective of students is in service quality and systems quality, both significant correlates of user satisfaction. In a study on factors affecting faculty web portal usability, Bringula and Basa (2016) found that information-content as a web portal design factor was the only significant predictor of web portal usability. The implementation of an enterprise information portal for the company must also be considered an iterative process, one which is relevant to this proposed e-portal design, and one which the authors intend to assist in implementing repeating the process until acceptance and making any changes that will support the implementation. For, as approaches and behaviors reinforced by van Brakel (2013), among others, implementation measures can contribute to more effective employee productivity, more effective business process management, clearly focused information management oriented toward improved customer care, and customer loyalty.

### System Working Principle

Fig 1. shows the ‘System Working Principle’, the e-portal is developed using HTML, CSS and PHP consists of the login feature which can be accessed by the user using the browser. When the user logs in to the system, the login credentials are matched with the data in the database server located at AWS. If the user details match with the login information in the database, the user gets logged in successfully. After the user is logged in, the user can have access to the resources of the portal such as the files and different data and information of the site. The data stored in the database are fetched from the Hub spot API, which can be displayed by the user after the user logs in into the portal. As a result, the user can access the data of the Hub Spot through without knowing the internal working mechanism of the system.

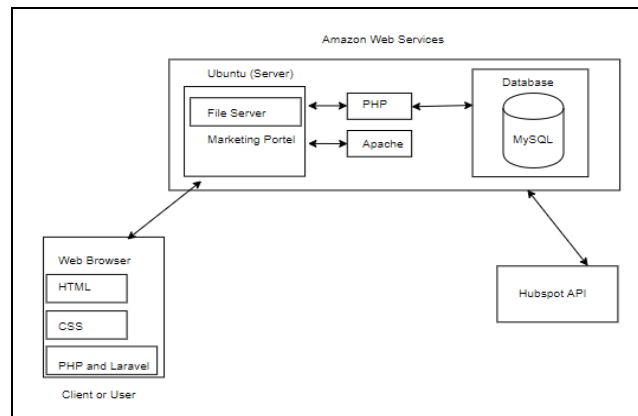


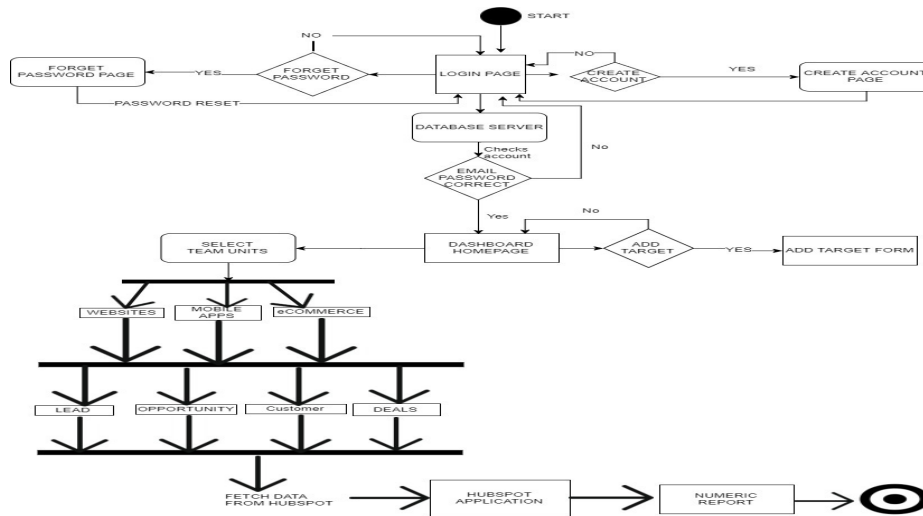
Fig. 1: System Working Principle

### E-portal Flow Chart

User can login directly to the portal with their credentials, which gets validated by the database server, then the user should be able to login to the homepage. If not, the user will be taken back to the login page with error message.

- a) If user forgets his password, user can click on *Forgotten Password* link and can retrieve their password or create a new password.
- b) If user doesn't have an account, user needs to sign-up and create an account.

- c) Once user granted access, user should be able to see the dashboard where they can either select team units or can add the target.
- d) 'add target' option, it's a form where the details and information can be accessed and stored, user also can return to the dashboard.
- e) 'team units' options, websites unit, mobile apps unit and ecommerce unit, either one can be selected.
- f) After team unit selection, user can select the status, which can be i.e. lead, opportunity, customer and deals.
- g) Selection of any one of the units, needs the data to be fetched from the Hub Spot API which is connected to the database Server and hence can get the numeric report. Thus, user can access the data and generate a report. More details see Fig 2. E-portal Flow Chart Diagram below

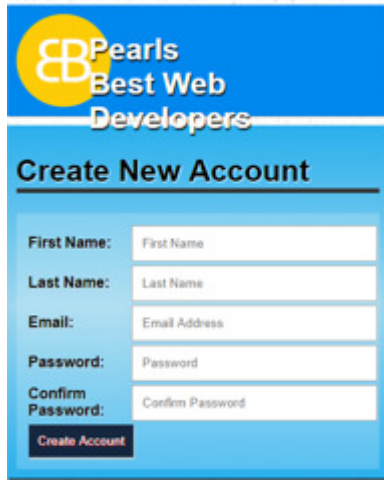


**Fig. 2:E-portal Flow Chart Diagram**

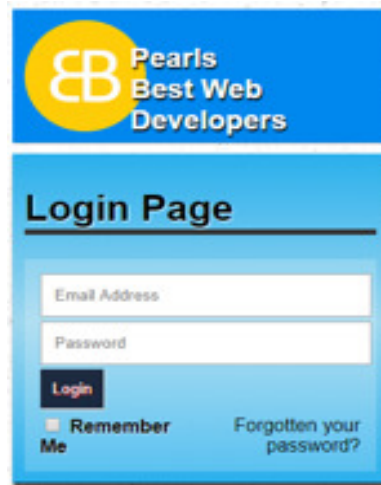
## Prototype Design

Figure 3 shows creating the new account for customers for EB Pearls that includes first name, last name, Email address, Password and confirmation of the password.

Figure 4 shows the login page of the e-Portal, where the user needs an email address and password. This page leads you to the homepage or dashboard.

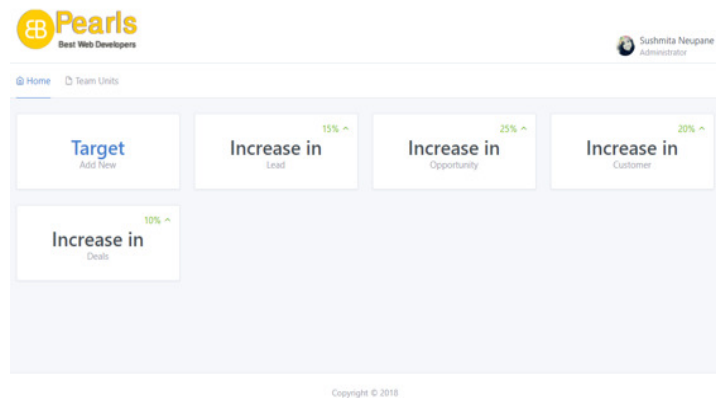


**Fig 3. Create New Account**



**Fig 4. Login Page**

The figure 5 below contains all buttons for all the e-portal functionality. The dashboard includes EB Pearls Logo/Slogan is kept at the top-left hand side whereas the person who logged in, their name is placed at the top-right hand side. It also, allows the user to select from the dashboard options namely, Target, percentage increase or decrease in Lead, Opportunity, Customer and Deals throughout the month in the selected year.



**Fig. 5:Home Page (Dashboard)**

The figure 6 below shows the (Team Unit) is classified based on the product that company offers namely Websites, e-commerce and mobile applications so, the 'add new target' option could be one of the three products mentioned previously, it's a form page in which the boxes for the selection of the month and year is shown, selection of the team units as per the need, adding the lead target, percentage target and the result box shows the calculated outcome from the lead target and the percentage target for the specified month, year and the team units.

The screenshot shows the 'Add New Target' form in the Pearls CRM system. The form is titled 'Add New Target' and is located within the 'Team Units' section. It features three main sections: 'Select Year' with a dropdown menu set to '2018', 'Select Month' with a dropdown menu set to 'January', and 'Select Units' with three radio buttons: 'Websites' (selected), 'Mobile App', and 'eCommerce'. Below these are two input fields: 'Lead Target' containing the text 'Lead Target.' and a percentage sign '%', and a 'Result' field. At the bottom of the form are two buttons: 'Cancel' and 'Add Target'.

**Fig. 6: Add New Target**

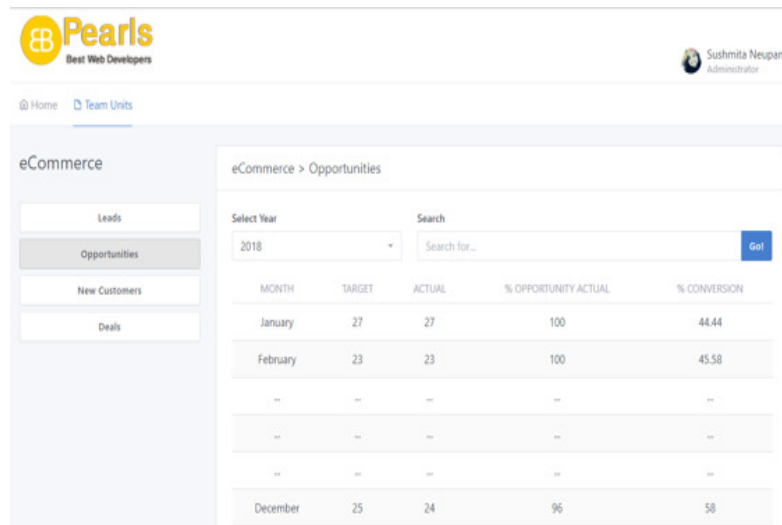
The figure 7 below shows the lead reports for the selected team unit and the product selected is 'Websites' for the period of 12 months. There is the search button for searching the keywords in the database. The target from the Edwards, from Hub Spot and the percentage of received versus actual data is shown.

The screenshot shows the 'Websites > Leads' report in the Pearls CRM system. The report is titled 'Websites > Leads' and is located within the 'Websites' section. It features a search bar at the top with a 'Get' button. Below the search bar is a table with the following data:

MONTH	TARGET FROM ADWORDS	ACTUAL FROM HUBSPOT	% LEAD RECEIVE VS ACTUAL
January	27	27	100
February	23	23	100
--	--	--	--
--	--	--	--
--	--	--	--
December	25	24	96

**Fig. 7: Lead Reports**

The figure 8 below shows the page for the 'Opportunities Field' for the e-commerce team unit, which is similar as the website team unit 'Lead Repot' page where the percentage comparison for the opportunity from Edwards and Actual Hub Spot is focused.



**Fig. 8: Opportunities Field**

## Conclusion, Limitations and Future Work

In conclusion, this project has highlighted the use of different marketing software tools for completing the project requirements. Several research on the software tools and their implementations were conducted to construct the literature review. However, different limitations and challenges were the team faced during the project design, such as IT skills, research and gathering customer requirements that created some issues for the project development. Moreover, after the investigation on the relevant project topics, lots of information regarding the client and articles that support the technology helped us to overcome these challenges and meet the project goals and objectives. Hence, we came up with the prototype that helps to fulfil the client requirements and the successful completion of the project. Thus, we are confident to implement the design prepared in this project next trimester that will help to benefit the client business to run smoothly and effectively.

## Acknowledgment

We would like to express our sincere gratitude towards our lecturer, Dr. Nandini Sidnal for providing us this opportunity to come up with this project. Also we would express appreciation for the invaluable assistance of our project supervisor Dr. Mohammad Mohammad in providing us with the necessary information and instructions and for the wide-ranging ideas regarding technology and procedures to be adapted in order to achieve the completion of an effective project.

We would also like to express our appreciation and pride towards our Client Mr. Akash Deep Shakya, who was supportive throughout the process of completion of the design that helps us to identify system and end user requirements of the company.

Moreover, we would express appreciation to the group members for their effective participation throughout the completion of the project prototype design. Our shortcomings, errors and mistakes were pointed out by our supervisor and lecturer and we received many useful suggestions regarding the contents, errors and omissions. With due acknowledgements and thanks for the suggestions made available to us, we have made efforts to omit such mistakes. Also, we are thankful to all those individuals



who have directly or indirectly provided us with any sort of assistance that helped us in completing the project design stage.

At the end, we couldn't remain tacit without giving our cordial thanks to Melbourne Institute of Technology, Sydney for providing us with this platform where we could study and explore our capability and enhance our overall personality through practical approach in the real industry site.

We felt it as our responsibility to revise, rearrange, type and retype with some additions and some omissions in order to meet the requirements of the project. We have tried our best to achieve perfection in our work. Suggestions for the further improvement of the project are most welcome, and will be highly appreciated and acknowledged and then implemented in our forthcoming projects.

## References

- Al-Mudimigh, A. S. and Ullah, Z. (2015), 'Portal Implementation Issues: A Case Study. In Computer Modelling and Simulation (UKSim),' Proceedings of the 12th International Conference on Computer Modelling and Simulation IEEE, ISBN: 978-1-4244-6615-3, 24-26 March 2015, Cambridge, UK, 142-146.
- Bandopadhyay, T. and Kumar, P. (2017), 'A New Approach for Evaluating the Order Fulfillment Process Options of B2C Horizontal Portals Using DEA (Data Envelopment Analysis),' *Journal of International Technology and Information Management*, 16 (1), 1-3.
- Bringula, R. P. and Basa, R. S. (2016), 'Factors affecting faculty web portal usability,' *Journal of educational technology & society*, 14 (4), 25-27.
- Dania, R. (2016), 'Marketing Automation,' *Journal of Economic Sciences*, 9 (58), 2-4.
- Hu, J. and Zhong, N. (2016), 'Organizing multiple data sources for developing intelligent e-business portals,' *Data Mining and Knowledge Discovery*, 12 (3), 127-150. doi:10.1007/s10618-005-0018-2
- IRINA, I. (2016), 'WHAT IS MARKETING AUTOMATION AND HOW COULD IT BE USED FOR BUSINESS?,' *Anuarul Institutului de Cercetari Economice "Gheorghe Zane" -Iasi*, 25 (1), 11-18, 2016.
- Jena, A.B. and Panda, S. (2017), 'Role of Marketing Automation Software Tools in Improving or Boosting Sales,' *Splint International Journal of Professionals: A Monthly Peer Reviewed International Journal of Management & IT*, 4 (7), 30-35
- Lamey, A. M., Keshk, A., and Mmousa, H. (2015), 'Improve performance of enterprises information portal using RFC and IDOC technique' Proceedings of the 8th International Conference on Informatics and Systems (INFOS) IEEE, ISBN: 978-1-4673-0828-1, 14-16 May 2015, Giza, Egypt, DE-60.
- Moraga, Á., Calero, C., and Piattini, M. (2016), 'Comparing different quality models for portals. Online information review,' 30 (5), 555-568. doi: 10.1108/14684520610706424
- Noorani, H.S., and Kodandarama Setty, M.B. (2017), 'Three steps for successful implementation of sales portals in CPG companies,' *International Journal of Retail & Distribution Management*, 35 (9), 746-749.

Novak, M and Svagor, I. (2016), 'Current Usage of Component Based Principles for developing Web Applications with Frameworks: A literature Review,' *Interdisciplinary Description of Complex Systems*, 14 (2), 6-7.

Paul E. C. (2016) 'Methodology of Compiling Web-Applications into Executables Obtaining Seamless Server Installations and GUI Navigations through Qt and C++ Process Communications,' *International Journal of Information Engineering and Electronic Business*, 8 (6), 28-36.

Ramos C.M.Q., Matos N., Sousa C.M.R., Correia M.B. and Cascada P. (2017), Marketing Intelligence and Automation – An Approach Associated with Tourism in Order to Obtain Economic Benefits for a Region,' In: Antona M., Stephanidis C. (eds) *Universal Access in Human–Computer Interaction. Design and Development Approaches and Methods. UAHCI 2017. Lecture Notes in Computer Science*, vol 10277. Springer, Cham

Ripunjit Das, D. P. S. (2016), 'Comparison of Procedural PHP with Codeigniter and Laravel Framework,' *International Journal of Current Trends in Engineering & Research (IJCTER)*, 2 (6), 42-48.

Scheepers, R. (2016), 'A conceptual framework for the implementation of enterprise information portals in large organizations,' *European Journal of Information Systems*, 15 (6), 635-647. DOI: 10.1057/palgrave.ejis.3000646

Shaltoni, A. M., Khraim, H., Abuhamad, A., and Amer, M. (2015), 'Exploring students' satisfaction with universities' portals in developing countries: A cultural perspective,' *The International Journal of Information and Learning Technology*, 32 (2), 82-93.

Sihare, S. R. (2018), 'Roles of E–content for E–business: Analysis,' *International Journal of Information Engineering and Electronic Business*, 10 (1), 24-26.

Sonia, K., Yadav, M. and Kumari, S. R. (2017), 'Database Connection Technology,' *International Journal of Advanced Research in Computer*, 8 (5), 4-6.

Thompson, S. (2017) 'Watching the Movie Using Personas as a Library Marketing Tool,' *Reference & User Services Quarterly*, 57 (1), 17-19.

Tojib, D. R., Sugianto, L. F. and Sendjaya, S. (2016), 'User satisfaction with business-to-employee portals: conceptualization and scale development,' *European Journal of Information Systems*, 17 (6), 649-667.

Van Brakel, P. (2013), 'Information portals: a strategy for importing external content,' *The Electronic Library*, 21 (6), 591-600.

Wu, Y. L. and Cheng, X. K. (2017), 'The Design and Implementation of Special Market-Orientated Integrated E-Business Portal System' Proceedings of the International Conference on E-Business and E-Government IEEE, ISBN: 978-1-4244-6647-4, 7-9 May 2017, Guangzhou, China, 145-148.

## **The Motivation System Development: Case-study of the Trade Metal Company in Russian Federation**

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### **Abstract**

The article is devoted to the analysis of the possibility of building a system of staff motivation on the basis of self-motivation of employees. Using diagnostic tests to assess the motivating potential score (MPS) (Job characteristic theory (JCT) by J.R.Hackman-G.R.Oldham), constructive motivational attitudes and achievement motivation tests (A.Mehrabian, T.Ehlers) the personnel of the trade metal company operating in the market of Yekaterinburg, the Ural, Russian Federation was analyzed. In General, a high level of motivational profile of work in terms of "task Identity" and "task significance" was revealed. However, the study of the motivation of the achievements of the company's staff showed a contradictory picture, which indicates the unstable self-motivation of employees. When developing a personnel motivation system, it is necessary to pay attention to the points of growth of motivational potential of work in the aspects of "skill variety", "autonomy" and "feedback", as well as to develop programs to stabilize the self-motivation of personnel in order to ensure a predictable and realistic result of its implementation.

**Keywords:** motivational potential of job, self-motivation, motivation of achievements, incentive system

### **Introduction**

The motivational component is still a key one in the human resources management of the organization, despite the significant simplification of the company's activities in connection with the processes of digitalization (automation, robotics, and computerization) of its business processes.

The creation of effective incentive systems for personnel is an urgent task of any organization. However, its implementation significantly depends on the self-motivation of employees, which is not always adequately evaluated by top management.

Meanwhile, self-motivation is not only an internal psychological process that characterizes the person himself, but also the result of his relationship with the organization arising in the process of labor. It is the organization that forms the environment necessary for the effective work of the personnel – the motivating potential score, in which the self-motivation of the employee can be fully realized.

The "core" characteristics of the motivating potential score are the task variety, task identity, task significance, autonomy and feedback. The basic characteristic of employee self motivation is achievement motivation, first of all.

### **Object of Research**

The object of the research is a small business company in the field of metal trade on the market of Yekaterinburg (Ural Federal District, Russian Federation), which started to operate on the market since November, 2010.

Company specializes in two main directions:

- *Main activity*: Shipping black, stainless steel and non-ferrous metal, a variety of special steels and alloys of presence from a warehouse in Yekaterinburg, as well as to order from manufacturers.

In stock has always supported a wide range of metal products: Metals and metal (armature, circle, square, angles, channels, beams, hexagon, wire rod, wire, strip, channel bent), plates (hot rolled, cold rolled, low-alloyed, expanded metal, corrugated, steel sheet, galvanized, stainless steel), pipe (profile, electric welding, hot-rolled, cold-rolled) and other types of steel.

Here you can also purchase a wide range of steel grades and sizes:

- common quality carbon;
- carbon structural quality;
- alloyed construction;
- bearing;
- spring;
- alloyed tool;
- heat-resistant;
- increased strength;
- high-alloy steels, and others.

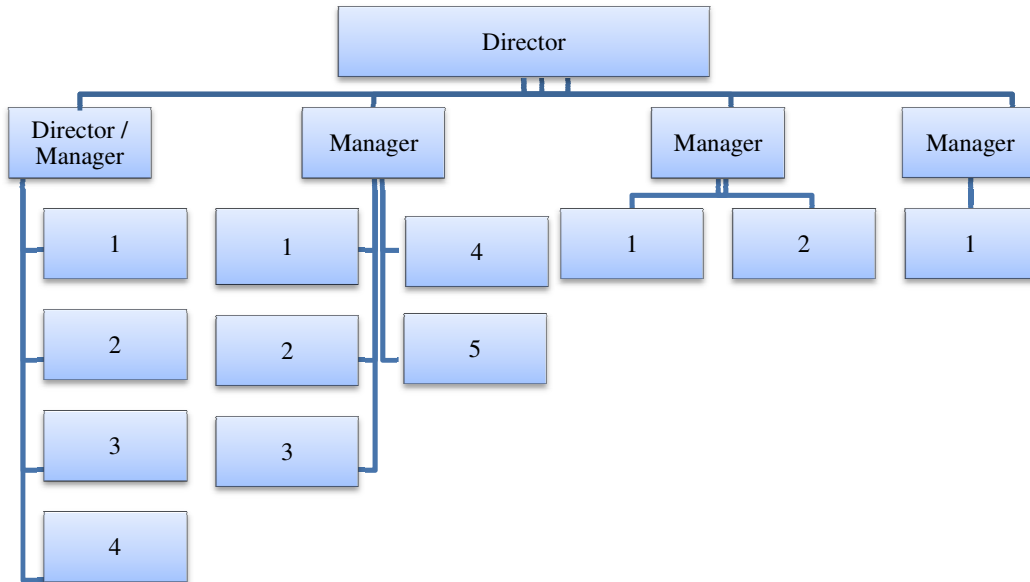
- *The second area of activity*: metal fabrication, design and manufacture of parts of any complexity on samples and sketches of the customer. For example, reinforcement cages, bent elements, gears, molds, dies, body parts, parts for imported machinery, and more.

The official mission of the organization and the objectives are “To increase profitability, expansion of market position, improve performance, and increase the capacity of the Organization to update products and technologies, the improvement of human resources.”

Competitive advantages of the company that is being researched are:

- successful cooperation with major Russian metallurgical plants;
- a wide range of products;
- any shipment volume (from kilograms up to the car of the stock and on order);
- complex delivery (retrofitted products missing in our warehouse);
- pre-assembly orders in warehouses;
- modern warehouses with rail access roads;
- delivery of auto and rail transport (formation of teams of wagons);
- a wide range of services (cutting to size at the modern high-tech equipment, manufacture of metal structures of different complexity and purpose);
- compliance with the quality of rolled metal guests;
- high-speed service at all stages of the order;
- highly qualified staff;
- individual approach to each client;
- a system of discounts (depending on volume) and implementation of commercial lending (regular customers).

Company's staff includes 16 persons total (see Fig. 1): 1 – commercial director (commercial director simultaneously is one of the managers of Department); 3 – managers of Departments; 12 – sales-managers. Organogram is presented on the fig. 1.



**Fig. 1: Organogram of the trade metal company, Yekaterinburg, Russian Federation**

(Source: own research, 2017)

According to the value and the role of the International division of labor company can be categorizes as a "small business company".

### Description of the Research: Goal, Tasks and Methods

*The aim of our study* was to evaluate the possibility of construction of system of motivation of personnel on the basis of the peculiarities of motivation of employees.

To achieve this goal, we have set the following *tasks*:

- 1) to explore the motivational profile of work in the company;
- 2) to evaluate the self-motivation of the company's employees in terms of the level of achievement motivation;
- 3) to assess the prospect of a relevant system of staff incentives based on the results.

To analyze self-motivation of staff we were used *psychological method and diagnostic instruments*:

1. *The test "Core" job characteristics" by J.R.Hackman-G.R.Oldham.*

This test evaluates i.e. motivational potential of job and will tell how highly motivated and satisfied an employee it is with their work. This model successfully describes the behavior of individuals who have a high need for growth in the improvement and expansion in the work position.

Test evaluates parameters of job such as:

1. Task variety. How diverse is your work, to what extent your work is related to the performance of various functions and involves a variety of skills and abilities?
2. Task identity. How holistic and is your work finished?
3. Task significance. How important is your work to the organization as a whole?
4. Autonomy. How independent are you in carrying out your work?
5. Feedback. To what extent does the job itself provide you with information about the effectiveness of your work? Does it work information on how much you manage it-regardless of feedback from colleagues or management?

Building a motivational profile for a particular job (position) allows you to clearly see what changes are required if the task is to increase its motivational potential.

The J.R.Hackman-G.R.Oldham model of five "core" job characteristics gives managers not only the opportunity to assess the motivational potential of work in specific workplaces. It allows you to identify clear steps to enrich the work in those workplaces where the state of the key characteristics does not stimulate high labor motivation.

2. *Test "Constructive motivational attitudes"*, which examines the common direction to achievements.
3. *Mehrabian Achieving Tendency Scale (MATS) by A.Mehrabian according to social motivation theory of D.C.MacClelland (adaptation for Russia by M.Sh.Magomed-Eminov).*

It is a questionnaire which provides data on the prevalence of one of the two stable generalized motives of the person - achievement motive or motive of avoiding failure.

According to literature, in the approach of author achievement motivation is not seen as a bipolar system (with poles - the severity of achievement motive and the severity motive of avoiding failure). The motive of avoiding failure - is not the opposite of achievement motive: they are "equally great" and "equal rights" independent generalized motives. Male (A) and female (B) forms of the test were used. This method measures the resulting tendency of motivation that is the degree of predominance of one of these motives - commitment to achieve success and avoiding failure. High scores on the test means that commitment to achieve success is expressed in a greater extent compared to the avoidance of failure, that it is low - on the contrary. Expressed motivation of achievements consists from 164 to 210 points; pronounced avoidance of failure is from 75 to 163 points and uncertainty of trends - from 30 to 74 points.

4. *The Test of identifying the motivation for success or the desire to avoid failure, by T.Elers.*

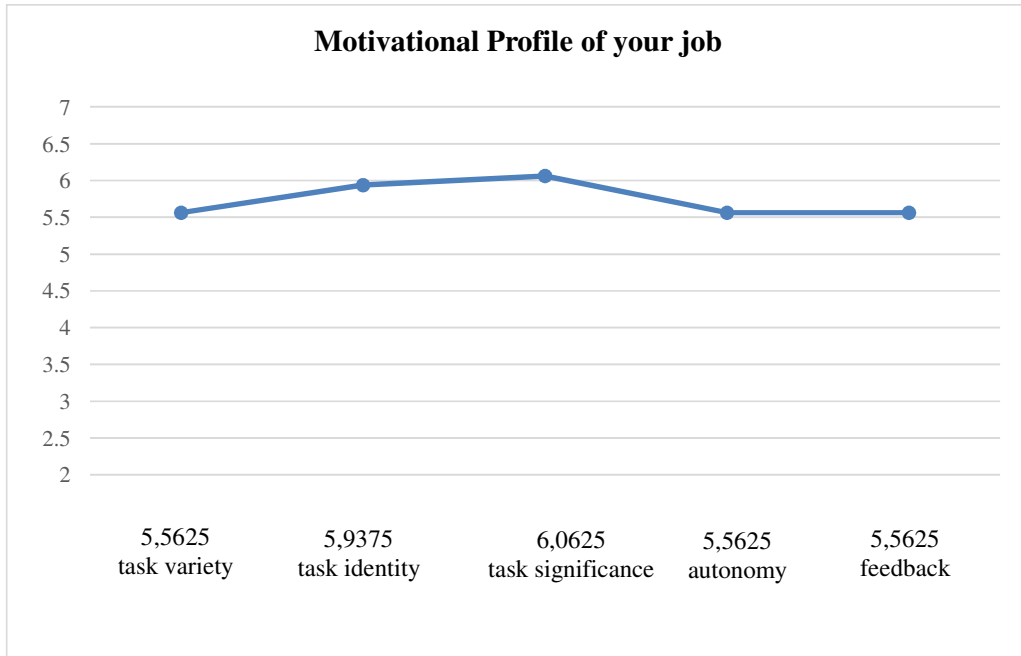
The test assesses the level of development of self-motivation, namely: the degree of desire for success, the level of activity, perseverance and perseverance in achieving goals, the ability to make decisions independently and take responsibility for them. Test values range from low motivation to success (up to 10 points) to middle (up to 16 points) till high (max 20 points).

All this 4 instruments are validated in Russia for the assessment to employees of the organization. Instruments were transformed in the Google form and investigation was organized in on-line way.

## **Results of the Research**

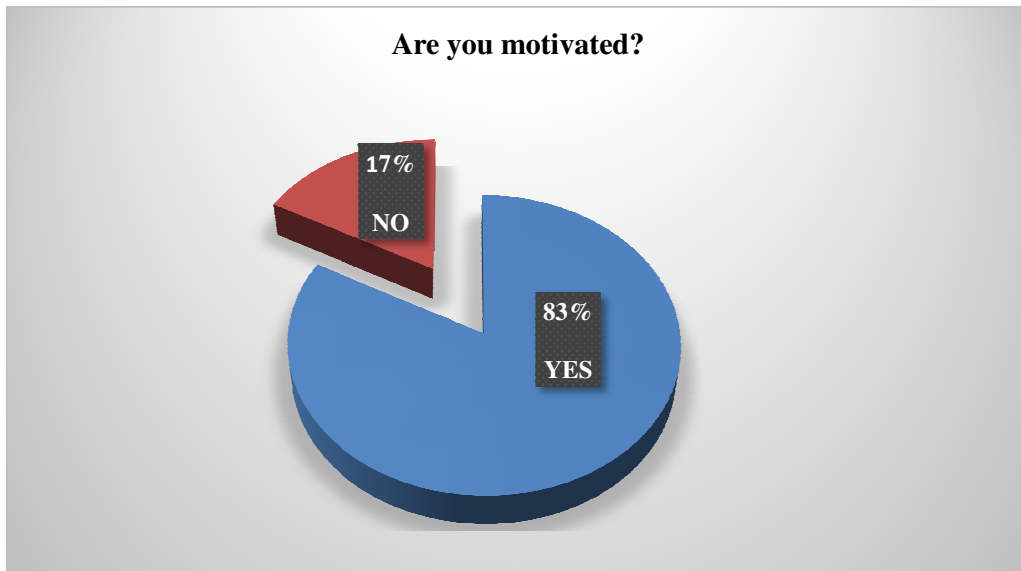
Follow results were got in this research.

A) Motivate profile of your job showed, that in a general view, the highest points were task identity and task significance compared task variety, autonomy and feedback. (See fig. 2)



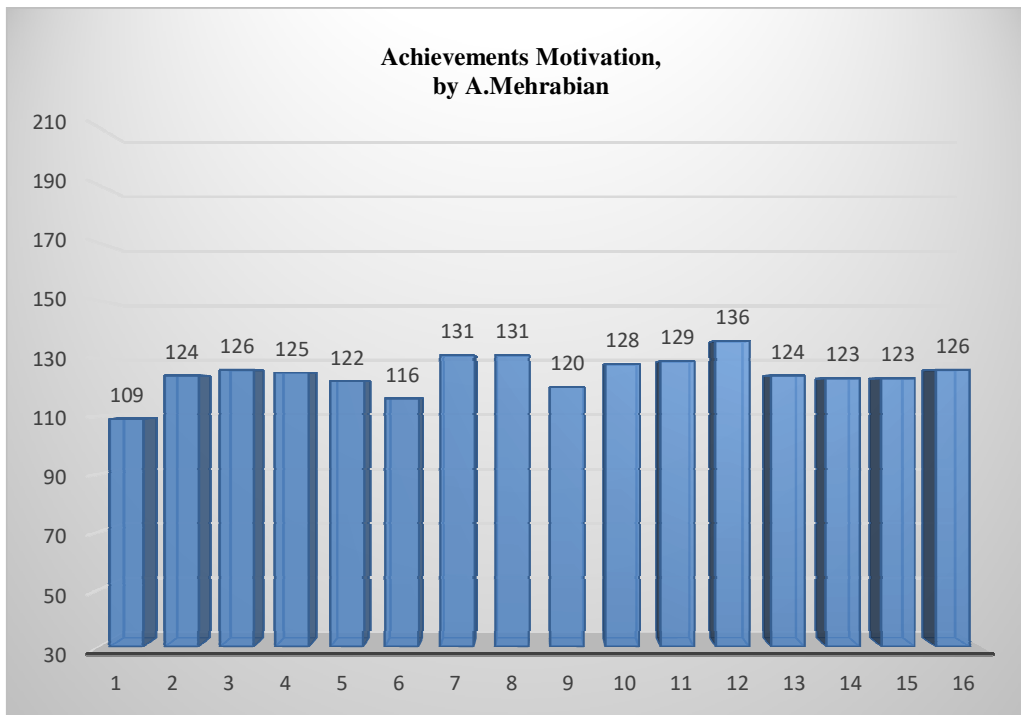
**Fig. 2: Company's Motivation Profile in the Job (Source: own research, 2017)**

B) Results of evaluation of the constructive motivational attitudes clearly demonstrate common high level (83 % via 17 %) positive employees' self-motivation. (See fig. 3)



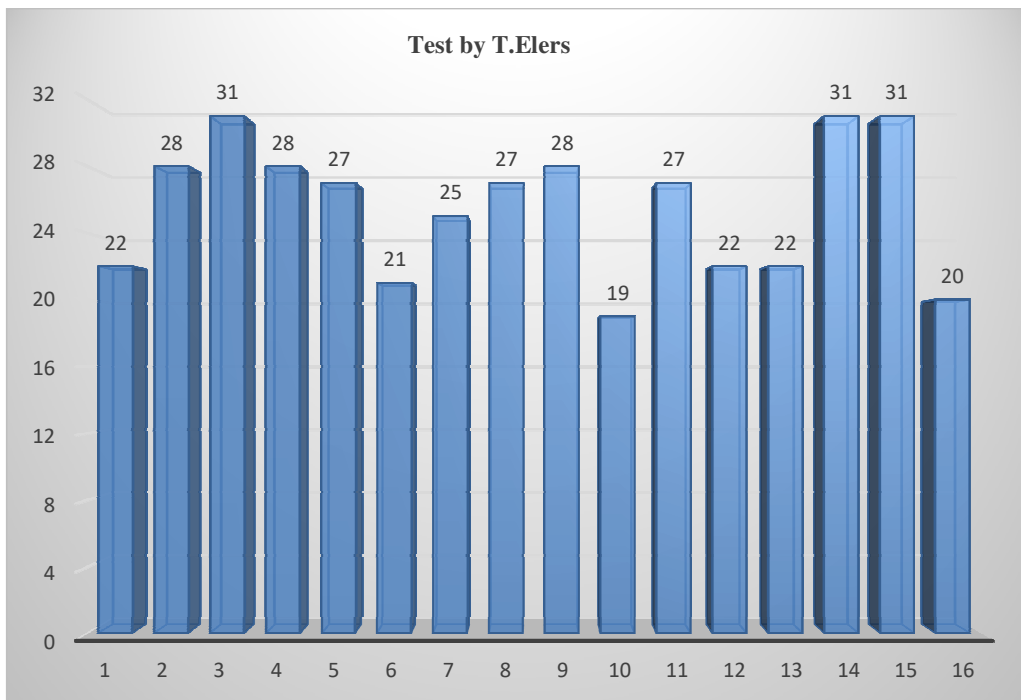
**Fig. 3: Personnel Self-Motivation Attitudes (Source: own research, 2017)**

C) Evaluation of motivation of achievements by A. Mehrabian shows the prevalence of motive of avoiding failure (usually from 74 till 16 points) in comparison of achievement's motive (usually up to 165). This means not-enough level of motivation to achieve for all employees. (See fig. 4)



**Fig. 4: Employees' Achievements Motivation (Source: own research, 2017)**

D) Finally, results the test of identifying the motivation for success or the desire to avoid failure, by T.Elers, indicate a high level such trend of most of persons. (See fig. 5)



**Fig. 5: Identifying the motivation for success of employees (Source: own research, 2017)**



## Conclusion

Assessment of the motivational profile of the trade metal company which was researched showed in general rather high level of development of motivational potential of work in the company ("core" job characteristics). However, some characteristics of the motivational profile (task identity and task significance work) were higher than others (task variety, autonomy and feedback). The top management of the organization when constructing the system of personnel motivation should be considered as the last point of growth.

Evaluation of self-motivation of employees revealed a high level of development of constructive motivational attitudes of the majority of employees that is a positive characteristic. However, it should be noted that the study of the motivation of achievements gave a contradictory result. On the one hand, the quantitative parameters of the overall achievement motivation (A. Mehrabian's test) show a tendency to avoid failure, but on other hand, the constructive motivational attitudes and identification of the motivation to success (T. Ehlers test) demonstrates its predominance over the avoidance of failure. This leads to the conclusion that the staff of the organization is characterized by unstable self-motivation, which may be an obstacle to the implementation of the incentive system. Therefore, in our opinion, the study of self-motivation in this company should be continued in order to clarify the causes of instability and develop programs for its stabilization so that the introduction of the personnel motivation system becomes more predictable and realistic.

## Acknowledgement

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## References

- Fedorova, A. and Ponomareva, O. (2017). 'Developing University HR Potential as the Basis for its Intellectual Capital', Proceedings of the 9th European Conference on Intellectual Capital (ECIC), 6-7 April 2017, Lisbon, Portugal, 97-105.
- Fedorova, A., Morokhov, N., Gerasimovich, M. and Tyuyusheva, Yu. (2018). 'Influence of the employment precarization on the working life quality of Russian workers'. Proceedings of 5th International Conference on Education and Social Science (INTCESS), 5-7 February 2018, Istanbul, Turkey, 64-70.
- Fetiskin, N P., Kozlov V V. and Manuylov G M. (2002) 'Diagnostika motivazii dostizheniya (A.Mehrabian)'. *Sozialno-psihologicheskaya diagnostika razvitiya lichnosti i malyh grupp*, 98-102.
- Hackman J R. and Oldham G R. (1975) 'Development of the job diagnostic survey' *Journal of Applied psychology*, Vol. 60. 2, 159.
- Hackman, J R. and Oldham, G R. (2005). 'How job characteristics theory happened'. *The Oxford handbook of management theory: The process of theory development*, 151-170.
- Hackman, J R. and Oldham, G R. (1976). 'Motivation through the design of work: Test of a theory'. *Organizational Behavior and Human Performance*, 16, 250-279.
- Heckhausen, H. (1967) *The Anatomy of achievement motivation*. Academic Press, New York.
- Heckhausen, H. (2003) *Motivaziya i deyatelnost*, SPb.: Piter; M.: Smysl.
- Lysenko, E. and Kovaleva, I. (2016). 'Involvement of Personnel in the System of Talent Management: Content Analysis of International, Federal and Regional Companies Sites, Having

Activities on the Territory of Russian Federation'. Proceedings of 3th International Multidisciplinary Scientific Conferences on Social Sciences and Arts (SGEM), 23-31 August 2016, Albena, Bulgaria BK 1: Psychology and Psychiatry, Sociology and Healthcare, Education, Vol. III, 549-556.

Lysenko, EV and Kovaleva, IG. (2015), 'Talant-menedgment kak novoe napravlenie v oblasti upravleniya chelovocheskimi resursami.' *Upravlenie Personalom i Intellektualnymi Resursami v Rossii*, 4 (3), 5-9.

Mehrabian, A. and Ksionzky, S. (1974). A theory of affiliation. D.C. Heath, Lexington, Mass.

Mehrabian, A. (1991). Your inner path to investment success: Insights into the psychology of investing. Probus, Chicago.

McClelland, D. (2007) Motivaziya cheloveka. SPb.: Piter, 2007.

McClelland, D C., et al. (1974) The achievement motive. Wash.

McClelland, D C. and Burnham, D H. (1976). 'Power is the great motivator'. *Harvard Business Review*, 54, 159-166.

McClelland, D. (1988) Human Motivation, Cambridge University Press.

## **Problems of the Development of Innovation Customs Technologies in the Formation of the Digital Economy**

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### **Abstract**

The relevance of this study is due to the fact that the innovation customs technologies adoption can accelerate and simplify the customs operations, improve the efficiency of the customs control and ensure the organization of the «single window» and e-customs functioning. The article deals with the innovation customs technologies that are used by the customs authorities of the Russian Federation and the participants of the foreign economic activity. In this paper the authors propose new targets that evaluate the activity of the customs officers that address the customs operations, as well as their formulas. The main problems of customs technologies application are revealed and the recommendations for improving the innovation customs technologies adoption are given.

**Keywords:** customs technologies, electronic customs, innovation management, remote release technology, customs control.

### **Introduction**

According to the modern conditions of globalization and constant development of the information technologies, the adoption of new information technologies has the priority.

The information technologies – processes, methods of search, collection, storage, processing, provision, dissemination of the information and the ways of implementation of such processes and methods.

The adoption of the innovation customs technologies is one of the key areas of the customs service development. The purpose of the customs technologies adoption is to accelerate and simplify the customs operations, improve the efficiency of the customs control, as well as to reduce the time and financial costs connected with the foreign economic activity implementation.

The analysis of the innovation customs technologies adoption facilitates the transition to a qualitatively new stage of implementation of the customs operations and the customs control – the development of the single window and the establishment of the e-customs by the year 2020.

The purpose of the work is to develop the recommendations for improving the innovation customs technologies adoption. This purpose may be achieved by solving the following tasks:

- considering the technologies used in the customs authorities;
- characterizing the target indicators of the customs authorities activities evaluation;
- identifying the main problems of the innovation customs technologies adoption and suggesting the ways of their solving.

## **The Implementation of the Digital Customs Technologies in the Customs Clearance**

A significant number of works by Russian researchers are devoted to the analysis of the use and implementation of individual customs technologies, but the issues of introducing advanced customs technologies in the customs authorities of the EAEU have not been studied enough.

In recent years, in the scientific works in the field of customs, the application of electronic declaration has been considered in the works of A. Grainger, E. Popova, O. Matveyeva, A. Dudiyeva, A. Datsenko. Technologies of remote release and preliminary informing were the subject of research by representatives of the customs academic environment - Y. Petrova, W. Czyzowicz, E. Stamati, I. Pavlikov and P. Afonin and A. L. Khrunova.

However, none of the surveyed researchers analyzed several promising customs technologies in the customs authorities in the context of their effectiveness. In general, there is an acute shortage of complex work on the application of advanced customs technologies and their place and role in the Russian Federation.

In order to create favorable conditions for the foreign economic activity and improve the competitiveness of the economy, the customs authorities take measures to improve the customs administration, to adopt the new perspective technologies such as: technology of electronic Declaration, technology of remote release of goods, technology of automatic registration of Declaration of goods, technology of automatic release of goods, technology of electronic Declaration of customs procedure of customs transit, technology of preliminary informing and others.

These technologies represent an interconnected set of innovations and softwares aimed for improving the customs authorities activities and the mechanism of their interaction with the participants of the foreign economic activity. Despite the fact that each of them appears in different periods of time, nowadays, they represent a complex picture and a new generation of the customs authorities work.

The basic customs technology for the implementation of customs Declaration of goods is the electronic Declaration, on the basis of which all the subsequent technologies are adopted and applied.

Electronic Declaration is a customs technology, the purpose of which is to accelerate the customs operations and the customs control during placing the goods under the customs procedures. This technology deals with the goods transported across the customs border of the Eurasian economic Union (EEU), by providing documents for these purposes in electronic form with the use of electronic digital signature.

To submit an electronic Declaration for goods, a participant of the foreign economic activity must register in the personal account and choose an electronic Declaration for goods among the popular services, then follow the next steps: preparation of the documents; submission and registration of the documents by the customs authority; verification of the documents and the information by the customs authority; release of goods.

The development of the electronic Declaration was a factor of the remote release technology adoption, which allows to reduce the flow of the heavy vehicles and thereby unload the transport infrastructure in large settlements, helps to optimize the logistics links between the shippers and the consignees of the imported goods, thereby reducing the financial and time costs of both participants of the foreign economic activity and the customs authorities.

The remote release technology is based on the use of the remote release in the centers of the electronic Declaration (CED).

The CED, at its core, is a specialized customs authority, the competence of which is limited exclusively to the Commission of the customs operations in respect of goods declared in electronic form, including the use of the Internet.

The work of the CED is based on the use of the remote release – a technology of customs Declaration, in which the Declaration of goods (DT) is submitted to the internal customs authority and the actual control, is carried out at the border customs.

With the help of the remote release technology, the participants of the foreign economic activity can submit the DT in electronic form to the CED, but in this case the cargo actually located at the border can be released into free circulation.

The national legislation provides for a provision that regulates the filing and the registration or the verification of the DT and the supporting documents prior to the arrival of goods with the use of the information technology, in case if it is cost-effective and efficient for the customs and the traders, and if it facilitates the provision of the information.

The preliminary information sent by the interested person is automatically controlled by the format and logic, following the results of which the interested person is provided with a unique identification number assigned to the preliminary information in electronic form, or a refusal to download the preliminary information. Further, upon the arrival of goods to the customs territory of the EEU, the participant of the foreign economic activity is obliged to submit a document containing information on the registration number of preliminary information within the terms established by the legislation.

The technology of automatic registration of the DT is a customs technology, in which the registration of the Declaration sent to the customs authority via the Internet is made without the direct participation of the officials, and the format-logical control of the electronic Declaration takes place without the participation of the customs officials.

It must be noted that one of the perspective directions of the development and the adoption of the technologies for the automatic registration of the DT and the automatic release of goods is their use in respect of goods placed under the customs procedure of release for domestic consumption.

It is important to note that the technology of automatic registration of the DT and automatic release of goods is widespread in the foreign customs authorities, considering the specifics of foreign trade in these countries. According to the tendency these technologies are generally used, in the developed countries due to the novelty and the requirement for a high level technical equipment of the customs services. In addition, the automatic registration of the DT is more widespread in the world, while the automatic release of goods entails the possibility of risks associated with the state security of the country.

The technology of automatic registration of the DT and automatic release of goods is introduced in the countries of the Association of Southeast Asian Nations (ASEAN) and used more than others, despite the fact that the ASEAN members have different levels of the technical equipment, the personnel qualification. The ASEAN countries are successful in this area and the application of other effective customs technologies became the reason of their success.

The ASEAN's experience is relevant for the EEU on the creation of a single window, an administrative cooperation, harmonization and a trade facilitation: 7 of 10 countries have a single window system (Singapore, Malaysia, Thailand, Brunei, Indonesia, Philippines and Vietnam), subject to a minimum number of the export and import documents (the first place in the ranking of Doing Business 2016 in terms of «international trade» goes to Singapore, where a bill of lading, invoice, customs Declaration and packing list are requested for the export and the import).

In the USA and Canada, the technology of an automatic registration of the DT is implemented for all the customs procedures, but the technology of an automatic release of goods is not applied because of

the prevention of the high-risk possibility of national security destruction. Analyzing the countries geographically distant from the EEU, we see that in New Zealand the technology of automatic registration of the DT is used in all customs procedures, but the automatic release of goods is carried out only in respect of goods placed under the customs procedure of the export. In Thailand, the automatic release of goods is implemented for the least risky goods, and the automatic registration of the is implemented for all customs procedures.

The newest among the considered innovation customs technologies developed on the basis of electronic Declaration is the electronic Declaration of the customs procedure of customs transit – customs technology, which consists in the Commission of customs operations by the customs authorities during the customs Declaration of goods placed under the customs procedure of customs transit in electronic form and in order to improve the application of such customs procedure.

The electronic Declaration of the customs procedure of customs transit is the latest perspective customs technology among the others developed on the basis of electronic Declaration. This new customs technology consists of the Commission of customs operations conducted by the customs authorities during the customs Declaration of goods placed under the customs procedure of the customs transit in electronic form and in order to improve the application of such customs procedure.

The transit cargo transportation refers to the high importance issues and is directly related to the national security of the country, and the system of guarantees of the international cargo transportation in the EEU is relevant today. It is important to note that with the help of the customs authorities standard softwares used for the registration of arrival, the information contained in the electronic transit Declaration is used as the preliminary information about goods and vehicles transported across the customs border of the EEU in respect of goods imported into the customs territory of the EEU, in case if the submission of the preliminary information is mandatory in accordance with the law of the EEU.

Thus, the basis for the implementation and implementation of all considered promising customs technologies is electronic Declaration.

As a result of the application of the adopted innovation customs technologies the participants of the foreign economic activity can choose the most convenient variant of the Commission of customs operations: remotely (using the technology of remote release, dividing the documentary and actual control), preliminary informing on goods (using the preliminary informing, for the purpose of acceleration of the Commission of the customs operations and the customs control), automatically (using an automatic registration of the DT and an automatic release of goods) and electronically (using the technology of electronic Declaration of customs procedure of customs transit, for minimization of the transport costs and time of the customs transit).

### **Key Performance Targets and Indicators for the Innovation Development of the Russian Customs**

In order to ensure the control over the implementation of the Comprehensive program of development of the Federal Customs Service of Russia for the period up to the year 2020, 4 targets are calculated for the automatic registration of the DT and an automatic release of goods that evaluate the activities of the customs authorities directed at the customs operations without the direct participation of the customs officials, namely:

- target indicator № 3 «Share of the automatically registered electronic declarations for exported goods»;
- target indicator № 4 «Share of the automatically registered electronic declarations for imported goods»;
- target indicator № 5 «Share of the automatically issued electronic declarations for exported goods submitted by the participants of the low-risk foreign economic activity»;

– target indicator № 6 «Share of the automatically issued electronic Declarations of imported goods, submitted by the participants of the foreign economic activities of the low level risk».

To expand the range of persons who can use the perspective customs technologies, subject to the constant monitoring of the risk management system: the automatic release of goods should be available for the participants of the foreign economic activity of the medium and high-level risk. For this, we propose to enter into the list of the key indicators «10 steps towards the business» the target indicator «Share of the automatically issued electronic declarations for exported goods» which will be calculated by the formula:

$$De = Ne / Te \times 100\%, \quad (1)$$

where De – the share of the automatically issued electronic Declaration of exported goods, %;

Ne – the number of the automatically issued declarations for goods in accordance with the customs procedures providing for their export from the customs territory of the EEU;

Te – the total number of the electronic declarations for goods registered in accordance with the customs procedures, for which the automatic registration is implemented, exported from the customs territory of the EEU.

We also propose a second target, which will be called «Share of the automatically issued electronic declarations for imported goods», calculated by the formula:

$$Di = Ni / Ti \times 100\%, \quad (2)$$

where Di – the share of the automatically issued electronic Declaration of imported goods, %;

Ni – the number of the declarations issued in automatic mode for goods in accordance with the customs procedures providing for their import into the customs territory of the EEU;

Ti – the total number of the electronic declarations for goods registered in accordance with the customs procedures, for which automatic registration is implemented, imported into the customs territory of the EEU.

The proposed targets need to be tested, however, we believe that they will create the basement for the development of the methodology for assessing the automatic release of goods for the participants of the foreign economic activity of the medium and high risk.

### **Recommendations for Improving the Adoption of the Innovation Customs Technologies**

In the process of research, we have identified the problems that reduce the effectiveness of the adoption of the innovation customs technologies in the customs authorities of the Russian Federation: technical, technological, regulatory, and organizational.

The technical problem is expressed in the failures of the software: the technical problems in the work of the KPS «Sea Port Portal» in the implementation of the preliminary information for the sea mode of the transport, as well as a low speed of processing the documents and a long time between the request and the receipt of the information from the DT database, which slows down the processing of orders for loading goods and can lead to a delay in the ship's departure from the port.

The next set of problems is of a technological nature. Thus, the quality of the provided preliminary information is low and, therefore, does not allow the proper use of the existing perspective customs technologies. For example, the information from the waybills in the preliminary information does not match the information specified in the DT.

From there, when the providing preliminary information about the goods is poor-quality, it is impossible to identify the risks, the indicators of which are contained in the risk profiles used in the preliminary information.

Moreover, there are strict criteria for the automatic registration, in case of failure of which the system refuses to register a DT. For example, when we have some restrictions on the customs value of the goods, the circle of persons and the rules of formalization of the documents.

The organizational problem consists of the discrepancy between the working time of customs posts (CED) (non-round-the-clock) and border customs posts (round-the-clock), what increases the time of the customs operations and leads to the financial and time costs for the participants of the foreign economic activity.

To solve the problems arising from the customs technologies adoption, we have proposed recommendations, namely: the technical problem may be solved by upgrading the KPS «Sea Port Portal» and increasing the load during the operation. This can be done by the source code analysis of the program determining the processing in the places of access to the resources, increasing the amount of RAM and the main memory of the hard drives of the server, which will allow more connections, so that the performance will be increased.

Technological problems may be solved by the unification and standardization of the composition of the information in the preliminary information, the automatic registration of the DT and the automatic release of goods.

In addition, it is necessary to transfer the private criteria (for example, the presence of features of the movement of the goods) from the automatic registration of the DT to the automatic release of goods, so that that the format-logical control would be the only reason of the refuse at the stage of automatic registration of the DT registration. For example, it's necessary to register the DT, if this DT is specified and the goods are transferred as supplies, but the automatic release of goods will not be implemented.

Thus, our recommendations developed to improve the adoption of the innovation customs technologies can ameliorate the quality of the customs operations by reducing the time and the financial costs and improving the efficiency and effectiveness of the customs authorities.

## **Conclusion**

In the article it's shown that the adoption of the electronic Declaration became the basis for the implementation of the technology of remote release of goods, the advance information technology, the technology of automatic registration of goods Declaration, the technology of automatic release of goods, the technology of the electronic Declaration of the customs procedure of the customs transit.

As a result of the study, we described the procedure of the innovation customs technologies in the customs authorities, the possibility of filing an electronic Declaration via the Internet, the creation of a CED, the possibility of applying the preliminary information about the goods on all modes of transport, automatic registration of the DT and automatic release of goods, the electronic Declaration of the customs procedure of the customs transit, which are prerequisites for the transition to a new stage of the development of the customs service – the creation of a «single window» and the electronic customs.

In the course of the study we identify the main problems of the innovation customs technologies adoption: technical (the failures), technological (a poor quality provided information, the errors in the documents formalization, the strict criteria for the automatic registration), and organizational (the mismatch of working time of the customs posts (CED) and the border customs posts). We have developed possible recommendations to improve the implementation of the customs technologies.

We are the first who proposes the improved formulas for assessing the effectiveness of automatic production of goods. The recommendations will allow expanding the range of the persons who has the right to apply the automatic release of goods, which, in turn, will help to increase the key indicators of the customs activity «10 steps towards business».



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## References

1. Afonin P. N., Khrunova A. L. (2017), 'Preliminary informing of customs authorities', *Economic relations.*, 1, 111-118.
2. Boltunova L. N. (2015), 'Preliminary notification of goods imported by sea transport as a tool for acceleration of customs operations', *Bulletin of Taganrog Institute of management and Economics*, 1, 71-74.
3. Czyzowicz W., Rybaczyk M., (2017), 'Customs enforcement network (CEN) database perspective: a case study', *World Customs Journal*, 1(11), 35-46.
4. Grainger A., Huiden R, Rukanova B. and Yao-Hua Tan. (2018), 'What is the cost of customs and borders across the supply chain? ...and how to mitigate the cost through better coordination and data sharing', *World Customs Journal*, 12 (2).
5. Kerstens J. and Canham J. , (2018), 'Blockchain: mapping new trade routes to trust', *WCO News*, 87, 52-55.
6. W. Klocek, (2018), 'The implementation process of IT solutions in the Polish Customs Administration', *i-Customs Journal*, 6, 18-20.
7. Korobkova M. N. (2017), 'The technology of electronic Declaration of goods placed under the customs transit procedure', *Scientific notes of Saint-Petersburg named after V. B. Bobkov branch of Russian customs Academy*, 1 (6), 32-35.
8. Kuleshov A. V. (2016), 'Customs technology: the way forward (for example, the North-Western customs administration) ', *Scientific notes of Saint-Petersburg named after V. B. Bobkov branch of Russian customs Academy*, 3 (59), 49-52.
9. Nikolaev A.S. (2017), 'Perfection of the activity of the customs bodies of the Russian Federation in the risk management system' // *Competitiveness in the Global World: Economics, Science, Technology*, 6-3 (51), 98-101.
10. Verzhilin D., Maximova T., Sokolova I. (2017), 'Online Socioeconomic Activity in Russia: Patterns of Dynamics and Regional Diversity', *Communications in Computer and Information Science*, IET , 745, 55-69.
11. 'WCO Single Window Guidelines', (2018), 'Single Window Data Harmonization Guidelines', World Customs Organization. [Online], [Retrieved September 22, 2018], <http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/single-window-guidelines.aspx>

## **Processing of Production Knowledge for Building Knowledge Management Systems (KMS) in Manufacturing Companies**

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### **Abstract**

The article presents stages and examples of processing production knowledge for building knowledge management system (KMS). Decision problems in the technological preparation of production are presented. The identification of knowledge concerning the analysis of the problems of a heuristic character leads to an elaboration scheme associated with the design processes. At the stage of the knowledge conceptualization, decision trees, that graphically reflect the decision-making, are elaborated. The condition of proper knowledge formalization is to present the relationship between input information and output information about of the production processes. To meet this condition, appropriate methods of knowledge representation have been elaborated. In the paper the production knowledge implementation basing on the usage of the decision tables concept was emphasized. Examples of classical decision tables used in the design of technological processes are presented. In the structures of tables, developed decision rules describing production knowledge.

**Keywords:** production knowledge, decision trees, technological production preparation, decision tables.

### **Introduction**

The strategic goal of knowledge management is the multiplication of intellectual capital and the enlargement of the organization's efficiency. Many authors such as for example Awad and Ghaziri (2008), Dalkir (2005), Mertins, Heisig and Vorbeck (2003) suggest that modern companies should be based on knowledge, which resources and proper management of these resources are seen as the most important source of enterprise's competitive advantage. De la Mothe and Foray (2001) mentioned that knowledge is an important resource in the development of manufacturing enterprises, which is the main source of innovation. In the case of the knowledge management, key processes are discerned, such as: locating, acquiring, development, distribution and using of knowledge, what has been noted in the books of such authors as Davenport, Probst (2002) and Wong, Aspinwall (2004). Knowledge management is understood as a set of actions fitting a proper form and the processes direction taking place in the company's knowledge resources.

There is a term existing in the manufacturing companies which is called the production knowledge. In the book by Trajer, Paszek and Iwan (2012) noted that production knowledge contains such sets of information thanks to which the basic objectives of production preparation may be implemented. Production knowledge resources contribute to the improvement of production processes and make the product meet the market requirements. Depending on the sources, the knowledge resources may be divided into basic groups of knowledge about the production processes, systems and products.

The starting point for the building a knowledge management system is the analysis of knowledge resources in a manufacturing company. Ongoing research in this area includes attempts to implement elements of artificial intelligence in the knowledge management systems what was noted in the books of such authors as Madanmohan (2005) and Negnevitsky (2002). The research is focused primarily knowledge codification strategy and are based on methods of the expert systems elaboration as described by the following authors: Giarratano, Riley (2005), Rutkowski (2008) and Turban, Aronson (2003). The rationale for the selection of such methods is the nature of the production knowledge itself,

which is embedded in the reality of the company. It is necessary to use in such a case, the specialists-experts knowledge dealing with the production preparation. It allows mapping the way of experts reasoning, solving selected decision problems that require detailed knowledge resources. Within the knowledge codification there are some steps implemented, associated with: acquiring knowledge, elaboration of its representation and the record of the expert system knowledge base. In the paper by Ćwikła (2014) is included the example of these activities is elaborated methods of manufacturing data acquisition for production management. In the paper by Grabowik, Krenczyk and Kalinowski (2012) is located another example within the elaboration of the knowledge representation is the use of the hybrid systems CAPP.

It was noted that an approach based on the experts knowledge concerning the construction of knowledge management systems is quite general, in practice it is possible to proceed directly to the implementations. To be seen is a shortage of strict construction methods of which enable building of knowledge management systems in manufacturing companies. Therefore it becomes necessary to develop such a method of knowledge processing that will allow the construction of a dedicated knowledge base of the knowledge management system.

### Stages of processing production knowledge

The knowledge resources gathered in a company are subject to the process of transformation. It is possible to distinguish firstly the input form of knowledge which is constituted by expertise knowledge. The output form of the knowledge is constituted by the system knowledge, which is recorded in the knowledge base system with the use of a software tool. This knowledge is presented according to the accepted knowledge representation. The knowledge transformation processes are in line with the strategy of knowledge codification, which goal is the identification of resources, the creation of organizational knowledge bases and the use of information systems in the knowledge management. The elaboration of the knowledge management system requires conducting of stages of processing production knowledge as shown in Fig. 1.

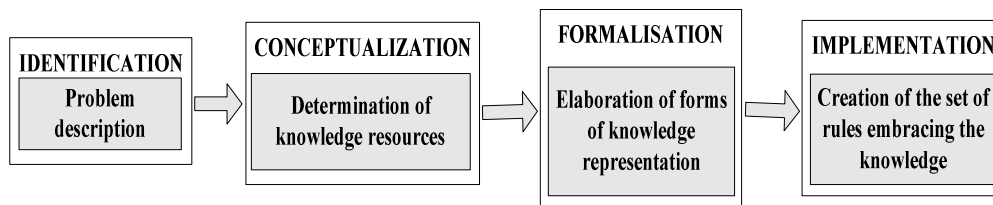


Fig. 1: Stages of processing production knowledge

As part of the knowledge identification stage, the decision problems are selected and the extent of their solutions is determined. The conceptualization stage is based on a detailed analysis of selected problems in terms of determining the required knowledge resources. The knowledge formalization is to translate key concepts, rules and relationships into formal. It is associated with the creation of the proper knowledge presentation, which is used in the recordings of the system knowledge base. During the implementation phase, the set of decision rules are created that stand for the knowledge components.

### Identification of the production knowledge

The identification stage of processing production knowledge is based on the analysis of the fundamental problems in the area of production preparation. These problems depending on the way of solving can be divided into two types:

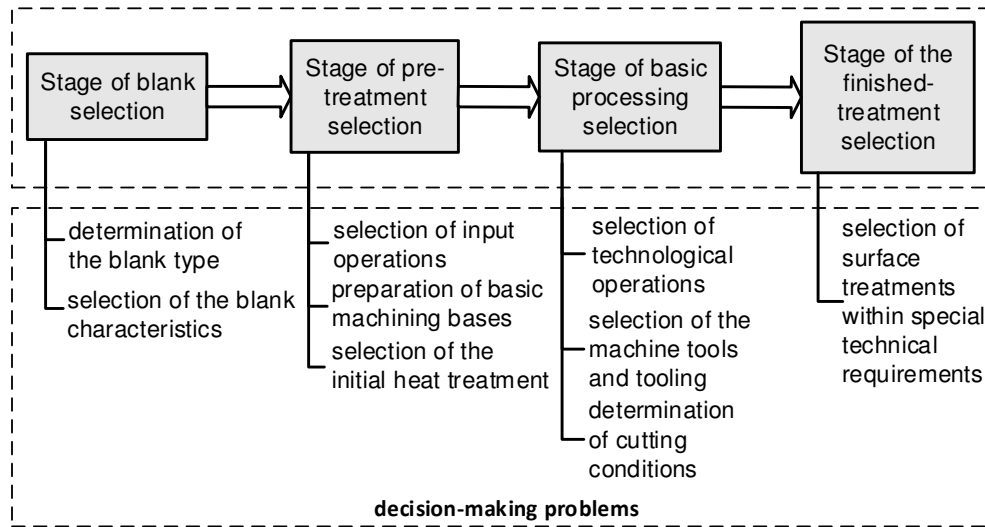
- algorithmic problems - these are the problems of known algorithm solutions (e.g.: choice of machining parameters, determination of time assigned to technological operations),

- heuristic problems - the solution of these problems depends on the specific conditions related to the company and is based largely on the experience of experts; they constitute the essence of decision making associated with the selection of the optimal variants in the view of adopted criteria; examples of such problems are: the elaboration of the basic plan of the technological process, designing elements of the operations structure, etc.

For example, the problem description starts with an analysis of the production preparation processes of selected machine elements. This analysis results in the determination of decision-making problems, the solution of which requires specific sets of production knowledge accumulated in the system. Regarding the elaboration of the knowledge analysis involves:

- construction of machine elements, e.g. the type of material, geometric dimensions, surface net-shape precision, surface roughness, heat treatment, surface hardness, etc.,
- technological characteristics of the production system, it means the analysis of the production capacity of the considered company, technical tools, the cutting tools base and technological hardware, etc.,
- relationships between the element construction and the process structure, it means determination of technological and technical resources that need to be applied to obtain the required characteristics of the element.

The identification of knowledge concerning the analysis of the problems of a heuristic character leads to an elaboration scheme associated with the design processes of selected machine components (Fig. 2). As a part of the decision stages, heuristic problems are determined that affect the distribution of knowledge resources for the implementation of specific sub-targets.



**Fig. 2: Examples of decision-making problems in technological production preparation of machine elements**

Troubleshooting process of decision-making requires the creation of acceptable alternative solutions from the point of view of the technological capacity of the production system and production profitability in terms of the production costs minimization and the processing cycle time.

### **Production Knowledge Conceptualization**

The conceptualization stage of knowledge requires the elaboration of the knowledge resources on the basis of which the decision problems are solved, determined at the level of knowledge identification. Preparing of the knowledge sets is based on a multi-stage structure of the technological process of machine parts. The sequence of distinguished decision steps results from the choice of manufacturing

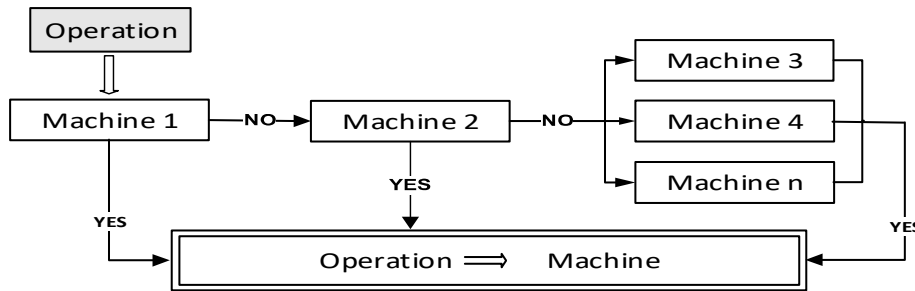
operations, in order to increase the net-shape precision and fit desired properties to the treated objects, until the finished product is achieved. In various stages of the design, partial decision problems were picked out, what allowed to organize them according to assumed knowledge sets.

While creating variants, specific criteria and limitations existing in the selected companies, are analysed. The number of possible solutions variants grows as the level of detail of the technological design process increases. In contrast, the degree of variants diversity depends on the level of complexity of the construction form of the component. The options available to choose from should be evaluated on the basis of which priority hierarchy and conditions of applicability are determined. Taking into account the level of description precision to describe the technological process structure, variants are created at different levels, e.g.:

- variants of technological processes,
- variants of technological operations,
- variants of technological tooling.

The number and complexity of options at each level depends frequently on the size of production and the company's manufacturing capabilities. It should be noted that while increasing levels of creating variants there is a simultaneous increase of the level of description precision of the technological process.

At the stage of the knowledge conceptualization, decision trees, that graphically reflect the decision-making, are elaborated. As an example of the selection variant based on the priority hierarchy, the selection of the machine in the technological process was shown. The starting point is the analysis of the machine technological capabilities. This leads to the creation of a set of possible variants of application. The basic procedure for the machines selection is shown in Fig. 3. The procedure scheme is based on the decision tree structure, in which nodes, machine names are placed on which the process takes place. The tree nodes are variants placed in the order of a fixed hierarchy of importance - the first node: *Machine 1*, the second node: *Machine 2*. In the case of nodes equivalence, variants were used as such: *Machine 3*, *Machine 4*, ..., *Machine n*. On the branches of the tree, Boolean values are placed, related to the adoption or rejection of the tree nodes data.



**Fig. 3: The decision tree scheme for the machines selection**

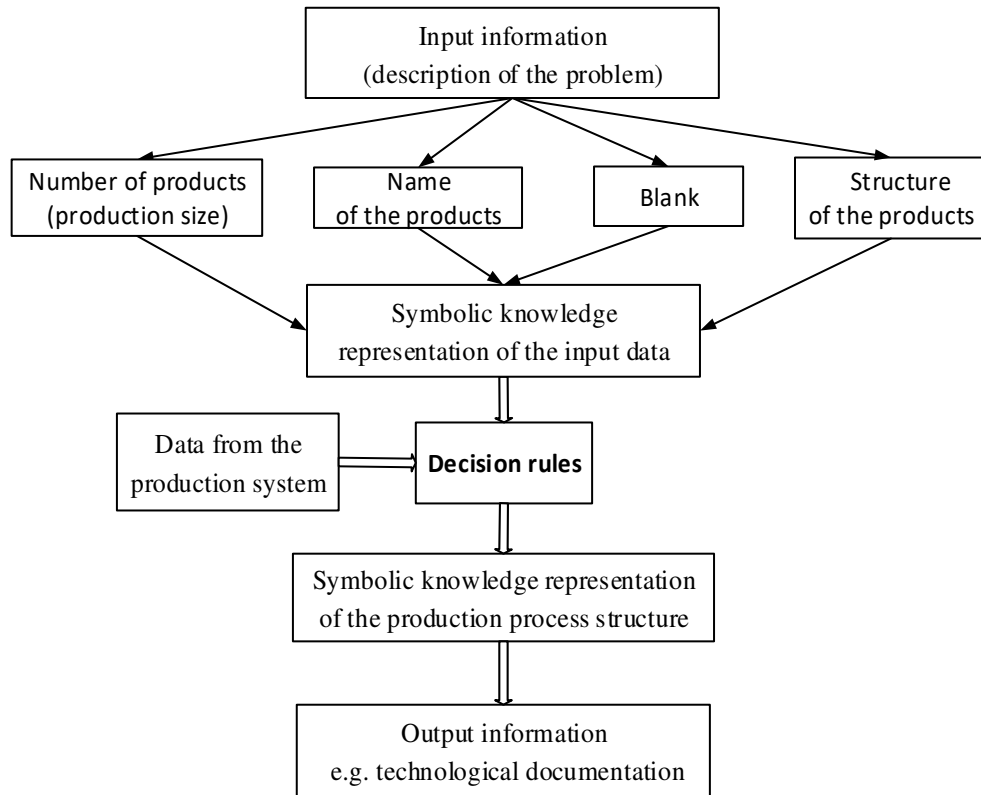
The decision problem solving process starts from the top of a tree and applies in passing through the various tree nodes, according to the accepted logic values of its branches, up to the base of the tree. The output value of the tree is the relationship between the type of technological operations and the name of the machine.

### The Stage of Knowledge Formalisation

The primary objective of the production knowledge formalization stage is its adequate preparation for recording in the knowledge system base. Knowledge is shown in the form of presentation that allows the gathering of knowledge components about ways how to solve the problems of decision-making. The condition of proper knowledge formalization is to present the relationship between input

information and output information about of the production processes. To meet this condition, appropriate methods of knowledge representation have been elaborated.

Knowledge representation means a general formalism of transmission, storage and collection of any knowledge supplies. It is a combination of data structures and interpretation procedures assigned such that providing that properly used may lead to intelligent behaviour and the usage of the computer system. The formalisation stage of the production knowledge focuses on the elaboration on decision rules, which determine the selection rules of the technological process for the particular production item. The rules represent relationships between the input information and the output information about production processes (Fig. 4).



**Fig. 4: Scheme of formalization of production knowledge by using of decision rules**

Decision rules constitute an elementary part of the knowledge base system, and on their basis, the decision problems are solved. The primary objective of the application of the rules is as follows:

- record of relationships appearing in the description of the construction element - the rules usually show the arrangement of the description (characteristic dimensions and elementary objects) and the order of assigning values to the variable dimensions,
- the creation of knowledge characterizing the structure of the designed technological process - starting with the record of the highlighted symbol of the structure based on rules describing a symbolic representation of the process structure, it is possible to obtain information about the process according to the assumed level of precision of the description.

### Implementation of the Production Knowledge

In the paper the production knowledge implementation basing on the usage of the decision tables concept was emphasized. Thanks to the fact that inference rules are introduced in the array structure, the elaboration of a knowledge base system supporting the design processes becomes possible. Decision tables are a tabular form of knowledge representation, expressed by the rules. Conditions (reasons) and effects (conclusions) of rules are written in lines of the table, while the columns of the table describe the logical values of combination elements. The general structure of the decision table can be divided into four basic areas as shown in Fig 5.

		R1	R2						Rn
C1									
C2	area of conditions			area of conditions					
...	description			values					
Cn									
D1									
D2	area of actions			area of actions					
...	description			values					
Dn									
EXIT									

Fig. 5: Structure of decision table

Identification of the decision table elements is enabled by assigning appropriate symbols to them. In the area of conditions and actions description, appropriate knowledge elements content is recorded, that will be used in the elaboration of the expert system knowledge base. In the area of conditions values symbols are recorded as follows: Y (Yes) or N (No), meaning the fulfilment or non-fulfilment of the condition. In the area of operations values only the symbol Y (Yes) is used, which indicates the answer in the form of the action (or conclusion) for the fulfilled conditions, recorded in the columns of the table.

Implementation of the activities associated with the decision table is performed by the rules research in the order of their notation in the columns, until a rule is met, for which all the conditions specified therein the fulfilled. Hence, a strict rule-writing order in the columns should be kept, which is related to the procedural nature of the knowledge representation. After determining the rule values, according to the records in table, actions assigned to this rule (including the order in writing) are performed. In the last row of the table labeled EXIT, decision logic output values Y (Yes) or N (No) may be placed, which are recorded in the conditional part of the rule, contained in another table. Thanks to it a set of tables is obtained, and the considered decision-making problem may be divided into smaller tasks for which separate decision tables are prepared.

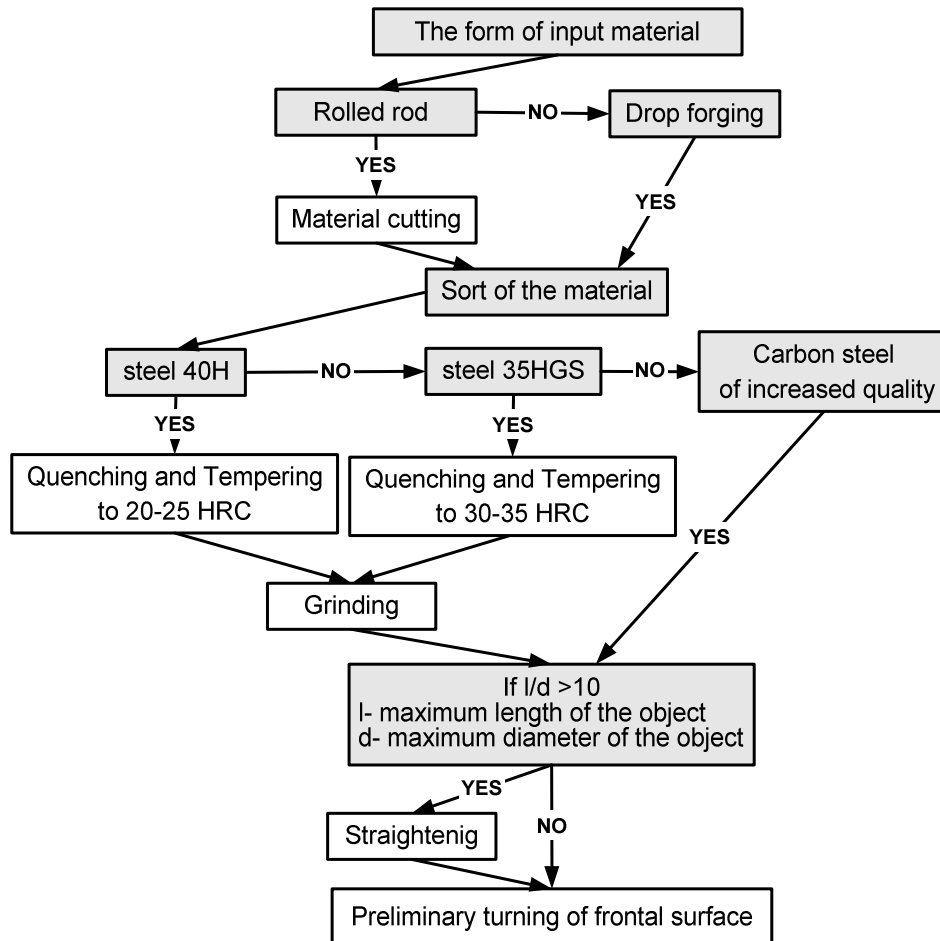
### Examples of Building of a Classical Decision Tables

In order to build a decision table for the given decision problem, first a procedure to choose the best variant from the permitted variations must be elaborated. Existing criteria and limitations in the selected company are analysed. The available variants to choose from should undergo an evaluation on the basis of which the order of importance and conditions of applicability are determined. This assessment is best conducted on the basis of available production knowledge and consultation with experts, involved in technological processes design.

The solution procedure of the decision-making problem is based on the structure of the decision tree. The main feature of this structure is a graphical representation of the decision-making process. The nodes of the decision tree contain the conditions under which the problem will be solved, and the actions that make the actual problem solutions. The branches of contain Boolean values, related to the

assumption or rejection of the nodes of the tree. The tree structure corresponds to the construction of the classical rules of inference: *if <conditions> then <actions>*, the advantage is the pictorial presentation of the decision-making process. Thanks to this, decision-making is easier because starting from the top of the tree, it is just to move between the tree nodes basing on the established Boolean values down to its base.

In the Fig. 6 an example of a decision tree structure has been presented, that have been elaborated for the decision-making stage associated with the selection of the pre-treatment of selected machine parts.



**Fig. 6: Example of a decision tree for selection of the pre-treatment technological process**

The decision tree analysis leads to the elaboration of a set of design rules for the technological process, which represent the relationship between the terms and actions. These rules are placed in a decision table as shown in Table 1.

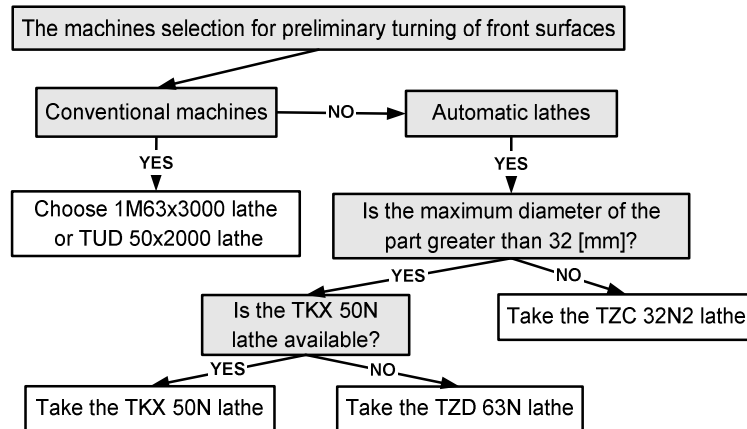
Suitable conditions C1÷C6 have been placed in rows, and activities related to the choice of the type of technological operations have been placed in rows D1÷D6. The design rules written in columns R1÷R12 have been obtained by associating logical values of fulfilment or failure of the conditions and required actions to implement the pre-treatment technological process. It may be noted that the conditional and behavioural parts of these rules are multi-elemental. The elements of rules creation are connected with the conjunction operators, which simplifies the recording of the knowledge needed to design technological processes.



**Table 1: Example of the decision table for selection of the pre-treatment technological process**

		R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
C1	Is the input material a rolled rod?	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
C2	Is the input material a drop forging?							Y	Y	Y	Y	Y	Y
C3	Is the part made of steel 40H?	Y	Y	N	N	N	N	Y	Y	N	N	N	N
C4	Is the part made of steel 35HGS?			Y	Y	N	N			Y	Y	N	N
C5	Is the part made of carbon steel of increased quality?					Y	Y					Y	Y
C6	Is the ratio of the total length to the maximum diameter of the part greater than 10?	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
D1	Material cutting	Y	Y	Y	Y	Y	Y						
D2	Quenching and Tempering to 20-25 HRC	Y	Y					Y	Y				
D3	Quenching and Tempering to 30-35 HRC			Y	Y					Y	Y		
D4	Grinding of the material	Y	Y	Y	Y			Y	Y	Y	Y		
D5	Straightening the material	Y		Y		Y		Y		Y		Y	
D6	Preliminary turning of frontal surface	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
EXIT		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

The decision table contains an EXIT row, in which Boolean output value were placed in order to connect with other elements of the knowledge representation. In this case, these are conditional pieces of rules that are used in machines selection for specific operations selected on the basis of the decision table. It is assumed that the logical value of these conditions is Y (Yes). Fig. 7 shows the decision tree for machines selection in turning of front surfaces.



**Fig. 7: A decision tree for the machines selection for pre-treatment technological process**

The activities included in the nodes of the tree represent the symbol of the selected machine, owned by a particular production company. The decision tree analysis allows the elaboration of the decision table elements as shown in the Table 2.

**Table 2: The example of the decision table for the machines selection of pre-treatment positions**

		R1	R2	R3	R4
C1	Is the machine for the turning operation of pre-treatment front surfaces selected?	Y	Y	Y	Y
C2	Are conventional machine selected?	Y	N	N	N
C3	Are automatic lathes selected?		Y	Y	Y
C4	Is the maximum diameter of the element greater than 32 [mm]?		Y	Y	N
C5	Is the TKX 50N lathe available?		Y	N	
D1	Take: the 1M63x3000 lathe or the TUD 50x2000 lathe	Y			
D2	Take the TKX 50N lathe		Y		
D3	Take the TZD 63N lathe			Y	
D4	Take the TZC 32N2 lathe				Y
EXIT		Y	Y	Y	Y

Introduced symbols of knowledge representation in the conditional and action part of the decision rules are described by information collected in the knowledge management system. Thanks to this, the system supports technological preparation of production by generating proposals for solutions to the decision-making problems in the process designing.

## Conclusion

Elaborated stages of processing production knowledge have been aimed at the building of knowledge management systems. These systems should effectively support designing of production processes associated with the knowledge processing, especially in the engineering industry. Taking into account the specific activities of such a systems, the results of its work can be bound to with the improvement of processes and products and the information flow in the companies.

Decision tables are effective representation of production knowledge and may be used in the process of implementation of a decision support system. The main advantages of this representation are its ability to group knowledge components according to distinguished stages of decision-making problems. In elaboration of decision tables, a special attention must be paid to the correct order of recording of the rows and columns, because it affects order of the questions and answers generation.

A further step in the production knowledge implementation is the record of elaborated decision tables in the knowledge base of the production knowledge management system. For this purpose, appropriate software tools are used, for example the shell expert systems. Decision rules are recorded according to a syntax and semantics of the used tool.

## References

- Awad, E. M. and Ghaziri, H. M. (2008), Knowledge Management, Dorling Kindersley.
- Ćwikła, G. (2014), 'Methods of manufacturing data acquisition for production management – a review', *Advanced Materials Research*, Vol. 837, 618-623.
- Dalkir, K. (2005), Knowledge Management in Theory and Practice. Elsevier.

- Davenport, T.H. and Probst, B. (2002), Knowledge management case book. Best Practices, Corporate Publishing John Wiley&Sons, Berlin&Munich.
- De la Mothe, J. and Foray, D. (2001), Knowledge Management in the Innovation Process, Springer-Verlag, Berlin.
- Giarratano, J. and Riley, G. (2005), Expert Systems. Principles and Programming, Thomson Learning.
- Grabowik, C., Krenczyk, D. and Kalinowski, K. (2012), 'The hybrid method of knowledge representation in a CAPP knowledge based system', *Hybrid Artificial Intelligent Systems*, Vol. 7209, 284-295.
- Madanmohan, R. (2005), Knowledge Management Tools and Techniques. Practitioner and Experts Evaluate KM Solutions, Elsevier Butterworth-Heinemann, New York.
- Mertins, K., Heisig, P. and Vorbeck, J. (2003), Knowledge Management: Concepts and Practices, Springer, New York.
- Negnevitsky, M. (2002), Artificial Intelligence. A Guide to Intelligent Systems, Addison-Wesley.
- Rutkowski, L. (2008), Computational Intelligence – Methods and Techniques, Springer-Verlag, Berlin – Heidelberg.
- Trajer, J., Paszek, A. and Iwan, S. (2012), Zarządzanie wiedzą, Polskie Wydawnictwo Ekonomiczne, Warszawa (in Polish).
- Turban, E. and Aronson, J.E. (2003), Decision Support Systems and Intelligent Systems, Prentice Hall, Saddle River, New York.
- Wong, K.Y. and Aspinwall, E. (2004), Knowledge Management Implementation Framework: A Review. *Knowledge and Process Management*, no. 2.

## Debates on How Economists See Sustainability

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### Abstract

As announced in our previous works, this paper is part of a larger research that deals with sustainable development and environmental protection in extractive industry. In this respect, the aim of this paper is to show how economists think about sustainability. We also consider the way in which ecologists think about sustainability (and reveal it in our next paper). We will not be considering whether or not sustainability should be a policy objective. That is the sort of ethical question that other previous paper addressed. Here we will take it as given that sustainability is desirable, that it is agreed that the current human generation should take account of the interests of future human generations. The first question that then arises is: what are the interests of future generations? The next question then is: how do we look after those interests? This second question itself involves two stages. First, we deal with identifying current policy objectives that look after future interests. Second, we deal with devising policy instruments to achieve those objectives. But this paper deals mainly with mapping the interests of future generations into current policy objectives and it addresses questions about instruments only in a very general way. Hence, much of the rest of papers will be concerned with more detailed analysis of such questions.

**Keywords:** weak and strong sustainability, Hartwick rule, consumption time paths, inter-temporal, future generations

### Introduction

The economic activity of mankind, especially in the last two centuries, has had a profound impact on the environment as resources are the backbone of every economy and provide two basic functions – raw materials for production of goods and services, and environmental services (Neagu, Bulearca *et al.*, 2017). The rapid depletion of forest resources, fish stocks, fossil fuels and mining deposits has raised many moral and practical questions about current and future generations. Moreover, a number of environmental problems, such as acid rain, greenhouse effect and ozone depletion, are the focus of all the world's states. In this sense, what does economic science say about the exploitation of deficient natural resources?

### Literature Review

The concept of 'sustainability' has become the current answer to absolving the world of its environmental and economic crises in the 21st century. Since its conceptualization, there has been a barrage of investigations and literature on the vagueness and ambiguity of its definition and applicability. There are two main opposing schools of thought; on one side are the pessimists, usually *ecologists* and other scientists, who are convinced the Earth cannot forever support the world's demand of renewable and non renewable resources. On the other side are the optimists, the *economists*, who are equally convinced that the Earth, with market incentives, appropriate public policies, material substitution, recycling, and new technology can satisfy the needs and improve the quality of human welfare, of this and following generations, indefinitely. Both views and supporting

arguments are, therefore, explored in the context of sustainable resource use and sustainable development (Mensah and Castro, 2004).

Hence, the “economic” conception of sustainable development points out to new mechanisms of market as a solution to stipulate the production to support the capacity of natural resources. The consideration here is to extend the mercantile regulation over the nature, pushing the social struggle for the control of the natural resources into the market, and not through the political sphere. It is passed over the conflict for the control of the natural resources (Brown et al., 2015), trying to create special conditions to keep them, without considering the political social standings, which rule the control power and the use of those resources (Krautkraemer, 2005). Sustainability is therefore seen as a dynamic concept based on attitude and flexibility not the final solution to utopia on Earth.

In this respect, in the first paragraph of the paper we shall identify interests as consumption levels, and consider comparisons of different time paths for consumption so as to discuss how the idea of sustainability as stated in several papers<sup>1</sup> might be made more precise. For economists this is the obvious way to proceed with the analysis of the sustainability problem. In this paragraph we also introduce, for later discussion, other ways of conceptualizing the sustainability problem. The next two paragraphs then look, respectively, at economic approach (in this paper) and ecological approach (in the next paper) to sustainability. We then discuss an approach which sees the problem primarily in terms of social processes and institutions (also in the next paper). These different ways of conceptualizing sustainability should not be seen as competitive or mutually exclusive. Rather, they are complementary; and the last paragraph of the next paper attempts to draw, at a general level, some environmental policy lessons.

Throughout the paper, analysis will assume that the size of the human population is constant. This assumption greatly simplifies exposition without the loss of any essential insights<sup>2</sup>. For example, if we take sustainability to be constant consumption, then clearly if we are really looking out for the interests of future generations we must be thinking about per capita consumption. The assumption of a constant population size means that when we talk about consumption going up, or down, or being constant, we are referring to the nature of the time path for both per capita and aggregate consumption. As in the previous papers, we can treat the consumption/utility that we refer to as that of some representative individual, where all individuals are the same in all relevant respects.

## Concepts and Constraints

Even if we restrict attention to the economics literature, there is no universally agreed definition of the concept of sustainability. On the contrary, in that literature, one finds a variety of definitions, meanings and interpretations. In one of its papers, Jack Pezzey wrote: ‘*So I see little point in expanding the collection of fifty sustainability definitions which I made in 1989, to the five thousand definitions that one could readily find today*’ (Pezzey, 1997, p. 448). A more useful exercise than providing an exhaustive list of the definitions that have appeared in the economics literature is to give just three that can illuminate the difficulties of coming up with a single all-embracing definition. This will help in understanding the various approaches to sustainability that can be taken, and in identifying the major issues addressed.

Pezzey (1997) distinguishes between ‘sustainable’ development, ‘sustained’ development and ‘survivable’ development. These concepts are defined as follows and the following notation is used:

$U_t$  - the utility level at time  $t$ ;  
 $\dot{U}_t$  - the rate of change of utility at time  $t$ ;

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<sup>1</sup> There is a large literature dealing with sustainable resource use and sustainable development (see: Barbier and Markandya, 1990; Redclift, 1992; Beckerman, 1994; Goldin and Winters, 1995; de Graaf *et al.*, 1996; Faucheux *et al.*, 1996; Pezzey and Toman, 2002; Howarth, 2012; etc).

<sup>2</sup> The feasibility of sustainability as constant per capita consumption where the population is increasing is analyzed, for example, in Solow (1974).

- $U_t^{MAX}$  - the maximum utility which can be held constant for ever from time  $t$  onwards, given production opportunities available at time  $t$ ;
- $U^{SURV}$  - the minimum utility level consistent with survival of the given population.

Then we may argue that:

- Development is *sustainable* if  $U_t \leq U_t^{MAX}$  always;
- Development is *sustained* if  $\dot{U}_t \geq 0$  always;
- Development is *survivable* if  $U_t > U^{SURV}$  always.

If utility is a function of consumption alone, the usual assumption in inter-temporal economic analysis, then it is possible to replace the word ‘utility’ by ‘consumption’ in each of these criteria (and to change symbols from  $U$  to  $C$  commensurably) and thereby to define them in terms of consumption rather than utility.

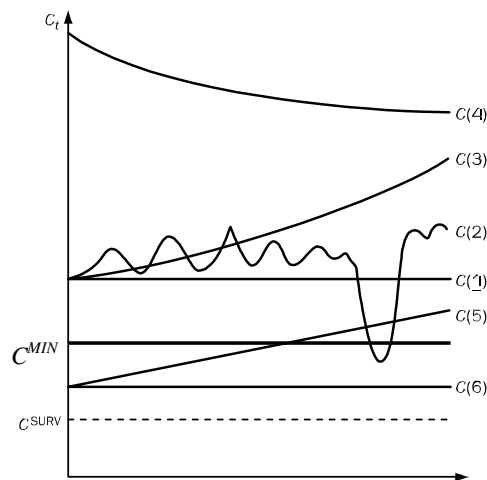
Doing this we obtain:

- Development is *sustainable* if  $C_t \leq C_t^{MAX}$  always;
- Development is *sustained* if  $\dot{C}_t \geq 0$  always;
- Development is *survivable* if  $C_t > C^{SURV}$  always.

Note that the level of utility (or consumption) corresponding to survivability is taken to be constant over time (hence  $C^{SURV}$  carries no time subscript). But  $C_t^{MAX}$  does, and must, include a time subscript. The highest level of constant, sustainable consumption an economy can obtain from any point of time onwards does depend on which point in time we consider. For example, at the end of a prolonged and major war, in which large stocks of resources have been consumed or irretrievably degraded, the maximum feasible level of sustainable consumption is likely to be smaller than it was before the war broke out.

### Consumption Time Paths

We will use some hypothetical time paths of consumption to illustrate some notions of sustainability. As noted in the demonstration above, and following on from the environmental literature already mentioned, it is standard when thinking about inter-temporal distribution issues such as sustainability for economists to work with utility functions where consumption is the only argument, and where utility increases with consumption. In that case, we can look at things in terms of either utility or consumption. The consumption time paths that we want to consider are shown in Figure 1.



**Figure 1: Consumption paths over time**

(Source: Author's own assumptions)

The vertical axis measures the level of consumption at any point in time. The passage of time from the present ( $t = 0$ ) onwards corresponds to movement from left to right along the horizontal axis. Six alternative time paths of consumption are shown, labeled  $C(1)$  to  $C(6)$ . In addition, the heavy horizontal line denoted  $C^{MIN}$  represents the level of consumption which is the minimum that society deems as being socially and morally acceptable, while the dotted line,  $C^{SURV}$ , represents the biophysical minimum consumption level.

### ***Comparing Consumption Time Paths***

Consider the idea of sustainability as non-declining consumption, which is the concept of sustainability that is most widely used in economic analysis. In Figure 1, four of the paths –  $C(1)$ ,  $C(3)$ ,  $C(5)$  and  $C(6)$  – satisfy the criteria of non-declining consumption. Can we rank them? Yes, but only if we adopt some kind of social welfare function. We saw in other papers that we could incorporate sustainability considerations into inter-temporal welfare maximization by adopting them as constraints. That kind of approach would identify one of  $C(1)$ ,  $C(2)$ ,  $C(3)$  or  $C(4)$  as ‘best’. Given that along  $C(3)$  consumption is at every point in time higher than on any of the other three paths, and is nowhere declining, that kind of approach with a utilitarian social welfare function of the sort considered in previous papers would identify  $C(3)$  as the best path. Although  $C(4)$  has higher consumption at every point in time, it is ruled out by the non-declining consumption constraint.

We saw in our previous paper (Neagu *et al.*, 2018) that an apparently sound ethical principle could in some circumstances lead to outcomes that are not obviously sensible. The same point can, and needs to, be made here. Consider path  $C(2)$  in Figure 1. It clearly does not have the non-declining consumption property. Suppose a choice has to be made between  $C(2)$  and  $C(6)$ . Strict adherence to the non-declining consumption criterion as a constraint on choice would, for any social welfare function, mean selecting  $C(6)$  rather than  $C(2)$  despite the fact that at every point in time consumption is higher on the former than on the latter path.

A serious objection to the non-declining consumption criterion is that it does not impose any requirements on how large the non-declining level of consumption should be. On this criterion, an economy is sustainable even if living standards are abysmally low and remain so, provided they do not get any lower over time. One can imagine a poor economy which could become considerably less poor in the medium future by the sacrifice of some consumption in the near future. Planning for such an economy with the non-declining consumption criterion as a constraint would rule out such a development path.

So, the adoption of a simple constraint such as non-declining consumption is not problem-free. What about alternative constraints that might be placed on the conventional maximization of an inter-temporal social welfare function so as to capture the spirit of an ethical concern for future generations? As noted above, Pezzey (1997) introduced the idea of survivable development. In Figure 1 the broken line labeled  $C^{SURV}$  shows some minimum level of consumption consistent with biophysical survival requirements. One could maximize subject to the constraint that consumption does not fall below such a level. That would avoid the problems with the non-declining consumption constraint noted above. It would not, for example, rule out  $C(2)$  or  $C(4)$ .

But one might feel that such a constraint is not really ‘fair’ to future generations. In discussions of poverty, it is now widely agreed that the poverty line should be culturally rather than biologically determined. In this spirit, we might argue that consumption should not fall below some minimum, decent, culturally determined level over time. Let us assume that such a level can be defined, and suppose that it corresponds to the horizontal line labeled  $C^{MIN}$  in Figure 1. We can use the term ‘minimum condition’ to describe the constraint on the choice of optimal consumption path that consumption should never fall below  $C^{MIN}$ . Such a constraint would rule out  $C(2)$  but not  $C(4)$ .

Table 1 summarizes how the six consumption paths of Figure 1 fare against the three constraints considered here. All of the six consumption paths satisfy the survivable development criterion (although we have noted that this is a relatively undemanding requirement). Three of them – paths

*C(1)*, *C(3)* and *C(4)* – also satisfy the minimum condition. Which paths satisfy all of the three criteria we have examined? Just two, *C(1)* and *C(3)*. Clearly, given that both satisfy all of the constraints considered, maximizing a conventional utilitarian inter-temporal social welfare function would mean the choice of *C(3)* over *C(1)* whichever sustainability constraint were adopted. *C(4)* would be the chosen path with either the survivability or the minimum condition constraint, but would be eliminated if the non-declining consumption constraint were adopted.

**Table 1: Various sustainability criteria applied to the hypothetical consumption paths**

Consumption path	Criterion		
	Non-declining consumption	Survivability	Minimum condition
C(1)	S	S	S
C(2)	NS	S	NS
C(3)	S	S	S
C(4)	NS	S	S
C(5)	S	S	NS
C(6)	S	S	NS

*Key: S = Satisfied; NS = Not satisfied*

*Source: Authors' own assumptions*

### ***Concepts of sustainability***

A concern for sustainability derives from an ethical concern for future generations together with an appreciation of the facts which implies that such concern needs to be incorporated into current decision making – because, for example, of the use of non-renewable resources in production (Mensah and Castro, 2004). If we did not care about future generations, then the use of non-renewable resources in production would not require any particular attention in current decision making. Equally, if nothing that we did now had any implications for future generations, then notwithstanding an ethical concern for them there would be no need to think about them in current planning and decision making.

What we have seen so far here is that even if we restrict attention to consumption, a ‘concern for future generations’ (Spash, 2011) can take a variety of expressions, and does not translate into a single simple constraint on current planning. It should also be noted that in explaining this using Figure 1 we implicitly assumed that the various alternative consumption paths are feasible, could actually be followed if chosen. This, of course, need not be the case in fact. Given, for example, the use of non-renewable resources in production, some would argue that constant consumption for ever, at any rate other than zero, is not feasible. We look at this and related matters below.

Before doing that we need to note that constant consumption (or utility) is not the only possible conceptualization of sustainability. Table 2 lists six concepts that are widely used and discussed in the sustainability literature.



**Table 2: Six concepts of sustainability**

# of concept	The concept
1	A sustainable state is one in which utility (or consumption) is non-declining through time.
2	A sustainable state is one in which resources are managed so as to maintain production opportunities for the future.
3	A sustainable state is one in which the natural capital stock is non-declining through time.
4	A sustainable state is one in which resources are managed so as to maintain a sustainable yield of resource services.
5	A sustainable state is one which satisfies minimum conditions for ecosystem resilience through time.
6	Sustainable development as consensus-building and institutional development.

*Source: Authors' own selection*

We will be discussing each of the concepts listed in Table 2 in some detail in the rest of the paper. Concepts 1, 2 and 3 are basically economic in nature, and will be discussed in the next paragraph ('Economists on sustainability'). Concepts 4 and 5 originate with ecologists, and are covered in the first paragraph of our next paper ('Ecologists on sustainability')<sup>3</sup>. As we shall see, while the third concept is expressed in economic terminology, it reflects a position, on substitution possibilities, that is more commonly found among ecologists than among economists. The final concept, really a group of concepts, sees sustainability as being essentially a problem of governance in the broadest sense.

Note that the concepts should not be seen as mutually exclusive. The first, for example, largely entails the second, because if utility or consumption is not to decline, resources must be managed so that productive opportunities are maintained for subsequent generations. The fourth is a particular case of the second. Again, the first seems to require the fifth if we take the view that production and consumption cannot be maintained over time in the face of ecosystem collapse.

None of these concepts explicitly specifies the duration of time over which sustainability is to operate. Presumably one must have in mind very long horizons for the idea of sustainability to have substance. But this merely begs the question of what is meant by a long period of time. Some writers choose to think of indefinitely long (or infinite) time horizons: a state is sustainable if it is capable of being reproduced in perpetuity. Others conceive of millennia or the like: periods of time over which human populations are approximately genetically constant. However, it is not necessary to decide upon any particular span of time: we could define a sustainable state as one in which some relevant magnitude is bequeathed to the following period in at least as good a state as it is in the initial period. Provided no finite terminal time is set, this implies that one is thinking about unlimited time spans.

## **Economists on Sustainability**

In this paragraph we provide an overview and preview of the way that economists approach the analysis of sustainability issues. We will come to a more detailed and rigorous account of many of the issues considered here later in our future papers to come.

### ***Economic concepts of sustainability***

In the previous paragraph we noted two economic concepts of sustainability:

- A sustainable state is one in which utility/consumption is non-declining through time.

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<sup>3</sup> Here, as elsewhere, we use the term 'ecologist' rather loosely to refer to natural scientists interested in matters environmental.

- A sustainable state is one in which resources are managed so as to maintain production opportunities for the future.

An example of a definition relating to the first concept is that Sustainability is defined as “. . . *non-declining utility of a representative member of society for millennia into the future*” (Pezzey, 1992, p. 32). Note that in terms of the terminology taken from Pezzey (1997) this relates to ‘sustained’ rather than ‘sustainable’ development. In fact, in his 1997 *Land Economics* paper, Pezzey states that he now regards ‘sustainable’ rather than ‘sustained’ development as the appropriate criterion of sustainability. However, most economists would still make an option for what the 1997 Pezzey calls ‘sustained’ as the definition of sustainability that focuses on the behavior of utility/consumption over time.

An example of a definition relating to the second of the above concepts is that sustainability involves “*Preserving opportunities for future generations as a common sense minimal notion of inter-generational justice*” (Page, 1977, p. 202; Page, 1977, 1982, p. 205). In thus defining sustainability, Page is appealing to John Locke’s (1960) concept of just acquisition, and the idea is that the present generation does not have the right to deplete the opportunities afforded by the resource base since it does not properly ‘own’ it.

Another version of the opportunities-based view underpins the most well-known definition of sustainability, that due to the Brundtland Report: “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (WCED, 1987, p. 43). While the utility/consumption-based and opportunities-based concepts start from different places, where they end up in terms of formal analysis is very much the same place. This is because for economists the opportunities that matter are consumption opportunities, so that to say that *A* has the same opportunities as *B*, but consumes differently is to say that *A* has different preferences from *B*. However, in the context of the single-commodity representative-consumer models that are mostly used for the analysis of inter-temporal distribution, and hence sustainability, issues, it is explicitly assumed that the utility function is the same over generations. In that kind of simple model, as we shall see when discussing the Hartwick rule later in this paragraph (and in other future papers to come), it turns out that constant consumption and equal opportunities are inextricably linked.

### **3.2. Is sustainability feasible? Substitution possibilities**

We have already noted that the clearest setting for the analysis of the sustainability problem is a model where a non-renewable resource, of which there is necessarily a finite amount in existence, is used in production. With such a characterization of the problem in mind, the Nobel laureate economist Robert Solow has criticized those environmentalists who urge that we should conserve resources for future generations. This is a damagingly narrow way to pose the question. We have no obligation to our successors to bequeath a share of this or that resource. Our obligation refers to generalized productive capacity or, even wider, to certain standards of consumption/living possibilities over time (Solow, 1986). What our successors will be interested in, Solow is in effect saying, is not the amount of ‘oil’ in the ground that they inherit from us, but rather whether they inherit the capability to do the things that we now do using ‘oil’. They will be interested in the consumption opportunities that they inherit, not the stocks of resources that they inherit.

To make the distinction that Solow makes it is necessary to believe that we can bequeath to our successors something that is a substitute for non-renewable resources. If we cannot bequeath a substitute, then, to honor our ethical commitment, which Solow accepts, to leave them with the same consumption opportunities as ourselves, we do have an obligation ‘to bequeath a share of this or that resource’.

The basic issues can be explored within the framework of the simple optimal growth model, where production uses a non-renewable resource. That model’s welfare function is:

$$W = \int_{t=0}^{t=\infty} U(C_t) e^{-\rho t} dt \quad (1)$$

to be maximized subject to the constraints:

$$\dot{K} = Q(K_t, R_t) - C_t \quad (2)$$

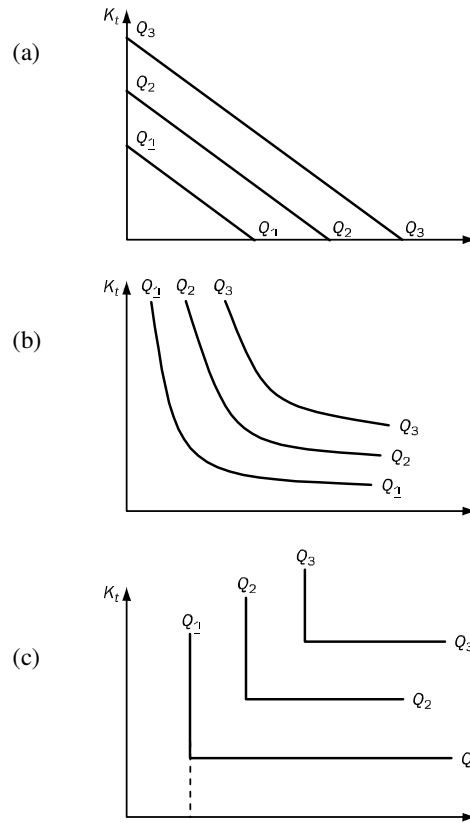
$$\dot{S} = -R_t \quad (3)$$

$$\bar{S} = \int_{t=0}^{t=\infty} R_t dt \quad (4)$$

where:  $W$  - Social welfare flow;  
 $U$  - Utility flow;  
 $C$  - Consumption flow;  
 $K$  - Capital stock (human-made);  
 $Q$  - Aggregate output flow;  
 $R$  - Resource extraction or use flow;  
 $S$  - Resource stock;  
 $\rho$  - Rate of utility time preference (utility discount rate);  
 $t$  - A period of time.

When discussing about the optimal consumption path (arising in the previous paragraph), it was noted that the production function  $Q(K_t, R_t)$  may be such that constant consumption for ever may simply be impossible. We were then interested in whether the standard utilitarian approach would, in circumstances where sustainability as constant consumption for ever was feasible, indicate sustainability. We saw that it would not. What we are now interested in is the question of feasibility – under what conditions is constant consumption for ever possible, notwithstanding that production uses inputs of a non-renewable resource available only in finite total amount?

Figure 2 shows the isoquants for three specifications of the production function  $Q_t = Q(K_t, R_t)$  that identify these possibilities.



**Figure 2 Production functions with capital and natural resource inputs**

Panel (a) of Figure 2 corresponds to:

$$Q_t = \alpha K_t + \beta R_t \quad (5)$$

In this case, the resource is non-essential in production. For  $R_t = 0$ ,  $Q_t = \alpha K_t$ , and any level of output can be produced if there is enough capital. The use of a non-renewable resource in production does not, in this case, mean that sustainability as constant consumption is infeasible. Capital is a perfect substitute for the non-renewable resource.

Panel (c) of Figure 2 corresponds to:

$$Q_t = \min(\alpha K_t, \beta R_t) \quad (6)$$

In this case,  $Q$  is equal to whichever is the smaller of  $\alpha K_t$  and  $\beta R_t$ . In panel (c), given resource input  $R_t$ , for example,  $Q_t$  is the maximum feasible output, however much capital input is used. In this case, the resource is essential in production, and substitution possibilities are non-existent. If there is no resource input, there is no output. Given the production function (6), the initial stock of the resource sets an upper limit to the amount that can be produced and consumed – total production over all time cannot exceed  $\beta \bar{S}$ . The inter-temporal distribution problem is now that of sharing out use of the resource over time.

This is often called the ‘cake-eating’ problem. If the production function is (6), then clearly in the model where production possibilities are given by equations (2) to (4), the size of  $\bar{S}$  sets an upper limit to the total amount that can be produced over all time. In this model there are no substitution

possibilities, and there is no technical progress – when the resource runs out, production, and hence consumption, goes to zero. Basically, the inter-temporal problem reduces to optimally sharing the stock of the resource as between those alive at different points in time. The problem with the obviously ‘fair’ solution of equal shares is that  $\bar{S}$  is finite, so that the infinite planning horizon embodied in equation (1) would mean that the equal shares are of size zero – a finite cake cannot be divided into an infinite number of pieces. If there is a resource that is always an essential input to production, and if there are no substitution possibilities for that resource, then the inter-temporal problem reduces to making the resource last as long as possible by consuming, at each point in time, as little as is possible consistent with survival.

With equation (5) as production function, the case shown in panel (a) of Figure 2, the inter-temporal problem posed by the use of a non-renewable resource in production is trivial – constant consumption for ever requires no special attention to the rate at which the resource is used. With equation (6) as production function, the case shown in panel (c) of Figure 2, the problem is insoluble – there is no pattern of resource use over time that can make constant consumption for ever feasible. The remark by Solow quoted above does not apply to either of these situations – in the former case conservation is unnecessary, in the latter case future generations would be interested in how much of the resource stock we left for them to use. In making this remark, Solow, like most economists, is assuming that substitution possibilities are somewhere between those of equations (5) and (6), so that the inter-temporal distribution problem is non-trivial but soluble. He is assuming, that is, that while non-zero output requires non-zero resource input, capital can substitute for the resource in production.

Panel (b) of Figure 2 shows the isoquants for such a production function. They are drawn for:

$$Q_t = K_t^\alpha R_t^\beta \quad \text{with } \alpha + \beta = 1 \quad (7)$$

which is a Cobb–Douglas production function with constant returns to scale. For this production function it can be shown that if  $\alpha > \beta$  then constant consumption for ever is feasible. Clearly, if in equation (7),  $R_t$  is set at 0, then  $Q_t$  is 0 – the resource is essential in production. However, given enough  $K$ , and  $\alpha > \beta$ , very high levels of output can be produced with very small levels of resource input, and there exists a program of capital accumulation such that  $R_t$  never actually becomes 0 (it goes asymptotically to zero) and consumption can be maintained constant for ever.

The nature of this capital accumulation program, which results from following the Hartwick rule, is discussed in the next subparagraph. The important point from that subparagraph is that the Hartwick rule is necessary but not sufficient for sustainability as constant consumption where production essentially uses a non-renewable resource input. If the production function is equation (6), for example, following the Hartwick rule will not result in constant consumption for ever. Nor will it if the production function is equation (7) with  $\alpha < \beta$ . Most economists follow Solow in taking the view that, in fact, substitution possibilities are such that sustainability as constant consumption for ever (or at least for a very long time) is feasible, so that the Hartwick rule is of great practical policy relevance.

### ***The Hartwick Rule***

John Hartwick (1977, 1978) sought to identify conditions under which constant consumption could be maintained indefinitely, given the essential use in production of input from a finite stock of a nonrenewable resource. He assumed that production conditions were as in equations (2) to (4) here, with the production function taking the form of equation (7) with  $\alpha > \beta$ . In such conditions, he showed that constant consumption would be the outcome if a particular savings/investment rule, now known as ‘the Hartwick rule’, were followed in an economy where depletion of the resource satisfied the conditions for inter-temporal efficiency. It has since been shown that the Hartwick rule ‘works’, i.e. leads to constant consumption, in more general settings where, for example, several types of non-renewable resource are being used in production, provided that all are being depleted efficiently. It needs to be emphasized that in all cases the Hartwick rule is necessary but not sufficient – following

it will realize constant consumption only if inter-temporal efficiency conditions are satisfied, and if sustainability as constant consumption is feasible, i.e. if the substitution possibilities as between capital and resources are great enough.

Here we discuss the Hartwick rule for the case where just one non-renewable resource is used in production. We assume that the inter-temporal efficiency conditions are satisfied. The general nature of these conditions will be introduced and explained in our future papers to come, and will largely deal with the way they apply to the exploitation of natural resources. For now we can say that assuming that they are satisfied in relation to our setting – use of a single non-renewable resource in production – is equivalent to assuming that the resource is extracted by perfectly competitive firms with perfect foresight, and that the economy as a whole is also perfectly competitive.

The Hartwick rule is that at every point in time the total rent arising in the resource extraction industry be saved and invested in reproducible capital. In terms of the model which is equations (2) to (4), the rule is that  $\dot{K}$  must be equal to the total rents arising in the resource extraction industry. The unit rent is the difference between the price at which an extracted unit of the resource sells and the marginal cost of extraction. It is, essentially, the scarcity value of the resource rises as the resource is depleted according to an efficient program. Total rent is simply unit rent times the number of units extracted. As will be discussed in our future papers to come, it turns out that following the Hartwick rule means that the total value of the economy's stock of reproducible capital together with its stock of the non-renewable resource is held constant over time – as the value of the remaining stock of the resource declines, so the value of the stock of reproducible capital increases in compensating amount. The constant consumption level that goes with following the Hartwick rule can be thought of as being like the interest on this constant stock of total wealth.

### ***Weak and Strong Sustainability***

In some economic contributions to the sustainability literature a distinction is made between 'weak sustainability' and 'strong sustainability' (Perman *et al.*, 2003; Neumayer, 2004). In fact, the point being made concerns differing views about the conditions that need to be met for the realization of sustainability as constant consumption (or utility), rather than different conceptions or definitions of sustainability. 'Weak' is not a different kind of sustainability from 'strong'. Proponents of both weak and strong sustainability take constant consumption (or utility) to be what sustainability is. They differ over what is necessary for its realization, and the difference is actually about substitution possibilities. In terms of the production functions just considered, 'weak sustainabilists' judge that the state of the world is effectively captured by equation (7) with  $\alpha > \beta$  (or equation (5) even), while 'strong sustainabilists' see equation (6) as being more relevant.

As developed in the literature, the weak versus strong sustainability debate makes extensive use of the notion of 'natural capital', which we now explain. Production potential at any point in time depends on the stock of productive assets available for use. This stock can be classified into human labor and all other productive resources. Now let us define the term 'capital' in a very broad sense, to include any economically useful stock, other than raw labor power. In this broad sense capital consists of:

- Natural capital: any naturally provided stock, such as aquifers and water systems, fertile land, crude oil and gas, forests, fisheries and other stocks of biomass, genetic material, and the earth's atmosphere itself. We have previously discussed (Neagu *et al.*, 2018) about the services that the natural environment provides to the economy. Talking of 'natural capital' is a way of referring to the collectivity of the environmental assets from which all such services flow.
- Physical capital: plant, equipment, buildings and other infrastructure, accumulated by devoting part of current production to capital investment.
- Human capital: stocks of learned skills embodied in particular individuals, which enhances the productive potential of those people.

- Intellectual capital: disembodied skills and knowledge. This comprises the stock of useful knowledge, which we might otherwise call the state of technology. These skills are disembodied in that they do not reside in particular individuals, but are part of the culture of a society. They reside in books and other cultural constructs, and are transmitted and developed through time by social learning processes.

If human-made capital is defined to be the sum of physical, human and intellectual capital, then the total stock of capital stock can be seen as consisting of two parts: natural and human-made capital. The latter is sometimes referred to as reproducible capital.

This way of classifying production inputs leads to writing the economy's production function in summary representative form as

$$Q = Q(L, K_N, K_H) \quad (8)$$

where  $L$  represents labor,  $K_N$  natural capital and  $K_H$  human-made capital. Note that we have defined technology as part of  $K_H$  so that our formulation does not allow the function itself to change with changing technology. Within this framework, the difference between weak and strong sustainabilists turns on what they judge to be the extent of the substitution possibilities between  $K_N$  and  $K_H$ .

The operational difference is that proponents of strong sustainability argue that sustainability requires that the level of  $K_N$  be non-declining, while proponents of weak sustainability argue that it requires that it is the sum of  $K_N$  and  $K_H$  that must be non-declining. Clearly, going back to the previous subparagraph, Solow and Hartwick are weak sustainabilists. Most, but not all, economists are weak sustainabilists. Sustainability as non-declining  $K_N$  is the third concept distinguished in Table 2. In so far as their arguments can be cast within this framework, most, but not all, ecologists are strong sustainabilists – in effect, they judge the possibilities for substituting  $K_H$  for  $K_N$  to be rather limited.

Economists have tended to think about threats to sustainability as constant consumption mainly in terms of natural resource inputs to production and the possible exhaustion of the stocks of natural resources. It is in that context that their judgment that  $K_H$  can be substituted for  $K_N$  has to be understood. Historical experience does tend to support the idea that physical, human and intellectual capital accumulation can offset any problems arising as stocks of natural resources are depleted. It is also true that there are many opportunities for substitution as between particulars of the general class of natural resources – bauxite for copper, for example.

It is in regard to the life-support and amenity services that natural capital provides, as discussed in our previous paper regarding Spaceship Earth (Neagu *et al.*, 2018), that there appears to less ground for optimism about the extent to which human-made capital can be substituted for natural capital. As spacecraft have already demonstrated, it is possible to use  $K_H$  to provide necessary life-support services such as temperature control, breathable air, etc., but only on a small scale. It has yet to be demonstrated, or even seriously argued, that human-made capital could replace natural capital in providing life-support services for several billions of humans. In regard to amenity services, some take the view that a lack of contact with the natural environment is dehumanizing, and would argue that in this context we should, as an ethical matter, regard the possibilities of  $K_H$  for  $K_N$  substitution as limited.

Clearly, the weak versus strong sustainability question is multi-faceted, and does not permit of firm precise answers, except in particular contexts. There is no answer to the general question: how far is  $K_H$  substitutable for  $K_N$ ? And, in some particulars, the answer is as much a matter of taste and/or ethics as it is a matter of science and technology.

In terms of simple high-level policy advice, weak sustainabilists say 'do not let the size of the total stock of capital fall', while strong sustainabilists say 'do not let the size of the natural capital stock fall'. In order to do either, it is necessary to be able to measure the size of the natural capital stock. It is not a homogeneous thing, but consists of many qualitatively different components. How, then, does

one define a single-valued measure of the natural capital stock? How do we add two lakes and one forest into a single value for natural capital, for example? Anyone familiar with national income accounting will recognize this difficulty. National income accounts do have a single-valued measure of the quantity of output. To obtain this, weights are employed. For example, 2 *items A* plus 3 *items B* would correspond to an output of 26 if we agreed to give each *item A* a weight of 10 and each *item B* a weight of 2 in the summation. For output of goods, an obvious weight to use is relative prices, and this is what is done in the national accounts.

But there are no obvious weights to use for aggregating individual items of natural capital. Prices do not exist for many items of natural capital and even where they do, there are many reasons why one would not be willing to accept them as correct reflections of 'true' values. If prices are to be used as weights, these prices will have to be imputed somehow or other. However, to anticipate some conclusions we reach in our future papers to come, most economists would agree that no fully satisfactory method yet exists for valuing environmental resources, and some would argue that none could ever exist (de Man, 2016). This means that a criterion which says that the total stock of natural capital should not be allowed to fall comes up against the fundamental problem that there is no satisfactory method of measuring the total stock of natural capital. If the stock of natural capital cannot be measured, then the total capital stock cannot be measured.

## Conclusions

Environmental and resource economics is concerned with the allocation, distribution and use of environmental resources. To some extent, these matters can be analyzed in a framework that does not require the adoption of any particular ethical viewpoint. We can focus our attention on answering questions of the form 'If X happens in a particular set of circumstances, what are the implications for Y?' Analyses of this form constitute what is sometimes described as 'positive' economics.

However, limiting our scope to answering questions of this form is restrictive. Many economists wish also to do 'normative' economics, to address questions about what *should* be done in a particular set of circumstances. To do this it is necessary to use ethical criteria derived from theories about how persons ought to behave. In doing normative economics, generally referred to as 'welfare economics', economists usually employ criteria derived from utilitarian ethical theory. Normative resource and environmental economics is predominantly founded in utilitarian ethics.

As basic issues can be explored within the framework of the simple optimal growth model, a model for welfare function was introduced. Hence, in circumstances where sustainability (seen as constant consumption) for ever was feasible, we were interested in whether the standard utilitarian approach would indicate sustainability, but we saw that it would not. From our analysis resulted that the use of a non-renewable resource in production does not mean that sustainability (seen as constant consumption) is infeasible as capital is a perfect substitute for the non-renewable resource.

As demonstrated here, production potential at any point in time depends on the stock of productive assets available for use. If human-made capital is defined to be the sum of physical, human and intellectual capital, then the total stock of capital stock can be seen as consisting of two parts: natural and human-made capital. The latter is sometimes referred to as reproducible capital.

In the context of economic activity and the natural environment, the question of how we should behave with respect to future generations is important. As we saw in our previous paper (Neagu *et al.*, 2018), there is, for many, a concern that current economic activity is affecting the environment so as to entail damage to future generations. Hence, this paper looks at the utilitarian approach to the question of inter-temporal distribution, focusing particularly on how economists see the sustainability issue. The next paper to come considers the way in which ecologists think about sustainability and will attempt to draw, at a general level, some environmental policy lessons. To conclude the analysis on sustainability, some practical examples will be presented as well.



## References

1. BARBIER, E. B. and MARKANDYA, A. (1990), *The conditions for achieving environmentally sustainable development*, in *European Economic Review* 34.
2. BECKERMAN, W. (1994), *Sustainable development. Is it a useful concept?*, in *Environmental Values* 3.
3. BROWN, M. J., GRZYBOWSKI, J., JENSEN, D., KAYE, J. L. (2015), *Natural Resources and Conflict. A Guide for Mediation Practitioners*, The United Nations Department of Political Affairs and United Nations Environment Programme (UN DPA and UNEP), February, New York.
4. de GRAAF, H. J., MUSTERS, C. J. M. and ter KEURS, W. J. (1996), *Sustainable development: looking for new strategies*, in *Ecological Economics* 16.
5. de MAN, P. (2016), 'Exclusive Use in an Inclusive Environment: The Meaning of the Non-Appropriation Principle for Space Resource Exploitation', Springer International Publishing Switzerland.
6. FAUCHEUX, S., PEARCE, D. and PROOPS, J. (eds) (1996), 'Models of Sustainable Development', Edward Elgar, Cheltenham.
7. GOLDIN, I. and WINTERS, L. A. (eds) (1995), 'The Economics of Sustainable Development', Cambridge University Press, Cambridge.
8. HARTWICK, J. M. (1977), *Intergenerational equity and the investing of rents from exhaustible resources*, in *American Economic Review* 67.
9. HARTWICK, J. M. (1978), Substitution among exhaustible resources and intergenerational equity, in *Review of Economic Studies* 45.
10. HOWARTH, R. (2012), *Sustainability, well-being, and economic growth*, in *Minding Nature*, Volume 5, Number 2, September.
11. KRAUTKRAEMER, J. (2005), *Economics of Natural Resource Scarcity: The State of the Debate*, Resources for the Future, Washington, D.C., Discussion Paper 05-14, April.
12. LOCKE, J. (1960), 'Second Treatise on Civil Government', Cambridge University Press, New York (Laslett Edition).
13. MENSAH, A. M. and CASTRO, L. C. (2004), *Sustainable Resource Use & Sustainable Development: A Contradiction?!*, Zentrum für Entwicklungsforschung (ZEF) - Center for Development Research, University of Bonn, November.
14. NEAGU, C., BULEARCA, M. and SIMA, C. (2017), *Debates on needs vs. resources: the limited character of natural resources*, in Proceedings of The 30th IBIMA Conference in "Vision 2020: Innovation Management, Development Sustainability, and Competitive Economic Growth", Madrid, Spain, 8-9 November.
15. NEAGU, C., BULEARCA, M. and SIMA, C. (2018), *The management of natural resources vs. the concept of "Spaceship Earth"*, in Proceedings of The 31st IBIMA Conference in "Innovation Management and Education Excellence through Vision 2020", 25-26 April 2018, Milan, Italy.
16. NEUMAYER, E. (2004), 'Weak Versus Strong Sustainability: Exploring the Limits of Two Opposing Paradigms', Cheltenham: Edward Elgar.
17. PAGE, T. (1977), 'Conservation and Economic Efficiency: An Approach to Materials Policy', Johns Hopkins University Press, Baltimore, MD.
18. PAGE, T. (1982), *Intergenerational justice as opportunity*, in MacLean, D. and Brown, P. (eds) 'Energy and the Future', Rowman and Littlefield, London, MD.
19. PERMAN, R., MA, Y., MCGILVRAY, J. and COMMON, M. (2003), 'Natural Resource and Environmental Economics', Third Edition, Pearson Education Limited, Harlow, UK.
20. PEZZEY, J. (1997), *Sustainability constraints versus optimality versus inter-temporal concern, and axioms versus data*, *Land Economics* 73(4).
21. PEZZEY, J. C. V. (1992), *Sustainability: an interdisciplinary guide*, *Environmental Values* 1.
22. PEZZEY, J. C. V. and TOMAN, M.A. (2002), *The Economics of Sustainability: A Review of Journal Articles*, Discussion Paper 02-03, in Resources for the Future, Washington, DC.
23. REDCLIFT, M. (1992), *The meaning of sustainable development*, in *Geoforum* 23(3).
24. SOLOW, R. (1986), *On the intergenerational allocation of natural resources*, in *Scandinavian Journal of Economics* 88(1).

25. SOLOW, R.M. (1974), *Intergenerational equity and exhaustible resources*, in Review of Economic Studies, Symposium, May, 29–46.
26. SPASH, C. L. (2011), *Social ecological economics: Understanding the past to see the future*, in American Journal of Economics and Sociology 70(2).
27. WCED (World Commission on Environment and Development) (1987), 'Our Common Future', Oxford University Press, and United Nations, New York.

## Econometric Models to Control the Oil Wells Production

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### Abstract

As we have previously stated, this paper is part of a larger research aiming to build up econometric models applicable in oil industry that may be useful for managers working in this industry. In the first part, this paper deals with models that describe flat radial motions in porous environment with zonal constant permeability, namely flat radial motion in the case of the common contour both perpendicular to the direction of the motion and collinear with the direction of motion; also we introduce the Skin effect due to the existence of a modified permeability zone. In the second part, the article deals with three-dimensional motions generated by hydro-dynamically imperfect oil wells. These models will be useful tools for decision makers for an optimal management of oil wells production.

**Keywords:** oil wells, flat radial motion, three-dimensional motion, porous environment, permeability, Skin effect

### Introduction

Despite the fact that hydrocarbon extraction is achieved in a closed system, which should enable them to avoid or, at least, substantially reduce all forms of pollution, the exploration and exploitation of oil and gas deposits continue to be among the most polluting industrial activities.

Hence, to manage oil wells production from oil deposits in environmentally-sound fashion (Kula, 1994; Pearce and Turner, 1990), analytical models have been developed corresponding to different motions in porous environment (Cretu, 1987; Cretu and Ionescu, 2005; Costache, 2008; Shah and Mishra, 2013; Abdel-Aal and Alsahlawi, 2014; Schiozer, 2015; Shereih, 2016). This paper is part of a larger research aiming to build up econometric models applicable in oil industry that may be useful for managers working in this industry. Hence, this article thoroughly discusses about models that describe flat radial motions in porous environment with zonal constant permeability, when there are two kinds of motion in the case of the common contour, and three-dimensional motions generated by hydro-dynamically imperfect oil wells (Gentry and Nash, 1972; Iordache and Avram, 1995; Avram, 2005).

This paper is a sequel of our previous works (Bulearca *et al.*, 2016; Bulearca *et al.*, 2017b; Bulearca *et al.*, 2018) that presented models describing, first, one-dimensional and two-dimension motion in homogenous porous environment, and second, one-dimensional motions in porous environment with zonal constant permeability, in the case of the common contour perpendicular to the direction of the motion and in the case of the common contour collinear with the direction of the motion.

Therefore, our focus should be placed on different types of motion, namely flat radial motions in porous environment with zonal constant permeability and three-dimensional motions. The first kind of motions can be encountered in the case of oil wells that have, in their immediate vicinity, a hydraulically cracked, acidified or partially blocked area, or which cross a succession of productive layers, while the second kind of motions are generated by hydro-dynamically imperfect oil wells. All these aspects and other related issues on this topic, as the Skin effect, will be further discussed in the next paragraphs.

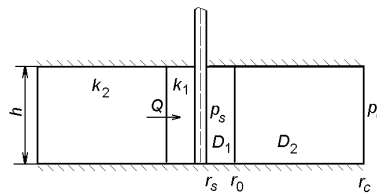
Starting from these findings and to extent the motion range to three-dimensional motions generated by hydro-dynamically imperfect oil wells, several types of such defects were introduced in the end, and our future researches will take it into consideration.

### Flat Radial Motions in Porous Environment with Zonal Constant Permeability

These motions can be encountered in the case of oil wells that have, in their immediate vicinity, a hydraulically cracked, acidified or partially blocked area, or which cross a succession of productive layers.

#### *Flat Radial Motion In The Case Of the Common Contour Perpendicular to the Direction of the Motion*

If in a cylindrical region of radius  $r_0$ , coaxial with the oil-well, the permeability of the productive layer has the modified value  $k_1$ , and in the rest of the well drainage area the permeability is the original  $k_2$  (as shown in Figure 1), the flat radial motion of the oil towards the well is carried out in two concentric ranges with different permeability. Modified permeability may be inferior to the original one when, during the drilling of the oil-well, partial pore blocking occurred as a result of water entering the circulating fluid, which caused the swelling of the clay minerals in the collector rock, or may be superior to the original permeability following the application of an acidification or hydraulic cracking process.



**Figure 1: The range of the flat radial motion in the case of the common contour perpendicular to the direction of the motion**

(Source: Author's own design)

The fundamental equations of motion, written in cylindrical coordinates (which on the basis of the flat character of the motion are reduced at the polar coordinates, given the existence of a single component of the filtering speed, namely the radial speed), for the two areas with different permeability, they are :

- the Darcy equation<sup>1</sup>:

<sup>1</sup> According to the Darcy's law (equation #1, first introduced in a previous paper, see Bulearca *et al.*, 2016), that has the expression:

$$v = v_r = -\frac{k}{\mu} \frac{dp}{dr} .$$

$$v_i = v_{ri} = -\frac{k_i}{\mu} \frac{dp_i}{dr}, \quad (i=1,2), \quad (1)$$

- the incompressible liquid state equation:

$$\rho = \rho_0 = \text{const.} \quad (2)$$

- the continuity equation:

$$\frac{1}{r} \frac{d}{dr} (r \rho v_i) = 0, \quad (i=1,2), \quad (3)$$

Substituting the Darcy equations (1) and the state equation (2) in the continuity equation (3) we shall obtain the differential motion equations:

$$\frac{d}{dr} \left( r \frac{dp_i}{dr} \right) = 0, \quad (i=1,2), \quad (4)$$

that gives the solutions:

$$p_i = a_i \ln r + b_i, \quad (i=1,2), \quad (5)$$

and are associated with boundary conditions:

$$\begin{cases} \ln r = r_s, & p_1 = p_s; \\ \ln r = r_c, & p_2 = p_c; \\ \ln r = r_0, & p_1 = p_2 \text{ și } v_1 = v_2, \end{cases} \quad (6)$$

where the last two conditions reflect the continuity both of the pressure, and the filtration speed on radius  $r_0$ .

By setting the boundary conditions (6) to the equations (5), the expressions of the four integration constants are obtained, which replaced in the same equations (5), give the following equations:

$$p_1 = p_s + \frac{p_c - p_s}{\ln \frac{r_0}{r_s} + \frac{k_1}{k_2} \ln \frac{r_c}{r_0}} \ln \frac{r}{r_s}, \quad p_2 = p_c - \frac{p_c - p_s}{\frac{k_2}{k_1} \ln \frac{r_0}{r_s} + \ln \frac{r_c}{r_0}} \ln \frac{r_c}{r}, \quad (7)$$

that are the laws of pressures variation in the two areas. If  $dp_1/dr$  and  $dp_2/dr$  derivatives obtained from the equations (7) are introduced in the Darcy equation (1), we shall determine the filtration speeds equations, as follows:

$$v_1 = v_2 = -\frac{k_1}{\mu} \frac{p_c - p_s}{\ln \frac{r_0}{r_s} + \frac{k_1}{k_2} \ln \frac{r_c}{r_0}} \frac{1}{r}. \quad (8)$$

The flow volume of crude oil is given by the macroscopic continuity equation (as it was introduced before, see equation (3)), where  $A = 2 \pi r h$ , and has the following expression:

$$Q = 2\pi r h |v_1| = \frac{2\pi h(p_c - p_s)}{\mu b_t \left( \frac{1}{k_1} \ln \frac{r_0}{r_s} + \frac{1}{k_2} \ln \frac{r_c}{r_0} \right)}, \quad (9)$$

where the volume ratio of the crude oil  $b_t$  ensures expressing the flow under surface conditions.

Then, equation (9) can be written as:

$$Q = \frac{2\pi k_m h(p_c - p_s)}{\mu b_t \ln \frac{r_c}{r_s}}, \quad (10)$$

where the average permeability  $k_m$  has the expression:

$$k_m = \frac{\ln \frac{r_c}{r_s}}{\frac{1}{k_1} \ln \frac{r_0}{r_s} + \frac{1}{k_2} \ln \frac{r_c}{r_0}}. \quad (11)$$

### 1.2. The Skin effect

As already mentioned, the existence of the modified permeability zone  $k_l$  may be the result of partial pore blocking or acidification or hydraulic cracking operations. Changing the permeability in the  $r_0$  radius area requires an additional pressure drop to cause the oil-well to produce the same flow as constant permeability. The additional pressure drop can be positive when  $k_l < k_2$ , or negative when  $k_l > k_2$ .

The differential pressures in the range between the rays  $r_0$  and  $r_s$  in the presence, respectively in the absence of the modified permeability zone (Figure 2) have the expressions:

$$p_0 - p_s = \frac{Q\mu b_t}{2\pi k_1 h} \ln \frac{r_0}{r_s}, \quad p_0 - p_s = \frac{Q\mu b_t}{2\pi k_2 h} \ln \frac{r_0}{r_s}, \quad (12)$$

where:  $p_0$  - the pressure values at the radius  $r_0$ , in the presence, respectively in the absence of the change in permeability;  
 $p_s$  - dynamic depth pressure of the oil-well.

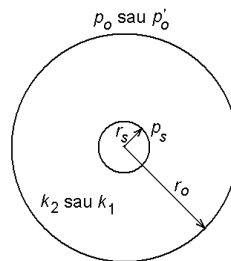


Figure 2 Differential pressures in the modified permeability zone in the context of the Skin factor determination

(Source: Author's own design)

By lowering the second relationship (12) from the first one, there is the expression of the additional pressure drop:

$$\Delta p_s = (p_0' - p_s) - (p_0 - p_s) = \frac{Q\mu b_t}{2\pi h} \left( \frac{1}{k_1} - \frac{1}{k_2} \right) \ln \frac{r_0}{r_s} = \frac{Q\mu b_t}{2\pi k_2 h} \left( \frac{k_2}{k_1} - 1 \right) \ln \frac{r_0}{r_s}. \quad (13)$$

The phenomenon of change in permeability of the productive layer in the immediate vicinity of the oil-well is known as the Skin effect or deterioration effect (Hawkins, 1956), and is quantitatively characterized by the Skin factor, defined as an additional dimensional pressure drop, by the equality:

$$S = \frac{2\pi k_2 h \Delta p_s}{Q\mu b_t}, \quad (14)$$

which, based on equation (13), becomes:

$$S = \left( \frac{k_2}{k_1} - 1 \right) \ln \frac{r_0}{r_s}. \quad (15)$$

The value of the Skin factor is positive when  $k_1 < k_2$ , respectively negative when  $k_1 > k_2$ .

If we multiply with  $k_2$  the equation of total flow  $Q^2$ , both the numerator and the denominator, then both add and subtract the term  $\ln (r_0/r_s)$  in the bracket from the denominator, the following equation is obtained:

$$Q = \frac{2\pi k_2 h (p_c - p_s)}{\mu b_t \left( \frac{k_2}{k_1} \ln \frac{r_0}{r_s} - \ln \frac{r_0}{r_s} + \ln \frac{r_c}{r_s} \right)},$$

which, based on the expression (15), becomes:

$$Q = \frac{2\pi k_2 h (p_c - p_s)}{\mu b_t \left( \ln \frac{r_c}{r_s} + S \right)}, \quad (16)$$

allowing us to compute the Skin factor, in terms of knowing the original flow and permeability, as follows:

$$S = \frac{2\pi k_2 h (p_c - p_s)}{Q\mu b_t} - \ln \frac{r_c}{r_s}. \quad (17)$$

### 1.3. Radial flat motion in the case of the common contour collinear with the direction of the motion

<sup>2</sup> The equation of total flow  $Q$  for the one dimensional motion in case of the common contour collinear with the direction of the motion (equation #29, first introduced in our previous paper, see Bulearca *et al.*, 2018) is given by the relationship:

$$Q = Q_1 + Q_2 = A_1 |v_1| + A_2 |v_2| = (A_1 k_1 + A_2 k_2) \frac{p_c - p_s}{\mu l}.$$

This motion corresponds to the situation in which the oil-well produces from a stack of overlapping communicating strata and is schematized for the particular case of two horizontal strata in Figure 3.

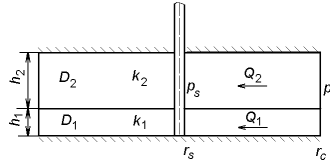


Figure 3 Radial flat motion field in the case of the common contour collinear with the direction of motion  
(Source: Author's own design)

Under the mentioned conditions, starting from the fundamental equations in paragraph 1.1, relations (4) with solutions (5) are reached. The boundary conditions associated with the equations (5) are, in this case:

$$\begin{cases} \text{la } r = r_s, & p_1 = p_2 = p_s, \\ \text{la } r = r_c, & p_1 = p_2 = p_c, \end{cases} \quad (18)$$

and lead to the following expressions of integration constants:

$$a_1 = a_2 = \frac{p_c - p_s}{\ln \frac{r_c}{r_s}}, \quad b_1 = b_2 = p_s - \frac{p_c - p_s}{\ln \frac{r_c}{r_s}} \ln r_s = p_c - \frac{p_c - p_s}{\ln \frac{r_c}{r_s}} \ln r_c.$$

By replacing these formulas in equations (5) we obtain the pressure equations in the two areas:

$$p_1 = p_2 = p_s + \frac{p_c - p_s}{\ln \frac{r_c}{r_s}} \ln \frac{r}{r_s}, \quad (19)$$

from which the  $dp_1/dr$ ,  $dp_2/dr$  derivatives, which are replaced in the relations (1) and (2), are established, allow to find out the equations of the filtration rate:

$$v_1 = -\frac{k_1}{\mu} \frac{p_c - p_s}{\ln \frac{r_c}{r_s}} \frac{1}{r}, \quad v_2 = -\frac{k_2}{\mu} \frac{p_c - p_s}{\ln \frac{r_c}{r_s}} \frac{1}{r}, \quad (20)$$

The flows of the two permeable overlapping strata are determined based on the equation of the productive capacity of a perfect oil-well in pressured aquifer strata<sup>3</sup> and, by summing the total flow is obtained as follows:

<sup>3</sup> For a perfect oil-well in pressured aquifer strata, the productive capacity of this oil-well (equation #3, first introduced in a previous paper, see Bulearca *et al.*, 2017a) is given by the relationship:

$$Q = 2\pi ak \frac{H - h_o}{\ln \frac{R}{r_o}}$$



$$Q = \frac{2\pi(k_1 h_1 + k_2 h_2)(p_c - p_s)}{\mu b_l \ln \frac{r_c}{r_s}} . \quad (21)$$

This equation, (21), can be expressed as (10); by identifying the equations (10) and (21), associated with the use of the notation  $h_1 + h_2 = h$ , there is the expression of the average permeability:

$$k_m = \frac{k_1 h_1 + k_2 h_2}{h_1 + h_2} , \quad (22)$$

which can be generalized for the existence of  $n$  permeable strata of  $h_i$  thicknesses and  $k_i$  permeabilities as follows:

$$k_m = \frac{\sum_{i=1}^n k_i h_i}{\sum_{i=1}^n h_i} . \quad (23)$$

### Three-Dimensional Motions Generated By Hydro-Dynamically Imperfect Oil Wells

In this paragraph there are presented some aspects of the three-dimensional motions generated by the oil wells that only partially pass through the productive layer, or produce through perforations or slits, in the conditions where the porous medium is homogeneous.

Oil wells that do not fully pass through the productive layer are called *imperfect oil wells after the degree of opening*, and those that do not produce through their natural walls are called *imperfect oil wells after the opening mode*.

The motion generated by an imperfect oil-well has three-dimensional convergence in the lower oil-well area (in the case of the imperfect oil-well according to the degree of opening) or in the apertures in the column (in the case of the imperfect oil-well according to the opening mode). Reducing the inlet of the fluid into the oil-well leads to the emergence of additional hydraulic resistances and thus to additional pressure drops compared to those existing in the case of the perfect oil-well. These additional hydraulic resistors make the flow of the imperfect oil-well less than the perfect oil-well flow. The effect of the oil-well's imperfection on its flow is characterized by the imperfection coefficient, defined as:

$$c_i = \frac{Q}{Q_p} , \quad (24)$$

where  $Q$  and  $Q_p$  are imperfect or perfect oil-well flows at the same differential pressure.

Since additional hydraulic resistances are located in the vicinity of the oil-well, the effect of the oil-well's imperfection on the flow can be treated as a pseudo-skin effect or as a fictitious reduction of the oil-well radius. In this way, the flow of the imperfect oil-well can be expressed in one of the following equivalent forms:

$$Q = \frac{2\pi k h(p_c^* - p_s^*)}{\mu b_t \left( \ln \frac{r_c}{r_s} + S_i \right)}, \quad (25)$$

$$Q = \frac{2\pi k h(p_c^* - p_s^*)}{\mu b_t \ln \frac{r_c}{r_{rs}}}, \quad (26)$$

where:  $p^*$  - the reduced pressure at a reference plane, which replaces the pressure  $p$ , in order to set conditions at constant pressure limits at different depths taking into account the hydrostatic equation;

$S_i$  - the pseudo-skin factor corresponding to the oil-well imperfection;

$r_{rs}$  - reduced oil-well radius.

From the equivalency of equations (25) and (26) the relationship between the pseudo-skin factor and the reduced radius of the oil-well results in the form:

$$r_{rs} = r_s e^{-S_i}. \quad (27)$$

Considering that the oil-well would generate a flat radial motion in the deposit if it were hydrodynamic perfect, it is possible to express the  $Q_p$  flow of the perfect oil-well in the equation of the incompressible fluid flow volume  $Q^4$ , replacing  $p$  with  $p^*$  (in a horizontal plane,  $p^* = p$ ) and the relation (24), in which the  $Q$ -flow of the imperfect oil-well is given by formula (25), becomes:

$$c_i = \frac{\ln \frac{r_c}{r_s}}{\ln \frac{r_c}{r_s} + S_i}, \quad (28)$$

where the pseudo-skin factor equation has to be determined for each type of oil-well defect.

However, there are several types of such defects, as follows: spherical radial motion, motion generated by a partially penetrating oil-well, motion generated by an imperfect oil-well according to its opening mode, and inactive soleplate water cones. All these types of oil-well defects will be largely addressed in our future paper.

## Conclusions

This paper is a sequel of our previous work that presented models describing two-dimension motion in homogenous porous environment, namely motion generated by an oil well in a deposit with linear supply contour, then the law of flow line refraction that occurs in the case of the motion of a fluid through a

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<sup>4</sup> The equation of the incompressible fluid flow volume  $Q$  of the oil well for the flat radial motion (equation #10, first introduced in a previous paper, see Bulearca *et al.*, 2017b) is given by the relationship:

$$Q = \frac{2\pi k h(p_c - p_s)}{\mu b_t \ln \frac{r_c}{r_s}}.$$

series of porous environment with zonal constant permeability, and bi-dimensional motion, that is the motion generated by an oil well in a porous environment with zonal constant permeability.

To manage oil wells production from oil deposits, analytical models have been developed corresponding to different motions in porous environment. This paper is part of a larger research aiming to build up econometric models applicable in oil industry that may be useful for managers working in oil industry. Hence, this article thoroughly discussed about models that describe two-dimension motion in homogenous porous environment with zonal constant permeability, when there are two kinds of motion in the case of the common contour.

Therefore, in this paper our focus was placed on different types of motion in porous environment with zonal constant permeability, motions that can be encountered in the case of oil wells that have, in their immediate vicinity, a hydraulically cracked, acidified or partially blocked area, or which cross a succession of productive layers. First, the motion generated by an oil well in a deposit with flat radial motion in the case of the common contour perpendicular to the direction of the motion was studied. The result is that the flow volume of crude oil is given by the macroscopic continuity equation.

Second, radial flat motion in the case of the common contour collinear with the direction of the motion was studied. This motion corresponds to the situation in which the oil-well produces from a stack of overlapping communicating strata. The result is that, starting from the fundamental equations from the case of the common contour perpendicular to the direction of the motion, the flows of the two permeable overlapping strata are determined based on the equation of the productive capacity of a perfect oil-well in pressured aquifer strata.

Moreover, the article dealt with the Skin effect. The existence of a modified permeability zone may be the result of partial pore blocking or acidification or hydraulic cracking operations, and this phenomenon of change in permeability of the productive layer in the immediate vicinity of the oil-well is known as the Skin effect or deterioration effect, and is quantitatively characterized by the Skin factor, defined as an additional dimensional pressure drop. All these aspects and other related issues on this topic were further discussed in the paper.

Starting from these findings and to extent the motion range from the two-dimension motions in homogenous porous environment and in a porous environment with zonal constant permeability, models that describe three-dimensional motions generated by hydro-dynamically imperfect oil wells were introduced in the end as there are several types of such defects, as follows: spherical radial motion, motion generated by a partially penetrating oil-well, motion generated by an imperfect oil-well according to its opening mode, and inactive soleplate water cones.

All these types of oil-well defects will be largely addressed in our next papers to come.

## References

Abdel-Aal, H., Alsahlawi, M. (2014), Petroleum economics & engineering, 3rd edition, Taylor & Francis Group, LLC, USA.

Avram, L. (2005), Foraj marin, Oil and Gas University Publishing House, Ploiești.

Bulearcă, M., Neagu, C., Ghiga, C., Sima, C. (2016), 'Econometric models applicable in oil industry', Proceedings of the 28th International Business Information Management Association (IBIMA), 9-10 Novembre 2016, Seville, Spain.

- Bulearcă, M., Neagu, C., C., Sima, C. (2017a), 'Econometric models to manage oil extraction process', Proceedings of the 29th International Business Information Management Association (IBIMA), 3-4 May 2017, Vienna, Austria.
- Bulearcă, M., Neagu, C., C., Sima, C. (2017b), 'Econometric models for the production of oil deposits', Proceedings of the 30th International Business Information Management Association (IBIMA), 8-9 November 2017, Madrid, Spain.
- Bulearcă, M., Neagu, C., C., Sima, C. (2018), 'Econometric models to manage oil wells production', Proceedings of the 31st International Business Information Management Association (IBIMA), 25-26 April 2018, Milan, Italy.
- Costache, G. (2008), *Indrumar pentru forajul geologic si hidrogeologic*, Technical Publishing House, Bucharest.
- Crețu, I. (1987), *Hidraulica zăcămintelor de hidrocarburi*, vol. 1, Technical Publishing House, Bucharest.
- Cretu, I., Ionescu, E. M. (2005), *Hidraulica subterana*, Oil and Gas University Publishing House, Ploiesti.
- Gentry, D., Nash, R. (1972), 'A Statistical Algorithm for Computing Vertical Deflections Gravimetrically', *Journal of Geophysical Research*, Volume 77, Issue 26.
- Hawkins, M. F. Jr. (1956), 'A Note on the Skin Effect', *Journal of Petroleum Technology*, Volume 8, Issue 12, pp. 65–66.
- Iordache, G., Avram, L. (1995), *Foraje speciale și foraj marin (II)*, Help-Ministries Romania Publishing House, Ploiești.
- Kula, E., (1994), *Economies of Natural Resources, the Environment and Policies*, Second Edition, Chapman and Hall, London.
- Pearce, D. W., Turner, R. K. (1990), *Economics of Natural Resources and the Environment*, Harvester Wheat Sheaf, London.
- Schiozer, D. J., Santos, A. A. S., Drumond, P. S. (2015), Integrated Model Based Decision Analysis in Twelve Steps Applied to Petroleum Fields Development and Management, *EUROPEC 2015, Society of Petroleum Engineers*, June 1.
- Shah, N., Mishra, P. (2013), Oil production optimization: a mathematical model, *Journal of Petroleum Exploration and Production Technology*, March, Volume 3, Issue 1, pp. 37-42.
- Shereih, K. (2016), *Economics Modeling for Petroleum Exploration and Production Projects Considering Risk and imprecise Data*, der Technischen Universität Berlin.

## **Elaboration of Perspective Directions of Innovative Development of the EEU**

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### **Abstract**

In the work the available benefits received by each country of EEU were specified. It was established that under modern conditions when there is a change of technological modes, there is a need to develop an appropriate policy of the development of EEU, to occupy leading positions in the new technological mode. For this task some objectives have been developed solving which would make it possible to achieve such a goal.

**Keywords:** customs legislation, Eurasian Economic Union, innovation management, economic integration

### **Introduction**

The modern stage of development of the world community is characterized by the increasing role of regional integration unions. Regionalization is becoming an actual trend in recent decades - the growth of regional trading agreements establishing additional preferences for their participants.

It is well known that since January 1, 2015 Eurasian Economic Union (EEU) has commenced to operate. It is composed of the Republic of Armenia, Republic of Belarus, the Kyrgyz Republic, the Republic of Kazakhstan and the Russian Federation

Relevance of the topic is due to the increasing role of regional trade agreements in the international trade. The study analyzed the benefits of the member countries from joining the EEU, resource potential of the EEU as a reproductive complex, as well as further perspective directions of deepening of integration.

### **Development of The Eurasian integration**

The goal of any integration association is almost always to increase the efficiency of national economics. The existing benefits of cooperation within the EEU for each country have been currently established. So, for Russia participation in EEU contributes to an increase in domestic production in the conditions of import substitution. Belarus got an opportunity to sell their export goods on the Russian market and markets of member countries, and also have reduced tariffs for energy resources. The increased investments in infrastructure projects and the need for transport corridors is of particular importance for Kazakhstan. Improved transport links are also important for Kyrgyz Republic, moreover, participation in EEU will provide assistance to Kyrgyzstan in the development of the economy, education and science. Armenia, in its turn, received an access to a huge market of resources for the development of its industry, as well as the possibility of free movement of labour.

To identify further development prospects within the integration, EEU resource potential was analyzed as a reproductive complex, by the results of which it was found that the EEU has a potential that is enough to provide an effective development of the economics. However, at the current moment the capacity of the EEU countries needs more careful examination. At that this potential requires effective management and reasonable usage.

The study found that the analysis of the development of Eurasian integration was conducted by many scholars (including academician, Advisor to the President of the Russian Federation on Eurasian integration S.U. Glazyev), who concluded that the global economic crisis led to the formation of a new technological mode. At the moment it is passing from embryonic development phase to a phase of growth [1].

Currently, in order to get ahead in the process of the formation of a new technological mode, a complex of urgent actions must be taken to lead out economics of EEU to the advanced development model, which many scientists speak now about. Such a set of actions aimed at improving the efficiency of the economics, could be called a development policy.

### **Difficulties of the Integration Process**

To solve the problem of leading out the economics of EEU countries to the advanced development model, the following activities were suggested. The first step towards improving the efficiency of the economics of the EEU countries should be strategic planning. In doing so, available resources and national competitive advantages of EEU countries must be evaluated, intensifying of which can provide a steady and rapid growth in production. Vector of economic development of EEU must be determined in the light of the clear understanding of the structural changes in the world economy and the prospects for global economic and social development.

Financial and investment policy of EEU should be oriented on the promising directions of a new technological mode that is forming in the present. These include biotechnology, nanotechnology, artificial intelligence systems, the global information network.

Given the huge resource potential of EEU, a promising direction of development is the modernization of extractive industries and technologies for processing of natural raw materials. In this field the attention should be paid to the possibility of borrowing new technologies abroad and their development with further improvement. Modernization of EI stimulates the development of related high-tech industries, will strengthen productive capacity in subsequent parts of the production chain and, consequently, increase the proportion of the added value of exported products.

For monitoring the speed and trajectory of the economic development of the Union specific targets and timetables for achieving them must be introduced. In order to avoid discrepancies between targeted, projected and actual indicators, a system of scientific support and expertise of the declared targets should be introduced. To ensure timely execution of the targets a clear mechanism of responsibility in the governmental system must be developed.

### **Prospects for the Expansion of the Eurasian Economic Space**

Promising result of following such a development policy should be the production of competitive products in demand at the foreign market. This will ensure the sustainable development of the economics of the EEU and will allow Eurasian integration to develop not only within the Union but also grow by attracting new partners.

Thus, the study revealed the available benefits received by each country of EEU. Speaking about the future prospects of development within the integration EEU should be seen as a single reproductive complex. It was established that under modern conditions when there is a change of technological

modes, there is a need to develop the appropriate policy of EEU development, to occupy leading positions in new technological mode. It is offered to solve the following tasks:

First, the resource potential of EEU must be defined and identified. On the basis of a certain capacity it is necessary to identify competitive advantages of EEU countries in those industries that are the most promising, in order to identify promising directions of global socio-economic development described in the article. Next, it is necessary to define the long-term objectives of the EEU and identify economic development strategy of EEU including the intensification of competitive advantages; increase of investment activity; higher spending on research and development; borrowing technology abroad and their improvement; review of industrial policy in the direction of increasing the added value of exported products.

Implementation of this strategy will increase the demand for ready-made products manufactured in EEU, therefore, its competitiveness and provide its output to the world market.

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### **List of literature**

1. Bogdanova E., Abramov V., Titov A., Kucheryavenko D. (2015) 'Eco-sanctions as a way to stimulate the organization's innovative activity', *Economics and Entrepreneurship*, 8-1 (61-1), 667-671.
2. Glazyev S. (2013) Scientific report: 'On the goals, challenges and measures of governmental policy development and integration'. Moscow. [Online], [Retrieved June 12, 2018], [https://sobityadnya.ru/blog/43464056003/Doklad-Sovbezu-RF-Sergeya-Glazeva-\(polnyiy-tekst\)](https://sobityadnya.ru/blog/43464056003/Doklad-Sovbezu-RF-Sergeya-Glazeva-(polnyiy-tekst))
3. Nikolaev A., Kuznetsova E. (2017), 'Analysis of the development of Eurasian economic integration', *Economics, Law, Innovation*, 1(3), 4-7.

## The Importance of Complexity Analysis in Information Systems

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### Abstract

With the development of new technologies and the growing tendency to gather more information, the issue of system complexity is becoming more and more relevant. Increasing complexity in the information system raises a number of problems, which in many cases can be prevented. These issues are mainly propagated in system properties such as readability, scalability, maintainability, sustainability, easiness of implementation, and many others. All these properties affect the general user friendliness and overall trust in the system. For these reasons, it is necessary to have a comprehensive view of complexity of the information system in the different phases of its life cycle. This paper deals with the complexity analysis of information systems, its causes and implications for users and organizations. The aim of this paper is to summarize ways of measuring complexity in different phases of its life cycle and different content dimensions of the information system. Selected complexity analysis is then showcased on a case study of a privately implemented real-world system. Finally, the obtained results of the analysis are evaluated and discussed.

**Keywords:** Complexity, Information Systems, Analysis of Complexity, Life Cycle

### Introduction

Complexity is a term that recently gain more popularity and is utilized profusely in specialized articles, methodologies and standards that are used to manage informatics. In this work, complexity in information systems is viewed as a system feature that affects its readability, difficulty of implementation, modifiability, comprehensibility, maintainability (Cardoso, 2008, Sommerville and Dewsbury, 2007), scalability or trustworthiness in general (Gol Mohammadi et al., 2014). The complexity of the information system (IS) is influenced by a number of factors such as the type of project methodology (agile, waterfall), the specific used technology (e.g. PHP vs. JavaScript, SQL vs. NoSQL database solution, single page application vs. multiple page application, etc.), specific technical infrastructure (Hanseth and Lyytinen, 2010), software code quality (McCabe, 1976), and many more.

The aim of the paper is to summarize the advantages and disadvantages of high and low complexity at different levels of abstraction (dimensions) within different phases of the information system life cycle and outline method to quantify the overall complexity of information system.

The paper is organized as follows. The second section deal with complexity and its impact on the individual phases of abstraction across individual phases of the life cycle. The third section outline the way of complexity quantification during the development and operation of the IS and propose the method to quantify the overall complexity of IS. The fourth section highlights selected complexity analysis on a case study example. The last two section provide discussion and conclusion.



## Complexity and Information Systems

Complexity can be seen as a system feature that reflects the total number of elements in the system and the number and density of relationships between these elements. The theory of complexity is based on the postulate, "the whole is more than the sum of its parts". For complex systems, so-called emergence occurs, which is a feature of complex systems where complex patterns occur from simpler rules and can be revealed only in the overall behaviour. The term "pattern" is particularly concerned with similarity in behaviour. The complex system is not defined based on the number of elements, but the complexity of their interconnection, the density of the network. Complexity refers to the implicit nature of the system that affects both the properties of the interacting components and the nature of their interaction. The complexity of the system includes aspects such as uncertainty (Ibl and Čapek, 2016, Jung et al., 2011), fluctuation, singularity, internal dynamics, connectivity, and more. Two types of recognizable complexity are:

- Descriptive complexity - corresponds to how the system appears to an outside observer.
- Natural complexity - it is related to the interior of the system, it reflects the inner nature of the system and its dynamics.

In the above-mentioned types of complexity, the information necessary to describe the system and the information to clarify the uncertainty are embedded. In practice, both complexities get into conflict. If we want to limit one, then the other is likely to grow or at best remain the same. Aspects that affect the complexity of each system are:

- the number of elements and relationships between them;
- recursive relationships (the system does not depend only on inputs, but also on past developments);
- parallel processes and their mutual synchronization;
- interactions (interaction of processes and presence of sensitivity dependence to initial conditions);
- uncertainty and fluctuation (all systems retain certain patterns).

The subject of this work is complexity in the context of information systems. Information systems support business processes, so it is important to focus on the complexity of processes, because processes with a large complexity that is difficult to understand cannot be easily introduced into the system and cause great problems in designing the system and its implementation. Each business process is a sequence of interrelated activities that take place across organizational units and respond to various stimuli from the internal and external environments. The process provides the transformation of inputs to outputs using some sources. In general, there is always a flow of activity from one person to another. The complexity of business processes must be constantly under control to avoid increasing it over time, which could lead to mistakes and complicate their understanding. The degree of complexity can be deduced by how difficult it is to understand or explain the process. The complexity of process is not constant. As the process evolves over time, its complexity also changes. Determining the degree of complexity is not an easy task. The most basic option for assessing complexity is to evaluate the system by its size. However, this approach, by definition of complexity, is not satisfactory because size does not have to be directly related to complexity. According to (Lloyd, 2001), cited by (Ibl and Boruchová, 2017) complexity measures can be classified into the following three categories:

- Difficulty of description, typically measured in bits, including Information and Entropy (Shannon, 1948), Algorithmic Information Content (Zurek, 1990), Minimum description length (Rissanen, 1978), Fisher information (Lehmann and Casella, 2006), Renyi entropy (Renyi, 1960), Code Length (Huffman, 1952), Chernoff information (Chernoff, 1972, Nielsen, 2011), Lempel-Ziv complexity (Lempel and Ziv, 1976), Dimension and Fractal Dimension (Mandelbrot and Hudson, 2004);
- Difficulty of creation, working with time, currency, or energy, such as Computational Complexity (Arora and Barak, 2009), Time Computational Complexity, Spatial Computational Complexity, Information-based Complexity (Traub et al., 1988), Logical

Depth (Bennett, 1995), Thermodynamic Depth (Lloyd and Pagels, 1988), Cost and Crypticity (Mahoney et al., 2011);

- The degree of organization that can be divided into the difficulty of describing the organizational structure and the amount of information divided between the parts of the system. This category includes, for example, Metric Entropy (Lorentz, 1966), Stochastic Complexity (Rissanen, 1996), Sophistication (Mota et al., 2013), Effective Complexity (Gell-Mann and Lloyd, 1996), True Complexity, Ideal Complexity, Hierarchical Complexity (Commons et al., 1998), Schema length, Grammar complexity, Mutual Information (Shannon, 1948).

The information system is supposed to support business processes. Nowadays, the term complexity is often mentioned in many methodologies and standards used to manage information technology. However, complexity is rarely clearly defined. The complexity of the information system can be seen from several perspectives:

- How much data and information is processed.
- How complicated are processes supported by the system.
- How complex is the organizational structure of an enterprise that uses the IS.
- How user-friendly is the user interface.

It is clear that the complexity of information systems has to be controlled, as otherwise the cost of the company increases and efficiency is reduced. The already existing complexity of information systems is difficult to reduce. Therefore, it is necessary not only to not increase it during the design and development of the information system, but also during its operation and maintenance. The resulting optimal complexity of the information system should always be the least possible that can be achieved.

At present, the complexity of information and communication technologies is becoming a growing problem. An increasing number of features that information technology offers also puts great demands on users. Information technology influences the everyday life of every person in several ways. Complex systems entail enormous costs of purchasing, implementing, advising and maintaining them, but also posing a risk for business continuity. In order to ensure optimal complexity, it is necessary to thoroughly understand the enterprise and information architecture when designing the system, but also to identify the mechanisms leading to its creation.

Table 1 summarizes few of the aspects that affect the complexity of IS in its life cycle. At each stage, it must be borne in mind that complexity at the lower level is exponentially more important than complexity at a higher level. Poorly chosen architecture at the conceptual level exhibits less elasticity, which has an impact on costs and negatively affects complexity, despite the fact that the next steps at the following levels were optimal. Overall, errors made at lower levels have less impact on the complexity and cost of the organization (see Figure 1).

**Table 1: Examples of complexity effects in various life cycle phases**

Life phase	cycle	Bearer of complexity (Dimensions)	Effect on complexity
Conceptual level		Organizational structure of the enterprise	The size and division of the organizational structure addressed by the information system has a major impact on its complexity. The organizational structure affects the number of IS modules, the size of the database, the number of processes, the number of users and the number of HW components. The structure of the IS corresponds to the structure of the company, so the company structure needs to be optimized before the development of the IS.

	Processes	The processes introduced into the IS are its functional and data content. It is not advisable to introduce complex processes into IS. Each process needs to be assessed in terms of complexity before it is implemented.
	Users	The number of system users is linked with processes and organizational structure, but not everyone has to be introduced into the system. The system should automate human processes. The number of users must be optimal for successful implementation of processes, since too many users increase complexity.
	Software	At this stage, it is necessary to decide whether the system will be implemented using the available ready-made SW solution or the IS will be tailored to the business processes.
	Hardware	The choice of the HW solution influences complexity in terms of computing capacity. HW must be chosen with respect to the expected IS operating time. The assumption is to increase HW requirements over time. The inefficient HW will slow down the work with the IS in the future. The size and density of the hardware component network affects the stability and speed of the IS.
Technological level	Data Structure	Complexity affects the selected database type, the number of tables and their attributes, sessions, and set integrity limits.
	Functional structure	Building an optimal activity diagram from a given process will fundamentally affect the complexity of the system. Too complex process modelling will result in a large number of system functions that will be passed to the complex user interface and the size of the custom SW custom code. The whole process should be covered in the simplest form.
	Communication structure	Determining how the system will communicate is important to all process participants. The system can communicate with either users or other SWs in the organization. The impact on complexity has, in particular, the number of information transmitted. Information that no one uses increases unnecessary complexity.
	Selected SW solutions (tailor-made programming / purchase of finished solution)	When purchasing a finished system, it is important to "fit" the processes in the company. Every already-made SW has limited modification capabilities (some elements cannot be removed and others cannot be added), this again negatively affects the complexity and work of users with the system.  An IS created precisely by the organization, contains only such complexity that is contained in higher levels of abstraction.
	HW structure	Depending on the size of the data structure and number of users, you need to choose and design a complex hardware network. The complexity of the selected hardware affects its structure (server number, data field, client PC, hub or switch)

	Graphical interface	The graphical interface has a major impact on complexity from a user's point of view, the complexity of GUI models will affect the daily work of users. The number of screens and items on the screen are based on data and functional structures. The graphical interface must be user-friendly and must not contain unnecessary elements that make users complain. The complexity of the interface is chosen according to the management hierarchy in the enterprise (managerial ISs have a simpler interface than the IS used in "production").
	Programming language	Selected programming language and chosen framework (API). Each programming language has some options to implement the procedure. The language where the required procedures are already defined is "simpler" than the one where the required procedure should be programmed manually using several lines of commands.
Implementation	Code structure	How code is structured is especially important when something needs to be changed in the code. If the program is written incomprehensibly, illegibly or hardly understandable (not documentation, comment errors), this program is difficult to modify.
	Implementation of finished IS	The finished IS brings its complexity from its manufacturer. The goal of the implementation is to optimize this complexity to the required size (number of entities and attributes, optimal number of UI elements, removal of unnecessary functions). Reducing complexity is often only possible by hiding items on the user interface screens. Optimization of the database or source code usually does not occur.
Operation, maintenance and reengineering		In the operational phase, the complexity of each of the previous phases is encountered and all errors are reflected here. Optimal implementation of all developmental steps is also optimal in terms of complexity and does not increase over time. Ignoring optimization in some phase will have a negative effect on the implementation, albeit minor changes of the system in its operation.

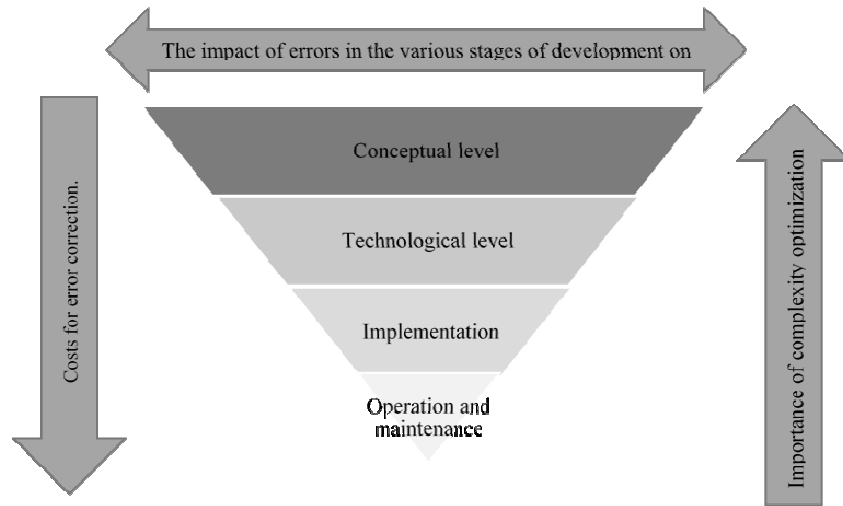


Fig. 1: Complexity scaling.

### Quantification of Complexity in Information Systems

There are plenty of ways to quantify complexity (see previous chapter) and there are many life cycle phases of IS development (and many life cycle models). Not to mention that each phase of the life cycle contains countless content dimensions (different views of the same - e.g. functional and data model). The general model for complexity quantification in the system  $S$  is defined in this work as a function  $c(S) = f(m, l, d)$ , where  $m$  represents the measure of complexity,  $l$  is the life cycle phase and  $d$  denotes the content dimension. If, for example, we chose the function  $f$  as a simple sum and a measure of complexity as the net number of entities  $E$ , this equation should be as follows:

$$c(S) = \sum_{i=1}^n \sum_{j=1}^{m_i} E_{i,j} \quad (1)$$

Where  $j$  is the index of a given dimension in the  $m$ -dimensional system and  $i$  is the life cycle stage index. For example, the number of entities (elements and relationships) of individual UML models (13 models = 13 dimensions) in the design phase can represent the complexity of the entire phase. If we chose a somewhat more sophisticated measure of complexity, such as Shannon's entropy, the equation will be:

$$c(S) = -\frac{1}{n} \sum_{i=1}^n \frac{1}{m_i} \sum_{j=1}^{m_i} \sum_{s=1}^k (p_{ij} \log p_{ij}) \quad (2)$$

Where  $p$  represents the relative frequency of a certain state of the system in phase  $i$  and the content dimension  $j$ . In this case,  $C(S)$  represents the average entropy of the system across all the life cycle phases and across all individual dimensions. Of course, it is not necessary to count the average entropy, but it is possible to make an arithmetic sum, which reflects better the number of phases and content dimensions.

However, the above-mentioned examples for complexity quantification represent only a static view of the problem, which in practice does not have the most benefits. The main problem is the response to the overall complexity when trying to modify the system, for example when adding a single entity (element or relationship) to a certain dimension of a particular phase. During the life cycle, the information system is often modified, such as adding a row to a table, creating a new database table, or extending a user interface with a new element. Obviously, complexity also increases with the increase in elements. As time goes on, there is a gradual growth, which in the extreme case may

cause system malfunction. The uncontrollable growth of complexity has the effect of constantly adding elements and at the same time not removing elements and bonds that are no longer used. In the case that the information system is not simplified, its complexity is growing during its life cycle. In practice, the deletion of system elements is very dangerous, as there is a risk of loss of information that is preserved, for example, in some connection to another element. Therefore, it is necessary to determine multipliers of individual elements of the information system in all dimensions and phases. The general multiplier can be defined as follows:

$$M(a_{i,j}) = C(S, a_{i,j} + 1) - C(S, a_{i,j}) = \Delta C(S)_{i,j} \quad (3)$$

I.e. it is the difference between the complexity after adding one element  $a_{i,j}$  (i-th phase, j-th dimension) and the original IS complexity. For example, after adding one element in the user interface dimension (value field), more than 5 new entities are created in the process dimension. Similarly, the addition of this element will be reflected in other dimensions. Adding multiple elements to multiple dimensions will result in multiplications that will increase complexity considerably. For example, every extension of a global enterprise strategy is another factor that implies an increase in the number of business processes, information services, and other elements that will increase the complexity of the IS over the next stages of the life cycle. The process of quantification itself is closely linked to a particular system set up and represents the function of all elements and relationships in the system. Quantification of complexity multipliers is therefore appropriate to determine empirically, based on working with real systems and ultimately determine the type sizes of multipliers for different types of business models and used architectures based on the aggregation of available data.

### Case Study

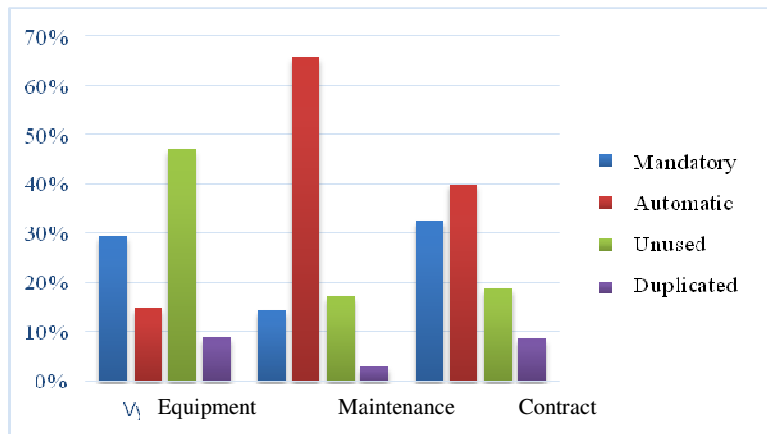
This section will focus on the complexity of the SAP / R3 ERP system at one of the Czech companies. In detail, due to the large scale of the system, we will focus on the maintenance and repair module (PM), which will show the complexity multiplication when adding one element to the organizational structure and the complexity of the user interface.

For the process of creating a maintenance order, the users use three forms: Equipment, Maintenance Report, and Contract. For complexity assessment, all fields in these forms were summarized. In addition, individual fields were classified as mandatory, automatically filled, unused or duplicated. Mandatory fields are those required for a successful process. Automatic fields are those that the system fills after entering the required field. Fields not used are those that are left empty and are not necessary for the process. Duplicate fields are ones that contain information that is already listed in another field of the same form, for example, on other tabs. The result of this categorisation is in Table 2 below.

**Table 2: Number of user interface fields.**

	Equipment	Maintenance Report	Contract
All fields	34	35	80
Mandatory	10	5	26
Automatic	5	23	32
Unused	16	6	15
Duplicate	3	1	7

If we use the equation (1) for quantification of complexity, the number of fields in the form would represent complexity amount for each form, i.e.  $C(\text{Equipment}) = 34$ ,  $C(\text{Maintenance Report}) = 35$  and  $C(\text{Contract}) = 80$ . A visual comparison of each field type is shown in Fig 2.



**Fig. 2: Form fields**

Unused and duplicated fields can be considered redundant and mandatory and automatic fields are necessary for the process. Based on this statement, form fields can be divided into fields that support the process (necessary complexity) and fields that unnecessarily increase complexity (excessive complexity). The share of the necessary and unnecessary complexity of this example is summarized in Table 3.

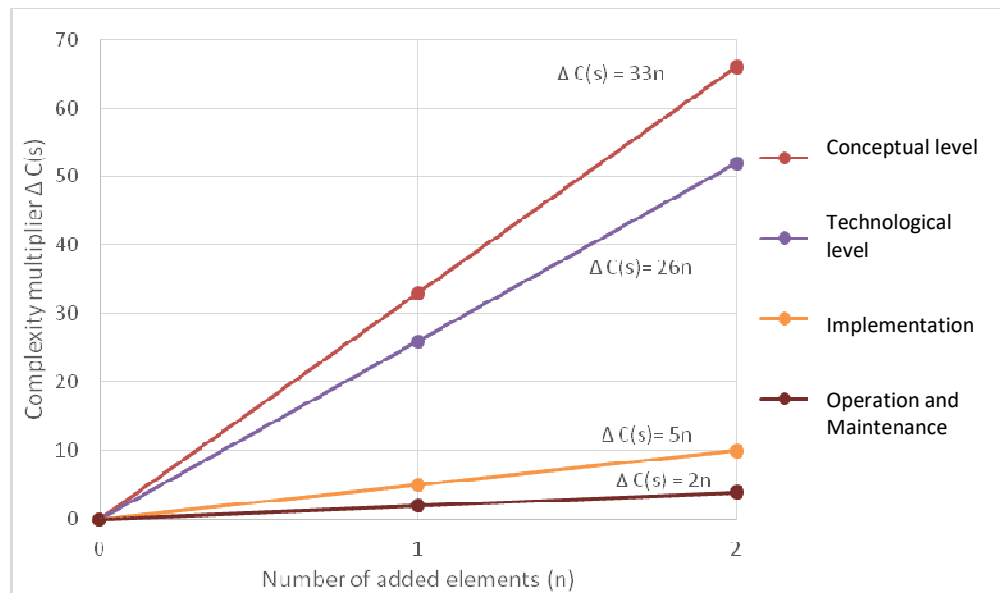
**Table 3: Distribution of complexity in the user interface**

	Equipment	Maintenance Report	Contract	Average
Necessary complexity	44 %	80 %	73 %	66 %
Excessive complexity	56 %	20 %	28 %	34 %

The table shows that the most redundant fields include the "Equipment" form, namely 56%, so the complexity of the forms is more than two times greater than is required. This is due to an inconsistent implementation of the system where the form has not been optimized and 56% of the fields provide no support for the process and should be removed. The "Reporting" form is the most optimal, 80% of the fields are necessary and the "Order" form contains 28% of redundant fields. All extra form fields take up space in the database and make the user interface less readable.

Now we look at the issue of modifications and multiplication. Adding one element to a dimension will not increase complexity by just one. A multiplier will be analysed below, which will show the dependence of adding one element to a given level (life cycle phase) on the overall complexity of the system at that level. Elements will be added to the organizational dimension. The multiplier will be calculated when adding one element of the organizational structure on the conceptual, technological, implementation and operational levels. After addition of one field in the form of one department with 4 employees, the PM module will be used by another group of users and will increase the complexity at the conceptual level. There will be an increase in the number of user accounts and roles, the number of hardware, the number of database elements, and the number of user interface elements. In a particular examined system, it was found that this change would increase the complexity by 33. When adding one element at the technological level, for example by adding a 2-member sub-scheduling group, the database changes, the user accounts, the number of user stations, and the number of elements on the system screens increase. The complexity of the system under examination is increased by 26. To get a multiplier at the implementation level, only one user role was added to the existing system. To ensure the functionality of the process, it was necessary to increase the number of user permissions, hardware elements and functional display items. The new user role also had to be loaded into the database. It was found that 5 elements were added. At the operational level, only one other user was added. The system only grew in the user list and the user was equipped with

a user station. The multiplier is therefore 2. The growth of complexity in changes in the dimension of organizational breakdown in individual levels is presented in Fig 3.



**Fig. 3: Multiplication of Complexity on different levels.**

### Discussion

It is very difficult to quantify the complexity of existing systems. The main idea of this work is the possibility to implement the proposed model of complexity measurement at the beginning of the life cycle. This is basically an supplementary option to adhere to a particular methodology (Lean, Six Sigma, ITIL, ISO or Agile software development). If we are able to quantify complexity in the IS, decision making will be improved at all stages of the life cycle, as we will always be able to choose the least complex variant (Occam's Razor application). However, the road to a full-scale methodology for complexity quantification is still long, and this work aims only to introduce this idea and to entice the reader to this issue. The first step for the implementation of the given methodology must be the integration of automatic methods for complexity quantification according to different methods, i.e. for example automatic computation of complexity of individual UML diagrams directly in the modelling tool, analysis of complexity of source code of information system components directly in IDE and so on. In the case study was shown that surplus fields may result from the creation of a "reserve" where at the time of implementation it was not clear whether the item would be used but was left visible in view of its potential use in the future. The main reason for this may be, in particular, the imperfect implementation of the module, where SAP offers a large number of items that need to be sorted out and decide their usability in the process and unnecessary hide from screens. Surplus and redundant fields are also the result of implementing a complete system solution that has not been tailored to the specific process needs.

### Conclusion

Complexity is a feature of the system that will become increasingly important in the future. The ever-growing size and integration of information systems can cause a number of unpredictable events, where, for example, a negligible change in the system can have a huge hidden multiplier of complexity. This work outlined a possible framework for the creation of a methodology for quantifying the complexity of information systems, which could be used to determine multipliers for individual critical places. It is possible to summarize that excess complexity will always results in increased costs and inefficient work, therefore it is important to monitor complexity throughout the whole life cycle and do not add any unnecessary complexity. It is also important to create a system



that is complex enough to cover all aspects of the processes. In the sample case study, the SAP PM module in the selected company was analysed. When assessing the complexity of the user interface, it was found that the forms contained an average surplus of 34% fields that cause unnecessary complexity, making it more difficult for the user to work with. In addition, a complexity multiplier of this system was established in organizational structure. As a result, the multiplier is the largest at the conceptual level and decreases in other levels. The multiplier in the conceptual level is approximately 6 times larger than the implementation level. Future research will focus on creating a full-fledged methodology for complexity measurement using various quantification methods such as entropy or logical depth.

## Acknowledgment

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## References

- ARORA, S. & BARAK, B. 2009. *Computational complexity: a modern approach*, Cambridge University Press.
- BENNETT, C. H. 1995. Logical depth and physical complexity. *The Universal Turing Machine A Half-Century Survey*, 207-235.
- CARDOSO, J. 2008. Business Process Control-Flow Complexity: Metric, Evaluation, and Validation. *International Journal of Web Services Research (IJWSR)*, 5, 49-76.
- COMMONS, M. L., TRUDEAU, E. J., STEIN, S. A., RICHARDS, F. A. & KRAUSE, S. R. 1998. Hierarchical complexity of tasks shows the existence of developmental stages. *Developmental Review*, 18, 237-278.
- GELL-MANN, M. & LLOYD, S. 1996. Information measures, effective complexity, and total information. *Complexity*, 2, 44-52.
- GOL MOHAMMADI, N., PAULUS, S., BISHR, M., METZGER, A., KÖNNECKE, H., HARTENSTEIN, S., WEYER, T. & POHL, K. Trustworthiness Attributes and Metrics for Engineering Trusted Internet-Based Software Systems. *In: HELFERT, M., DESPREZ, F., FERGUSON, D. & LEYMANN, F., eds. Cloud Computing and Services Science, 2014// 2014 Cham. Springer International Publishing*, 19-35.
- HANSETH, O. & LYYTINEN, K. 2010. Design theory for dynamic complexity in information infrastructures: the case of building internet. *Journal of Information Technology*, 25, 1-19.
- HUFFMAN, D. A. 1952. A method for the construction of minimum-redundancy codes. *Proceedings of the IRE*, 40, 1098-1101.
- CHERNOFF, H. 1972. *Sequential analysis and optimal design*, SIAM.
- IBL, M. & BORUCHOVÁ, Ž. Measuring the Complexity of User Processes using Shannon Entropy and Stochastic Petri Nets. *Proceedings of the International Conference on Computer-Human Interaction Research and Applications - Volume 1: CHIRA, 2017. SciTePress*, 212-217.
- IBL, M. & ČAPEK, J. 2016. Measure of Uncertainty in Process Models Using Stochastic Petri Nets and Shannon Entropy. *Entropy*, 18, 33.
- JUNG, J.-Y., CHIN, C.-H. & CARDOSO, J. 2011. An entropy-based uncertainty measure of process models. *Information Processing Letters*, 111, 135-141.
- LEHMANN, E. L. & CASELLA, G. 2006. *Theory of point estimation*, Springer Science & Business Media.
- LEMPEL, A. & ZIV, J. 1976. On the complexity of finite sequences. *IEEE Transactions on information theory*, 22, 75-81.
- LLOYD, S. 2001. Measures of complexity: a nonexhaustive list. *IEEE Control Systems*, 21, 7-8.
- LLOYD, S. & PAGELS, H. 1988. Complexity as thermodynamic depth. *Annals of physics*, 188, 186-213.
- LORENTZ, G. 1966. Metric entropy and approximation. *Bulletin of the American Mathematical Society*, 72, 903-937.
- MAHONEY, J. R., ELLISON, C. J., JAMES, R. G. & CRUTCHFIELD, J. P. 2011. How hidden are hidden processes? A primer on crypticity and entropy convergence. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 21, 037112.

- MANDELBROT, B. B. & HUDSON, R. L. 2004. *The (mis)behavior of markets : a fractal view of risk, ruin, and reward*, New York, Published by Basic Books.
- MCCABE, T. J. 1976. A Complexity Measure. *IEEE Trans. Softw. Eng.*, 2, 308-320.
- MOTA, F., AARONSON, S., ANTUNES, L. & SOUTO, A. Sophistication as randomness deficiency. International Workshop on Descriptive Complexity of Formal Systems, 2013. Springer, 172-181.
- NIELSEN, F. 2011. Chernoff information of exponential families. *arXiv preprint arXiv:1102.2684*.
- RENYI, A. On measures of information and entropy. Proceedings of the 4th Berkeley Symposium on Mathematics, Statistics and Probability, 1960. 547-561.
- RISSANEN, J. 1978. Modeling by shortest data description. *Automatica*, 14, 465-471.
- RISSANEN, J. J. 1996. Fisher information and stochastic complexity. *IEEE Transactions on Information Theory*, 42, 40-47.
- SHANNON, C. E. 1948. A mathematical theory of communication. *Bell System Technical Journal*, 27, 379-423.
- SOMMERVILLE, I. & DEWSBURY, G. 2007. *Dependable domestic systems design: A socio-technical approach*.
- TRAUB, J. F., WASILKOWSKI, G. W. & WOZNIAKOWSKI, H. 1988. *Information-based complexity*, Academic Press New York.
- ZUREK, W. H. 1990. Algorithmic information content, Church-Turing thesis, physical entropy, and Maxwell's demon. Los Alamos National Lab., NM (USA).

## **The Social and Economic Benefits of Rural Tourism for the Romanian Village**

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### **Abstract**

The objective of the rural tourism, as alternative for the development of the rural areas, is the economic development through investment, both in infrastructure and education, thus contributing to the increase in employment and implicitly leading to an increase of the standard of living in the Romanian villages. The current situation of most of the Romanian rural space needs the active involvement of the local communities in preserving the small rural household and the traditional way of life, in order to achieve a complex and sustainable development. The implementation of the current rural development programme may lead to a diversification of the rural activities, to the creation of new jobs in the rural space, involving non-agricultural activities or investment in infrastructure and related services.

In the present paper, we aim to present the economic and social benefits that the implementation of rural tourism may bring to the Romanian village.

**Keywords:** rural tourism, economic and social benefits, rural space

### **Introduction**

The natural resource is one of the most precious endowments of our country, a wealth little appreciated in recent times, but which, rationally capitalized, offers advantages to investors involved in tourism, tourists and the economy in general. Unfortunately, the natural resource is not only limited but also degrading what its use requires without destroying it, protecting our ecosystem as much as possible. This type of resources has a decisive role in the practice of tourism, the relief forms, the hydrographic network, the climate, the flora and the fauna distinguishing the forms of tourism.

Anthropic resources are the ones that influence tourism for long periods of time. The demographic factor, population incomes, free time have an impact on the level of tourism demand, and transport and communication infrastructure, accommodation capacity, historical vestiges, museums, and tourist objectives in general have an impact on the level of tourist offer.

Rural tourism activity depends to a large extent on the comfort offered to tourists, especially the quality and conditions offered by the accommodation structures, especially villas, cottages, holiday villages, campsites, rooms for rent, camps and especially, tourist hostels that require permanent investments so as to ensure a pleasant environment for tourists, meeting their desires and needs.

In Romania, there are opportunities for tourism development in general and for rural ones in particular due, among other things, to the existence of a cheap labor force and thus to the possibility to offer quality services at a competitive price, to the existence of funding from sources domestic and international tourism-related development.

These opportunities derive from the fact that the geographical situation and the diversity of the landscape are special, the climate is favorable for practicing different forms of tourism, there are archaeological and architectural objectives of real interest, the folklore and gastronomic traditions are diverse, specific to each sub-region in part, there are periodical cultural manifestations, folk festivals, and the Romanian hospitality creates for the tourists a great comfort, making them feel good and safe.

Rural tourism seems to be a viable alternative; in recent decades, policies promoted at European level in regional development together with Member States' national policies have encouraged rural areas to move towards tourism, taking into account positive social impacts and implications.

## **Results and Discussions**

Tourist activity can solve some of the economic problems of the rural population. The advantages of rural tourism can be economic and socio-cultural. Among these we can mention:

### ***Stabilizing the Population by Setting up the Labor Force***

This is an extremely important consequence for most rural areas, generally confronted with the phenomenon of depopulation, especially due to the lack of a certain material perspective of the inhabitants.

The supply of cash from tourist benefits can help preserve jobs in services such as trade, tourist accommodation, local transport, healthcare. They can provide additional income to farmers, forest workers, fishermen. Even if job preservation is less attractive than creating new jobs, it can contribute to the viability of rural communities, especially marginal ones, which do not benefit from the effects of urban polarization. Studies in rural areas have confirmed the role of tourism in preserving jobs and reducing the pollution phenomenon.

### ***Creating New Jobs***

The creation of new jobs is possible given that the local implementation of rural tourism is successful. This is mainly associated with hotel and restaurant practices. In the rural area, their success creates perspectives for accommodation of tourists to the locals, which will implicitly increase the activities related to the food trade, handicraft, transportation, valorization of the local patrimony, etc.

### ***Diversifying the Use of the Workforce***

The vast majority of rural areas show a poor diversity in the use of labor, almost entirely occupied in the agricultural sector. Diversification in a favorable tourist-economic context can also result in the stabilization of the rural population.

### ***Pluriactivity***

Pluriactivity is another beneficial consequence of rural tourism. It designates the situation where, at the individual or family level, the assurance of existence is accomplished by carrying out additional activities (at least one) in addition to the basic activity. Thus, a farmer may have the availability of renting rooms, helping the local government by providing tourist services (guide, animator, ski monitor, etc.).

Pluriactivity allows for additional revenue, both in the context of declining activity and constraints generated by the seasonal rhythm of agricultural activities.

### ***Promoting and developing services***

Promoting and developing services is an essential aspect, all the more so since many rural communities are still frequently struck by the lack of appropriate service facilities. The additional demand for products, caused by the numerical growth of the clientele (including tourism), can allow the expansion of the commercial network, the support of some improvements to the habitat (modernization of roads, sewerage, electrification, road and tourist signage) postal and communications services.

It is just as important to attract and maintain customers as well as increase it; this is not done by itself, and a concentrated policy of all the variables that act on the clientele is needed. At the level of tasks, it is necessary for them to acquire the willingness to offer quality services, permanently susceptible to renewal, adaptation to the rapid dynamics of the tourist's motivations.

Especially in the case of isolated rural settlements, which are not willing to provide and support many services, rural tourism can help to maintain their viability. Obviously, it is presumed that these settlements possess particular elements of tourist attraction, and the phenomenon of tourist traffic is stimulated and amplified by the proper marketing of the tourist offer.

Economic support for farmers is a major problem in the economic and political environments. Numerous studies conducted in countries with rural tourism tradition have highlighted that farmers' average incomes can be increased by offering different forms of accommodation by promoting visits to agricultural farms that have different attractiveness (horse-riding, winemaking, vegetable growing, apiculture, etc.) , by selling products specific to the household or village.

In addition to economic benefits that can incite farmers to engage in tourism, social benefits cannot be ignored as a result of contacts with townspeople in addition to variety intake. In a specific, often solitary way of life, villagers can become better informed about a series of topical issues that may have a favorable impact on their own socio-economic and cultural conditions.

### ***Promotion and Support of Folk Art, Local Handicraft Industry***

Art and rural crafts occupy an important place in the cultural heritage of each country. Rural tourism can help these activities both by recognizing their importance and by selling handicraft products.

Our country is privileged from this point of view, given the enormous diversity and authenticity of rural artistic creations.

In addition to the economic dimension they imply, these concerns represent messages of exceptional value to the spiritual vocations of the Romanian rural communities, as well as the ideal means of promoting the favorable image and stimulating the tourist interest.

Festivals of folk art and handicraft production are ideal mechanisms that facilitate the marketing and promotion of rural tourism creation and outline the tourist attraction. Their existence, coupled with adequate media coverage, can be the first lever to ensure the inclusion of a rural settlement in the field of tourism.

In addition to expanding its own cultural contribution, festivals and other events of this kind facilitate the access of other artistic collections to the environment, which contributes to the enrichment of cultural life.

### ***Rehabilitation of the Urban Heritage***

The rehabilitation of the urban heritage is achieved under the conditions of a tourist flow, mainly on two horses. First of all, preservation or restoration of objects of historical or cultural interest can be achieved by practicing access fees. Secondly, the creation of an accommodation potential involves the restoration and restoration of abandoned buildings as a result of the depopulation phenomenon.

Increasing comfort in buildings with available rooms for rent, building a recreational infrastructure (green spaces, fishing facilities, promenades, cyclotourism and equitation circuits, etc.) are, in the long run, beneficial initiatives for the community itself, beneficiary of the investments made.

All of this diminishes the motivation to relocate the younger generation and can contribute to the return of emigrants or even to the installation of new inhabitants.

### ***Attracting New Investments***

Rural tourism has the advantage of acting in the direction of opening new investment perspectives. Thus, tourism makes it easier for people from different backgrounds to come into contact, and ideas and actions, directed to the superior capitalization of various local resources, are inherent. Potential rural tourists can also include business people who have the ability to see more quickly the prospects of new activities and their financial perspectives, which can be beneficial by their effects on the rural community (jobs, infrastructure upgrading and services, the penetration into the information circuit, etc.). Obviously keeping pleasant memories of rural holidays can encourage business people to start investing in the environment.

In short, like any productive activity, rural tourism can also produce synergistic growth effects by attracting new variables into the design process and operating strategy.

### **Conclusions**

For a long time, agriculture has played an essential role in the development of rural areas. Rural development implies more than mere development of the agricultural sector. Measures taken to develop the rural sector have so far focused on supporting farm farms, but despite these subsidies, these policies have failed to significantly improve the fate of the rural environment. Against this background, new measures to restore the countryside, with an emphasis on local specificities, are needed.

Tourism responds to a multitude of human needs such as recreation, recreation, knowledge, health care, relaxation, enrichment of the cultural horizon, communication, adventure, justifying the involvement of an increasing number of people in the tourist circuit. Tourism is an indicator of the quality of life and a means of improving it, ie the economic and social growth factor.

The tourist potential in Romania is given in particular by natural resources (relief variety, climate, hydrographic system, flora, and fauna) and anthropic resources (archaeological remains, historical monuments, museums, memorial houses) related to the historical and cultural existence and evolution of our people. These two types of resources allow the differentiation of forms of tourism and their development.

We can talk about tourism as a potential priority sector in the economic and social development of the Romanian rural area, a point of interest for both the public and the private sector, which needs to be given special attention through the mix of macroeconomic policies used in the aim of making tourist activities more efficient.

## References

- [1]. Bogan, E., (2012), *Rural Tourism as a Strategic Option for Social and Economic Development in the Rural Area in Romania*
- [2]. Botezatu A. (2014), *Tourist Motivation For Rural Destinations*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 14 ISSUE 1, 49-52.
- [3]. Burghilea C., Uzlău C., Ene C.M. (2016), *Comparative Indicators Of Sustainable Tourism*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 16 ISSUE 3, 77-80.
- [4]. Candea M., Erdeli G., Simion T., Pepteanu D., (2003), *Potențialul turistic al României și amenajarea turistică a teritoriului*", Ed. Universitară
- [5]. Iova A.R., Năstase M., Lascăr E. (2016), *Development of Rural Tourism and Agrotourism in Romania by Implementing European Programs*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 16 Issue 1, 233-238.
- [6]. Maria Cristina Paiu, Turek Rahoveanu Adrian (2017), *Rural Tourism - Alternative for Development Rural Areas*, The 29th International Business Information Management (IBIMA) Conference Vienna, Austria
- [7]. Rusu, M. (2013) - *Impact of agro-tourism on mountain peasant farms in the context of sustainable development*
- [8]. Toader I., Mocuta D. (2018), *A study on agritourism services in Romania*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 18 ISSUE 2, 475-482.

## Interaction of Task Conflict, Relationship Conflict and Job Satisfaction

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### Abstract

Given the underrepresented empirical evidence on the association between conflict and job satisfaction particularly on the individual level analysis, our study investigates the interaction between age, gender and education level and perception of job satisfaction and conflict. The purpose of this study is to provide confirmatory evidence that conflict and demographic characteristic have significant association with job satisfaction among employees in Croatia. Findings from this preliminary research indicate that as employees experience more task conflicts, the relationship conflict increases while job satisfaction decreases. Moreover, relationship conflict has stronger association with job satisfaction (particularly on satisfaction with the coworkers) in comparison with the association of task conflict, which is consistent with the literature on the subject. Surprisingly, job satisfaction among Croatian employees varies with age, whereas no significant differences appears across gender or education groups. Implicitly, the results raise the questions about employers', managers' and human resources practitioners' awareness of the conflict and job satisfaction predictors or controlling factors.

**Keywords:** job satisfaction in general, coworkers, supervision, Croatian employees

### Introduction

In an increasingly interconnected, knowledge and relationship intensive work, organizations rely on the high-performers – engaged and highly competent employees - as their most important source of success. Attracting, engaging or sustaining high performers within the particular company becomes increasingly challenging. Considerable research shows interest in employee's job satisfaction as one of the predictors of the employee's voluntary turnover. In line with that, the interest of researchers and managers in the antecedents of the job satisfaction has been increased in the past decade.

In search for the answers on the question what makes the employees satisfied and engaged, at least two general categories of factors are investigated. On one hand, job satisfaction variations across gender, age and other demographic features of employees seems relevant as the new generations of employees with specific work attitudes (generation Y) arrive whereas baby boomer generation departures from the labour market. On the other hand, a number of factors related to the work environment including conflicts,



relations with coworkers and supervisors along the variety of organizational features seems to have equally important effect of the employees' satisfaction with the job.

The contemporary organizations harbor diverse sets of employees with different work attitudes, aspirations, abilities, skills and knowledges and in such a diverse conditions conflicts are part of the companies' daily interactions. Resolving those differences and managing conflicts may impose unnecessary time waste, create additional cost of resources, increase losses, decrease efficiency or employees' satisfaction. On the other hand, avoidance of the conflict may lead to an escalation of the groupthink and conformity which diminish organizational innovativeness or competitiveness on the long run. However, much of the prior research on the conflict have been done on the team level of analysis. Little attention has been paid to the individual level factors and their interaction with conflict expressions or job satisfaction.

Accordingly, the purpose of this study is to explore, confirm and understand the relationship between demographic factors, conflicts and job satisfaction of the employees of the Croatian private and public companies. Croatia is among those countries which have high unemployment rate, particularly for the young adults. High number of individuals available on the Croatian labour market may increase employers' insensitivity to specific needs of different demographic cohorts and decrease their awareness of the importance of proper human resources practices. Research on conflicts and job satisfaction in the Croatia are underrepresented particularly regarding task or relationship conflicts association with job satisfaction. Broadly, this study represents an effort to increase understanding of the interactions between conflict and job satisfaction as well as to contribute to the understanding of the differences in job satisfaction or conflict perception across demographic factors. Accumulating empirical evidence on factors that influence both conflicts and job satisfaction in Croatian national context may provide scholars and managers with more meaningful information regarding the human resources management theories and practices.

The article starts with the brief description of the previous research, followed by the description of measures, methodology and main results. Discussion section emphasizes the main points and inconsistencies between our results and prior research while conclusion indicates limitations and further research opportunities.

## **Previous Research**

Job satisfaction of the employees in the companies refers to the individuals' subjective evaluation of work in general or some specific components of the work. It reflects the degree to which employees feel good about their jobs and experience motivation and encouragement to be fully engaged in work. Kinicki et al. (2002) conducted a meta-analysis of the research related to the subject of job satisfaction and found that job satisfaction is related to the numerous antecedents such as: components of job design (task importance, variety, autonomy, feedback), negative stressors (including conflict and role ambiguities), group and organizational features (including cohesiveness, participation, inequality, organizational structure and climate) and leadership behaviour. Much of the prior research concerned with the antecedents of the job satisfaction indicates opposing results in terms of positive, negative or neutral association between specific job-related factor and job satisfaction (de Bustillo and Fernandez-Macias, 2005). It seems there is still a lot to be discovered around the topic of job satisfaction, particularly concerning the effect of conflicts as the pertinent feature of the organizational dynamics.

Conflict is commonly described as a social process resulting from real or perceived differences of the organizational members (De Dreu and Weingart, 2003) regarding task content and procedures, or relationships issues. Employees tend to frame conflict in the companies as either task or relationship related. Task conflict arises from „awareness of differences in viewpoints and opinions pertaining to a

specific task” (Jehn and Mannix, 2001, p. 238). Employees may have different opinions and ideas about “what and how” need to be done in order to achieve specific organizational goal or work-related tasks. Relationship conflict arises from the “interpersonal incompatibilities among organizational members which typically include tension, animosity and annoyance” (Jehn, 1995:258). Moreover, “anxiety, fear, frustration, strains and uneasiness when individuals dislike or are disliked by other members of the group, create negative reactions which may result in psychological or physical withdrawal of the organizational members” (Jehn, 1995:258).

Task and relationship conflicts tend to co-exist in the companies worldwide, and have been reported as substantially correlated. Even the managed task conflict may impose the challenge to an employee’s dignity or status and may evolve in relationship conflict (Jehn et al, 2008). Disagreements about task content and procedures may become personal and organizations with frequent and intense task conflicts situations are prone to relationship conflicts particularly when employees misinterpret task conflict by inferring hidden agendas or personal attacks (Simon and Peterson, 2000). Meta-analysis of the studies on task and relationship conflict association reported consistently positive correlations ranging from .19 (weak) to .84 (strong), whereby mean corrected correlation between task and relationship correlations reported in the different studies is .54 (De Dreu and Weingart, 2003). Correlations between relationship and task conflict can depend on the work climate, intra-organizational trust and psychological safety (Simons and Peterson, 2000). Strong correlations between task and relationship conflict may even mask the individual effect of task or relationship conflict on job satisfaction. Given the co-occurrence of the task or relationship conflict we propose high positive correlation between task and relationship conflicts.

H1: There is strong significant positive correlation between task and relationship conflict in organizational settings.

Early theories on conflict indicated that any type of conflicts imposes dysfunctional effects on the individual or organizational outcomes. Conflicts are usually associated with negative emotions which in turn hinder organizational performance and member’s satisfaction (Jehn and Mannix, 2001). Empirical evidence related to the effect of task conflicts on job satisfaction are suggesting negative association ranging from -0.04 (the weakest); -0.72 (the strongest); whereby -0.32 is reported as the mean correlation (De Dreu and Weingart, 2003). Employees who frequently experience task conflict situation may feel angry and insecure about their status, they may be frustrated because they have to participate in debates and convince peers about something beneficial to a job. As a result, task conflict may lead to job dissatisfaction. However, some authors challenge this dysfunctional perception of task conflicts. Amason (1996) and Behfar et al. (2001) indicated that disagreements among organizational members regarding what need to be done and how the task will be achieved (task and task related procedural conflict) may have positive impacts on job satisfaction in a specific situations and under particular conditions (such as task importance, intensity of occurrence, trust, open discussion atmosphere, etc.). On the other hand, relationship conflict has been found to have systematically negative impact on employee’s job satisfaction (Jehn 1995, De Dreu and Weingart, 2003). The relationship conflict encourages employees to hold to the own preferences even when they are suboptimal, distracts employees from the task related problems and tend to have damaging effect on productivity and effectiveness. In addition, relationship conflicts may lead to demotivation and employee’s withdrawal. Employees who frequently experience relationship conflicts will most likely experience dissatisfaction rather than satisfaction. Meta-analysis of the literature related to the subject of conflict have found that association between relationship conflict and job satisfaction range from -0.25 (weakest); to -0.83 (strongest); whereby the mean corrected correlation is reported to be -0.56 (De Dreu and Weingart, 2003), indicating that relationship conflict have larger negative impact on satisfaction than task conflict. Given the empirical evidence on the subject we presume following association between both types of conflict and job satisfaction.

H2a: Task conflict has negative effect on the employees’ job satisfaction.

H2b: Relationship conflict has negative effect on job satisfaction.

Gender, age and educational level have been theoretically assumed and empirically shown to have significant although inconsistent relationship with job satisfaction. There are significant variations across demographic characteristics and perception of job satisfaction. For example, age differences in overall job satisfaction are greater than those associated with gender, education or income (Clark et al. 1996). Although inconclusive, prior research suggest that job satisfaction increases with age (Aydin et al, 2012). One study finds that females have lower job satisfaction than males, while other reported opposing association (males have lower job satisfaction), or no significant gender differences (Lambert et al., 2001). Education is suggested to have significant positive relationship with job satisfaction or to be insignificant (Lambert et al., 2001). However, majority of the prior research on the subject is focused on the group level of analysis, and group characteristics such as size of the group, trust and cohesiveness of the group, communicational channels, etc. Individual-level characteristics, although relevant remains markedly underrepresented (Todorova et al. 2014). In line with the previous studies we presume that the evaluation of the conflict and satisfaction will confirm following relationships:

H3: There are significant differences across demographic characteristics such as gender, age and education on the perception of relationship and task conflict, as well as on the perception of job satisfaction.

The aim of this study is to empirically evaluate interrelation of the task conflict, relationship conflict and specific facets of the job satisfaction in the context of the Croatian companies. Up to date, management or organization research focused on job satisfaction or conflicts are mainly conceptual (Gonan-Božac and Angeleski, 2008) or narrowly focused on effect of job satisfaction on organizational performance (Bakotić, 2016), as well as on job satisfaction in specific occupations (Aljinović Barač and Tadić, 2011; Ružić et al. 2018). Therefore, more general preliminary evidence on the conflict and job perception among employees in Croatia would be beneficial, particularly in the context of recent macroeconomic crisis. During the 2008-2016 Croatia has experienced the severe economic downturn resulting in the high unemployment rate. The oversupply of the labor contributed to the employer's weak awareness of the importance of the job satisfaction and conflict association. Human resources management scholars and practitioners emphasize the role of the managing conflicts and job satisfaction as important for keeping high-performers within companies. In addition, "increased market competition, globalization, resource shortages, more rapid business pace, changes in technology, job insecurity, frequent restructuring processes, mergers, acquisitions, strategic alliances, and other contemporary business issues" (Pološki-Vokić and Sontor, 2009) increased the need to gain more insights on the association between task and relationship conflict and job satisfaction in context of Croatian companies.

## **Research Methodology**

### ***Sample***

Since the study is preliminary and exploratory in nature, the convenient sampling approach was utilized. The total of 153 employees of the small and medium sized private and public companies in Croatia, selected on the basis of the lead author's personal contacts and availability, submitted their responses to the on-line questionnaire during November-December, 2017.

In analyzing the available dataset, descriptive statistics considering means and standard deviations were calculated for numerical variables. Additionally, for testing differences in means, t-test and ANOVA were used. Categorical variables were presented with frequency tables.

Descriptive statistic of the sample demographic is shown in the table 1.

**Table 1: Sample demographic – descriptive statistics (n=153)**

Variable	Variable description	N	p(%)
Gender	Female	110	71.9
	Male	43	28.1
Age	18-30	40	26.1
	31-45	77	50.3
	46-65	36	23.5
Education	Primary education	0	0
	Secondary education	54	35.3
	Tertiary education (including postgraduate studies)	99	64.7
Average monthly salaries	-500 €	9	5.9
	501-1000 €	39	25.5
	1001-1500 €	62	40.5
	1501-2000 €	15	9.8
	2001 - €	28	18.3

The main hypotheses were analyzed by using the Pearson’s Correlation Coefficient, whereby the magnitude represents the strength of correlation and the sign indicates the direction of the correlation. Statistical analyses were performed by using statistical software Statistica 13.3.

***Measurement instruments***

In designing of the questionnaire, authors adopted the standardized sets of Intergroup Conflict Scale (ICS) and Job Descriptive Index (JDI) as the main measuring instruments.

Intergroup Conflict Scale (ICS) contains 8 items relevant for assessing relationship and task conflict in organizational settings (Jehn, 1995). Respondents answer to what extent each item in the ICS reflect their working conditions using the five-point scale whereby 1 indicate “never/none” and 5 “often/very much”. Relationship conflict construct reflects values of the four statements (for example: “How much emotional conflict is there among members in your work unit?”). The task conflict construct is measured as the average value of the additional four statements (for example: “To what extent are there differences of opinion in your work unit”, etc.) as suggested by Jehn (1995). Cronbach’s Alpha is 0.917 for Relationship conflict construct and 0.919 for Task conflict construct, indicating the high reliability of the measurement instrument.

Smith, Kendall and Hulin (1975) developed the job descriptive index (JDI) for assessment of the job satisfaction level of the organizational members. JDI is a multidimensional instrument which measures five specific areas of workers’ satisfactions on the job, namely with the job in general, coworkers on present job, supervision, pay and opportunities for promotion. Ironson et al. (1989) emphasized that JDI scales dimensions were constructed to measure discriminable different areas. Correlations between different dimensions of the JDI scale should be moderate (from .25 to .45)(Smith et al.1969). This study utilizes the three dimensional job description index and is focused on the job satisfaction in general (JIG),

worker’s satisfaction with her/his coworkers (Coworkers) or with her/his supervisors (Supervision). Each of these three dimensions of the employees’ satisfaction is described with the list of 18 adjectives or phrases, with approximately equal number of favourable and unfavourable adjectives. For example, in assessing the dimension of the job in general, respondent is instructed to think of her/his job in general, and decide what is it like most of the time. A list of adjectives such as “pleasant” (favourable); waste of time (unfavourable) is evaluated by respondent. Beside each word or phrase respondent may write “Y” (for yes) if it describes her/his job; “N” (for no) if it does not describe it, and “?” if she/he cannot decide. (Bowling Green State University, 2009 revision). The responses are then revised using the weights presented in the Smith, Kendall and Hulin (1975) to enable scoring and assessment of the JDI scales. In our study we have used three dimensions of the instrument, namely “Job in General” (JIG) scale, “People on present job” (Coworkers) scale and “Supervision” scale as three separate dependent variables. The JDI has been proven for its validity and reliability in comparing job satisfaction level between different companies, industries or over time (Cook et al. 1981; Kinicki et al. 2002). The high reliability of the measurement instrument is also validated for our study by high values of the Cronbach alpha values, namely for JDI-JIG scale (0.93); JDI – coworkers (0.94) and JDI – supervision (0.88).

## Results

This study investigates the relationship between two main types of the conflicts as well as their association with job satisfaction of the Croatian employees. As shown in the table 2, all hypothesized interaction between task and relationship conflict, as well as job satisfaction have expected direction. The strong positive association between task and relationship conflicts have been confirmed (H1). Task conflict (H2a) as well as relationship conflict (H2b) have significant negative effect on job satisfaction.

**Table 2: Mean, standard deviations (SD) and correlations among variables (n=153)**

	Mean	St.Dev.	1	2	3	4	5
1. Relationship conflict	2.32	0.97	-	.83***	-.21**	-.46***	-.23**
2. Task conflict	2.48	0.95	.83***	-	-.18*	-.39***	-.23**
3. JDI - JIG	38.45	14.78	-.21**	-.18*	-	.57***	.65***
4. JDI - Coworkers	34.37	17.13	-.46***	-.39***	.57***	-	.67***
5. JDI - Supervision	34.52	13.78	-.23***	-.23***	.65***	.67***	-

Note: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; †p<0.10

Looking at the table 2, all variables have significant associations. Task conflict is strongly positively related with relationship conflicts (0.83), and moderately negatively correlated with job in general (-0.21), coworkers (-0.46) and supervisors (-0.23) satisfaction dimensions.

This study further addressed whereas there are differences across demographic factors on perception of conflicts and job satisfaction. Table 3 shows only the significant differences across demographic characteristics.

**Table 3: Differences regarding job satisfaction and conflicts across demographic characteristics**

Variable	Gender (t-test)		Age (ANOVA)			Education (t-test)	
	Female	Male	18-30	31-45	46-65	Tertiary	Secondary
Relationship conflict	2.31	2.33	2.18	2.37	2.35	<b>2.46</b>	<b>2.06**</b>
Task conflict	2.50	2.45	2.58	2.52	2.31	<b>2.62</b>	<b>2.23**</b>
JDI – coworkers	34.68	33.56	<b>41.15</b>	<b>31.84</b>	<b>32.22**</b>	33.71	35.58
JDI – in general	38.92	37.26	41.48	36.58	39.08	37.97	39.33
JDI – supervision	35.15	32.91	<b>39.5</b>	<b>33.04</b>	<b>32.14*</b>	34.86	33.89

Note: \*\*\* p<0.001; \*\* p<0.01; \*p<0.05; †p<0.10

For the most part, results in the table 3 show that expected significant differences across demographic characteristics are either not evident or not in the predicted direction. Males and females, employees with different monthly salaries, as well as different educational attainment have similar level of satisfaction with job in general, coworkers or supervisors. Among the characteristics that show significant differences, our study indicates that younger employees have higher job satisfaction than older employees in two dimensions: coworkers and supervisions, whereas no significant differences exist between different age groups and job satisfaction in general. In addition, the more educated employees experience task and relationship conflict more often.

## Discussion

The main goal in this study was to identify interaction of the relationship and task conflict and job satisfaction in the sample of employees in Croatia. Findings from this research indicate that as employees experience more task conflicts, the relationship conflicts increase while job satisfaction decreases. Relationship conflict have stronger effect on job satisfaction (particularly on satisfaction with the coworkers) in comparison with the effect of task conflict. This is consistent with the literature on the subject, which suggest that conflicts are interrelated, yet negatively associated with the job satisfaction, and that relationship conflict have more prominent effect on job dissatisfaction. High correlation, or so called co-occurrence of the task and relationship conflict, may have even further negative implication on the companies. Unmanaged task conflict may initiate the vicious transformational process where criticism about task (task conflict) may evolve into personal (relationship) conflict and strengthen the negative effect of task conflict on job satisfaction. However, such transformation can be prevented or controlled. For example, job satisfaction can be increased by interventions in employee’s roles (by reducing the conflicting tasks and role ambiguity), as well as by the job design interventions (such as adding more task variety, identity, significance, autonomy, feedback). Moreover, the interventions in organization-level features (cohesiveness, integration, communication quality, participative involvement, organizational structure and climate) and leader/managers behavior (Aydin et al, 2012; Kinicki et al. 2002) may also reduce the negative association between conflicts and job satisfaction. Specifically, Jehn and Mannix (2001) suggested that companies in order to have high-performing and satisfied employees should take special care to enhance trust, respect and cohesiveness which will in turn increase the effort, positive attitudes, and cooperation of members and thus reduce the conflict expressions. Another study indicated that conflict characteristics such as communication norms, resolution efficacy, conflict importance and emotions related to conflicts enhance or reduce negative effect of the conflict on job satisfaction (Jehn et al., 2008). For example, employees will be more satisfied if managers promote open communication, constructive and moderate debates concerning the task, and if employees believe they have the ability to resolve the conflict. In contrast, the important and especially serious conflict evokes strong reactions and strengthen the negative effect of conflict on the employee’s satisfaction. In addition, negative emotions associated with conflict such as jealousy, anger or frustration tend to override rational reasoning and

strengthen the negative effect of conflict. Early constructive interventions of the managers on the hot discussions set the tone of the organizational climate and reduce the chances that employees will take debates personally and engage in the relationship conflict.

On the other hand, expected significant differences in job satisfaction across gender, age or education level of the employees, for the most part, have not been confirmed. Males and females, as well as employees with the different level of education show no significant differences in the level of job satisfaction. Gender differences in job satisfaction tend to be insignificant in the cultures with less inequality (Clark et al. 1996). In addition, education shows no significant association with job satisfaction in the context of employees from different occupations, companies and working conditions (Lambert et al. 2001). Since our sample included participants from different occupations and companies, we tentatively conclude that these findings are not inconsistent with the some of the prior research.

In addition, our findings suggest elder employees as less satisfied, whereas younger employees have higher job satisfaction particularly with coworkers and supervisions. This result is perhaps embedded in the broader cultural context of this study – namely the Croatian labour market. Croatia has one of the highest unemployment rates of young adults, and transition from the education to work is difficult given the worsening economic situation in Croatia. The young adults, faced with the prospect of being unemployed may feel satisfied simply by having a job. Another explanation may include the lower experience of the younger employees. Thus, they may perceive their coworkers and supervisors as sources of information beneficial for their learning, job related training and promotions. On the contrary, elder employees will tend to perceive themselves as more experienced and accomplished. Therefore, they may be more frustrated with the managers' feedback or they may perceive peers as competitors for formal recognition and promotions. Employees differ in valuing different aspects of job satisfaction according to their perception of the importance of the particular aspect (de Bustillo and Fernandez-Macias, 2005). In addition, the association between predictors and job satisfaction may not be linear, but bell shaped. All in all, our findings provide evidence that is largely confirmatory in relations to the prior research, and support the significance of the conflict expressions and demographic factors as relevant in understanding job satisfaction.

## **Conclusion**

The study of the interaction between conflict and job satisfaction was conducted using a convenient sample of employees in Croatian private and public companies. These results are consistent with the past research regarding the conflict and job satisfaction associations and confirm fundamental postulations that experiencing conflict situations have negative effect on employee's job satisfaction. However, the expected individual differences across gender, education, and monthly incomes of the employees were found as not significant, whereas difference across age showed unexpected directions. Thus, continued research devoted to understanding the antecedents of job satisfaction would be valuable.

In interpretation of the results of this study, some limitations should be considered and addressed in the future research. First, the convenient sampling limit the ability to generalize results of this research. Thus, further research should be more representative and control for the age, size, sector or industry of the companies, or employees' occupation. Secondly, the study examined the associations between few of the numerous factors related to the perception of conflict or job satisfaction, which helped us to find support for our results in comparison with the empirical evidence of prior research in this subject. In the future research, other factors such as personal (attitudes, tenure, experience), organizational (company climate, culture, job stability, prospect for promotion) or contextual (macroeconomic conditions, unemployment rate, opportunities for finding new jobs, labour market inequalities) may be taken into consideration to investigate their potential interactions with employee's satisfaction. Third, the inferential statistics utilized in this study tested primarily linear and direct associations between main variables. Although it is easy to

assume that conflicts and satisfaction have causal relationship, the causal ordering between conflict and satisfaction may be complex and even reversible. For example, high level of employees' satisfaction may cause less relationship conflicts whereas low level of job satisfaction can make employees more prone to relationship or task conflicts. Therefore, further research should consider other statistical test in order to examine potential indirect or curvilinear relationships between demographic variables, conflicts and job satisfactions.

Despite the limitations, this study raises several questions about the effect of conflict and satisfaction as well as about gender, age or education stereotyping of the employees in the context of Croatia. By better understanding of the factors related to job satisfaction and avoiding stereotypes related to the employees' demographics, managers and human resources practitioners in Croatia should have more control over the predictors of the employee's satisfaction and thus, they may prevent the high-performing employees' intention to leave the company.

## References

Aljinović Barač, Ž. and Tadić, I. (2010), 'Impact of accounting regulatory framework complexity on accountants' job satisfaction in Croatia,' *Management*, 16(1), 1-21.

Amason, A. C. (1996), 'Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams,' *Academy of management journal*, 39(1), 123-148.

Aydin, A., Uysal, S. and Sarier, Y. (2012), 'The effect of gender on job satisfaction of teachers: a meta-analysis study,' *Procedia – Social and Behavioural Sciences*, 46(2012), 356-362.

Bakotić, D. (2016), 'Relationship between job satisfaction and organizational performance,' *Economic Research-Ekonomska Istraživanja*, 29(1), 118-130.

Behfar, KJ., Mannix, EA., Peterson, RS. and Trochim, WM. (2001), 'Conflict in small groups: The meaning and consequences of process conflict,' *Small Group Research*, 42(2), 127-176.

Clark, A., Oswald, A., and Warr, P. (1996), 'Is job satisfaction U-shaped in age?', *Journal of Occupational Psychology* 69(1), 57-81.

Cook, JD., Hepworth, SJ., Wall, TD. and Warr, PB. (1981), *The experience of work*. London: Academic Press.

de Bustillo LRM. and Fernandez-Macias, E. (2005), 'Job satisfaction as an indicator of the quality of work,' *The Journal of Socio-Economics*, 34(5), 656-673.

De Dreu, C. and Weingart, L. (2003), 'Task versus relationship conflict, team performance, and team member satisfaction,' *Journal of Applied Psychology*, 88, 741–749.

De Wit, FR., Greer, LL. and Jehn, KA. (2012), 'The paradox of intragroup conflict: a meta-analysis,' *Journal of Applied Psychology*, 97(2), 360.

Gonan Božac, M. and Angeleski, I. (2008), 'Menadžment konflikta: razmatranje teoretske paradigme i makrostrateškog pristupa,' *Economic research-Ekonomska istraživanja*, 21(4), 45-61.



Jehn, K. A. (1995), 'A multimethod examination of the benefits and detriments of intragroup conflict,' *Administrative Science Quarterly*, 40, 256-282.

Jehn, KA. and Mannix, EA. (2001), 'The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance,' *Academy of management journal*, 44(2), 238-251.

Jehn, KA., Greer, L., Levine, S. and Szulanski, G. (2008), 'The effects of conflict types, dimensions, and emergent states on group outcomes,' *Group Decision and Negotiation*, 17(6), 465-495.

Kinicki, AJ., McKee-Ryan, FM., Schriesheim, CA. and Carson, KP. (2002), 'Assessing the construct validity of the Job Descriptive Index: A review and meta-analysis,' *Journal of applied psychology*, 87(1), 14.

Lambert, EG., Hogan, NL., and Barton, SM. (2001), 'The impact of job satisfaction on turnover intent: a test of a structural measurement model using a national sample of workers,' *The Social Science Journal* 38 (2), 233-250.

Ružić, E., Benazić, D., and Bukša Tezzele, R. (2018), 'The influence of sales management control, sales management support and satisfaction with manager on salespeople's job satisfaction,' *Ekonomski Vjesnik*, 31(1), 111-123.

Simons, TL. and Peterson, RS. (2000), 'Task conflict and relationship conflict in top management teams: The pivotal role of intragroup trust,' *Journal of Applied Psychology*, 85(1), 102-111.

Smith, PC., Kendall, LM. and Hulin, CL. (1969), *The measurement of satisfaction in work and retirement*, Chicago: Rand McNally.

Todorova, G., Bear, JB. and Weingart, LR. (2014), 'Can Conflict Be Energizing? A study of Task Conflict, Positive Emotions, and Job Satisfaction,' *Journal of Applied Psychology*, 9(3), 451-467.

Pološki Vokić, N. and Sontor, S. (2009), 'Conflict management styles in Croatian enterprises—The relationship between individual characteristics and conflict handling styles,' *FEB Working Series (Paper No. 09-05)*, Faculty of Economics and Business—Zagreb.

## **Review on Peer Assessment as Effective Knowledge Sharing Tool for Students Learning in Classroom**

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### **Abstract**

Peer assessment is an innovative style of learning, growth and development through assessment. As modern education increasingly focuses on self-directed and collaborative learning. Feedback for learning is a key component of formative assessment, in a sense that the success or failure of such assessment depends considerably on how the feedback is provided and students' use of feedback. Present study evidences that regular feedback on students' learning leads to considerable gains. Peer assessment is an educational procedure in which students are assigned tasks to act as both reviewers and authors, evaluating the work of their fellow students. In a comprehensive literature review provided below on assessment and classroom learning. Psychology as a discipline can exert a direct influence on teachers and researchers. Benefits for assessors and assesses can be categorized into benefits related to knowledge, skills, attitude, performance and behaviour. Knowledge sharing is of great interest of students because it improves performance, promotes learning, and innovation. As every student owes different psychological thinking patterns, explaining human behavior in all its complexity is a difficult task. The behavioural beliefs produce a favourable or unfavourable attitude toward other and improvise behavioural control. Through this study, it can be urged that students behaviour for knowledge sharing can be controlled through sophisticated technological development like peer assessment with the help of online assessment tools. For that purpose, peer assessment process need timely changes to become easier for students.

**Keywords:** Peer Assessment, Knowledge Sharing, Formative Assessment, Summative Assessment, Students' Learning

### **Introduction**

Today, every institution needs economical resources to face the challenges besides these challenges information technology is grown heinously in this regard knowledge sharing and management is become necessary because knowledge now is considered as an precious asset at micro and macro levels (Charband and Jafari Navimipour, 2018). Knowledge due to its increasing value today plays vital role for the regeneration of more valuable knowledge (Vuori and Okkonen, 2012). Knowledge sharing is become very serious and important because it is catalyst either for development or for destruction. Therefore Jafri et al., (2015) quotes that, knowledge efficient dissemination can attain the success of organization or people, because competition in almost every field of life is increasing which can increase the sustainability or reduce the performance at any time. Albeit, knowledge among educational institution for students to students can develop their confidence as well as increase the competency levels to meet the curriculum requirements (Baer, Smith and Allen, 2004). Wu and Zhu (2012) conducted a research on knowledge sharing and found that for organizations it is positive survival if the dissemination and management of knowledge is frequently flowing from

groups to group and individual to individuals because it enables them generate productive and new ideas (Vuori and Okkonen, 2012).

According to Riege (2005), knowledge sharing is turning point because of the abilities of knowledge sharing entities and necessary functions with ultimate objectives. Especially tacit Knowledge can be crucial to be shared when the individual [students] are unwilling to share it. In spite of this risk, sharing and dissemination among people [students] is considered like a positive sources for the sustainability of productivity among people as well as institutions, a very important factor should be considered here is the context of sharing the knowledge which is dire necessary to be understood (Roschelle, 1992; Guzdial, 1997). Dyer and Nobeoka quoted that knowledge sharing facilitates the exchange of ideas, information and increase the learning capabilities the domain that is effected through knowledge sharing ranges from individuals to organizations. Among several purposes of knowledge, sharing the highlighted theme is to help and work together like in this review work is peer assessment which works like interdependency (Lin, 2007).

In the context of this reviews study, in class students are not always willing to share the technical knowledge because of the fear of curricular growth. A main reason behind this notion is that, students are not highly experienced to overcome the sense of being exploited until teacher or guide them and assure them about the evolutionary growth that comes slowly for sure. Knowledge sharing in organizations is of great interest of students because it improves performance, promotes learning, and innovation (Realf et al., 2000; Stahl and Hesse, 2006). In this point of view, many researchers conducted in the field of pedagogy portray that, knowledge-sharing intentions are directly related to context of the knowledge and especially the mode of knowledge is being shared among students.

## **Literature Review**

According to Ajzen (2002), favourable or unfavourable behaviour is aggregate of respective attitude toward behaviour like normative belief is output or result of social pressure or subjective norm; and control belief this increase the perceived behavioural control (Baer, Smith and Allen, 2004). Formation of behavioural intention is combination of attitude toward behaviour, subjective norm and perception of the behavioural control (Cheung *et al.*, 2008). According to the theory of Social Interaction, person's strong intention to perform any behaviour is dependent on more favourable the attitude and subjective norm, the greater perceived control. These three variables of the Social Interaction theory arises when any opportunity arises, and in the end the intention to perform they behaviour arises for any task (Veugelers, 2011). In this study of review, opportunity for students to perform or improvise the out is peer assessment, which is attached with one or more tasks and assignments for them to do in the class.

## **Knowledge Sharing**

Knowledge sharing can be defined as a social interaction culture, involving the exchange of student knowledge, experiences, and skills through the whole department or organization (Lin, 2007). Researchers have noted that firms can successfully promote a knowledge sharing culture by not only directly incorporating knowledge in their business strategy, but also by changing student attitudes and behaviours to promote willing and consistent knowledge sharing. Smith, further by directly incorporating knowledge in their business strategy, but also by changing student attitudes and behaviours to promote willing and consistent knowledge sharing. Smith, further admitted that the personal opinions and insights of students are shaped (Jolae *et al.*, 2014).

Knowledge sharing in classroom is also a better way for students to generate new ideas by assessing self and others' assignments, which in the class is social interaction among students. Many articles have reviewed factors affecting knowledge sharing (Charband and Jafari Navimipour, 2018). Pezeshki et al. (2011), did investigation of the factors that influence individuals [here students] to share the knowledge among mates and peers of the organization [institutions]. Results of his

investigations improve that knowledge sharing behaviour (Lin, 2007) show significant relationships between factors of social trust, relational, social capital and attitude toward knowledge sharing.

Additionally, the results of the study conducted by Pezeshki Rad et al. (2011), indicates that relational, social capital and attitude toward knowledge sharing highlighted 37 percent variation in knowledge sharing (Jolaei et al., 2014). Further similar factors examined by Babalhavaeji and Kermani (2011) in study; faculty-related factors that influence knowledge sharing, the author found that faculties with an intention to encourage knowledge sharing had a positive attitude toward knowledge sharing culture in higher education institutions. They additionally showed that experience of faculty members has a relationship with faculty's knowledge sharing behaviour positively keeping in view the context of knowledge (Škerlavaj et al., 2018).

Nordin et al. (2012a, 2012b) applied theory of Social Interaction in faculty member and academic staff of public higher education institutions and explained that the knowledge sharing behaviour among them is influenced by the determining the levels of knowledge (Vuori and Okkonen, 2012), (Debeljak and Krkač, 2008). Findings of this study reveals that when levels of knowledge sharing behaviour among institutional staff are open-ended then Social Interaction theory factors show positive intentions among them (Scott and Usher, 2010).

Liu et al. (2013a) have compared different theories on the knowledge sharing behaviour of sports professionals and considered the differences according to the occupation. The findings indicated that such behaviour indirectly, but positively, impacted by subjective norms, shared attitudes, perceived behavioural control and shared intentions (Donhauser and Shaw, 2018). Also, knowledge sharing behaviour differed significantly among sports professionals employed in academia and industry, with the intention to share exerting the greatest influence (Nelson and Schunn, 2009). The results showed that most of the respondents were aware of the importance of knowledge sharing but not most respondents were engaged in active knowledge sharing behaviour, and the factors that were independent predictors of knowledge sharing behaviour were commitment, trust (Eslami et al., 2016), reward system and technology. The results showed that students used Web 2.0 technologies in learning and sharing knowledge among them. These ways include communicating features, collaboration features, creating awareness and training, providing learning facilities and materials, fast internet connectivity, motivation, knowledge, technology support system, activity and evaluation (Charband and Jafari Navimipour, 2018).

## Peer Assessment

Peer assessment is the issue of active research, which uncover the latent methods of representation, accomplishment and analysis of peer assessment to meet its limitations. Advantages of PA is to improve higher levels of thinking skills, complexity of topical knowledge, and feedback by individual participant (Wang *et al.*, 2011). Learning influence cannot only foresighted through the process but it also might even be put in the centre. There is the purpose of educational evaluation which intensify a student's thoughtfulness, measure student accomplishment, and evaluating the success of an educational process (Wang *et al.*, 2008). One type of educational assessment is peer assessment that is very flexible and served as function as either a formative and summative assessment, sometime individual or even both at the same time with several components. Students can review each other's performance and give feedback to each other. It is a common accepted application of formative Peer Assessment (Wang *et al.*, 2015). Summative PA is another type of assessment in which fellow students' work is more complicated and it requires more careful guidance by a teacher, since grades would be fair, consistent, and comparable for all students (Staubitz *et al.*, 2016).

It is the assessment of one student by other students; both summative graduate system and formative feedback review should be provided in this assessment. Peer assessment is an innovative style of learning, growth and development through assessment (Falchikov and Goldfinch, 2000; Demiraslan Çevik *et al.*, 2016). Peer assessment aspired to recover the standard of learning and empower learners, where conventional figures can avoid learners' desires. It comprises of student participation not only in the final work evaluation made by students but also in the earlier standard setting and the

achievement (Wang *et al.*, 2008). Peer assessment is actually the element of peer tutoring (Tolmie *et al.*, 2010). The form of peer tutoring can be beneficial for both tutor and tutee (Wang *et al.*, 2013). According to Topping (1996), the potential benefits of peer tutoring includes the skills development of evaluation and justification and also using disciplined knowledge. (Wang *et al.*, 2018).

During higher education there is a trend for students to evaluate the results of other students as a learning activity (Rockwell, 2006). A change in this concept is to have a student peer assess the work of another (Topping, 1998). A basic objective of this is to learn from the errors they make by themselves and the mistakes shown in the work assessment of others. According to Vickerman (2009), the latest literature review on graduation peer assessment available in students have the positive experience for their learning. The students value the experience because it can provide deep knowledge into assessment processes (Davey, 2011). The formative peer assessments in students could often work hard to evaluate mistakes effectively, and in summative peer assessment, mostly students could give judgements for grade boundaries (Baturay, 2015).

In this research, much more focus has been provided to the peer assessment, in which “students engage in reflective criticism of the products of other students and provide them with feedback using previously defined criteria” (Donhauser and Shaw, 2018). The learners could socially build knowledge through providing and gaining peer response. Peer response/feedback could expose learners' errors in cognition and cause cognitive not equilibrium, which might be motivate them to tackle and take accomplishment to tackle with those mistakes, in order to resolve cognitive conflict (Li, Cao and Qu, 2017).

In view of benefits, the peer assessment could interfere with the educationists for publically check their peers (Sluijsmans, 2002). At the same time, evaluation might consider critical analysis or negative opinion is more helpful than positive opinions/feedback, which can improve the work performance. For this reason secrecy has been maintained to boundary the unenthusiastic influence of managerial problems arises from peer assessment for the ethical consideration (van Zundert, Sluijsmans and van Merriënboer, 2010; Wang *et al.*, 2012).

In past, several theoretical and conceptual models of evaluation have been executed that match the evaluation for learning rules. Because of this reason, peer assessment has increase the focus in research also the classroom practices and actions (Willey and Gardner, 2009). The particular framework of peer assessment as an instrument to sustain knowledge is therefore the basic aim of this study (John, 2006). Peer assessment review studies have five various plans which can be identified. They are classified according to the students are involved in the process of peer assessment from goal formulation to final decision making (Wang *et al.*, 2015). At First stage, in making of peer, students will score each other's' work performance against a set of standard observation. Students will be involved in the scoring. Peer feedback of students takes this a step forward, and also permit particular students to comment on each other's performance, rottenly additional to scoring itself (Sun *et al.*, 2015; Wang *et al.*, 2015). Thirdly, peer grading allows the students responsibility for decision making about the results of the evaluation. However, peer appraisal is included in feedback but not in peer grading. At last, in peer assessment students do not only engaged in formulation of peer evaluation criteria, marking, providing and communicating results and also make decision, but often provide input also for the work formulation at peer assessment process initially (Littlejohn *et al.*, 2016; Müller *et al.*, 2018).

According to Y. Wang *et al.* (2006) for learning, peer assessment is commonly used to enhance students' shared responsibility for the assessment processes and knowledge sharing. To Improve students' duty for their personal learning is a basic assumption for implementing new modes of assessment such as peer assessment (Wu and Heck Sheehan, 2014; Chai, Tay and Lim, 2015). In assessment literature, it is argued that active students are more motivated in peer reviewing, and therefore show more knowledge achievement than other students show. But it is obvious that students feel difficulty to criticize other's work (Wang *et al.*, 2015). This is the 'novelty' of peer assessment in education management. Ballantyne *et al.* (2002), found various, indicate that it is common to find that subjects [here students] feel assessment to be the responsibility of teachers, who are recognized as

experts (Beck, Schwabrow, 2013; Shephard and Shephard, 2017). They have concluded that students have lack of confidence in both their peers' and their own abilities as evaluator. The peer assessment is a mode of assessment in which peers appraise each other's learning (both process and outcomes), daily classroom practice reveals that peer assessment formats vary to a large extent (Roberts, 2006; Demiraslan Çevik *et al.*, 2016).

The idea in which that assessment and evaluation is served as a learning tool for peers, students and teachers was highlighted by (Veal *et al.*, 1995), who said, "When assessment is part of the teaching and learning phase of instruction, its primary purpose should be to provide feedback to students and the teacher". Teachers can learn more about the strengths and weaknesses of their students and their teaching methods. If students have knowledge about their assessment, they would become much keen in the class performance, and their participation level should increase (Sheehy, Griffin, 2006).

Peer assessment is a learning plan, in which students do judgement for each other's work quantitatively as well as qualitatively (van Zundert, Sluijsmans and van Merriënboer, 2010; van Zundert *et al.*, 2012). The concept of peer assessment emerged in 1920s (Kane & Lawler, 1978). Peer assessment inspire the students to repeat, examine, and work together in their learning procedure (Prins *et al.*, 2005; Strijbos and Sluijsmans, 2010). According to Chen, Wei, Wu, and Uden (2009), it is explored that how sophisticated rapid peer assessment can influence a learner's expression levels in an online learning perspective (Rockwell, 2006). It is investigated the influence of peer assessment which is online and reflective have the arguments on students and theoretical knowledge (Lin *et al.*, 2011). Peer assessment is valuably suggested because it minimises faculty's work (Rubin and Turner, 2012) and increases learning results (Wang *et al.*, 2015).

Efficient and effectiveness in learning nature can be created by peer assessment methods in diverse fields (Falchikov and Goldfinch, 2000). For many years peer assessment is used for many computer programming courses (Zou *et al.*, 2018). Positive feedbacks from the evaluating students comprises of experience and effective learning outcomes (Wang *et al.*, 2013). Although students' programs automatically could be evaluated through a software benchmarking system which reduces teachers' work, but students cannot learn the learning skills. During review of code student can learn, also write and read comments carefully (Demiraslan Çevik *et al.*, 2016; Wang *et al.*, 2016). The proficiency would be important for students for teamwork in their career development. The advantages of peer assessment are influential for teachers. Though, teachers don't implement PA process until and unless they suppose that process of peer assessment is favourable and results are valid (Wang *et al.*, 2016).

Peer assessment is the educational method in which, the researcher request students to act as authors and reviewer both, for evaluation of the work of other fellow students. It is helpful for students to improve the standard of their work and understand the knowledge efficiently and effectively since students obtain more opinions and gain deep insight in the course material (Wang *et al.*, 2012).

## **Results & Conclusion**

Motivated by the needs to understand and learn the underlying drivers of knowledge sharing behaviours, attitude, subjective norms and perceived control motivators as key influences on students' knowledge sharing behaviour to increase learning with peer assessment. The results showed that students' interaction through peer assessment for knowledge sharing significantly influenced behavioural intentions. Three motivational factors (reciprocal benefits, knowledge self-efficacy, and enjoyment in helping others) were also significantly associated with student knowledge sharing attitudes and intentions. However, expected organizational rewards did not significantly influence student attitudes and behaviour intentions regarding knowledge sharing. The implications for practitioners and researchers and the limitations of this study are discussed below.

In this article, I have tried to show that the theory of Social Interaction provides a useful conceptual framework for dealing with the complexities of human social behaviour. The theory incorporates some of the central concepts in the social and behaviour sciences, and it defines these concepts in a

way that permits prediction and understanding of particular behaviours in specified contexts. Attitudes toward the behaviour, subjective norms with respect to the behaviour and perceived control over the behaviour are usually found to predict behavioural intentions with a high degree of accuracy. In turn, these intentions, in combination with perceived behavioural control, can account for a considerable proportion of variance in behaviour. The theory of Social Interaction traces attitudes, subjective norms, and perceived behavioural control to an underlying foundation of beliefs about the behaviour. Although there is plenty of evidence for significant relations between behavioural beliefs and attitudes toward the behaviour.

The most widely accepted view, which describes the nature of the relations in terms of expectancy-value models, has received some support, but there is clearly much room for improvement. Of particular concern are correlations of only moderate magnitude that are frequently observed in attempts to relate belief-based measures of the theory's constructs to other, more global measures of these constructs. Optimally resealing measures of belief strength, outcome evaluation, motivation to comply, and the perceived power of control factors can help overcome scaling limitations, but the observed gain in correlations between global and belief-based measures is insufficient to deal with the problem.

Therefore, Knowledge sharing behaviour among students can be modified through interaction through peer assessment. The levels of expectations for future learning among students are depending on the styles and patterns of peer assessment models, which are incorporated in the form of assignments and tasks. Through routine assessment and evaluation of students, the knowledge sharing styles can also be transformed for more effective learning among students according to Y. Wang (2011). This review will be further developed with data collected proofs in future work this work will be depicting the students' learning levels and proficiencies in knowledge sharing among them through classroom peer assessment practices.

## References

- Baer, R. A., Smith, G. T. and Allen, K. B. (2004) 'Assessment of mindfulness by self-report: The Kentucky inventory of mindfulness skills', *Assessment*, 11(3), pp. 191–206. doi: 10.1177/1073191104268029.
- Baturay, M. H. (2015) 'An Overview of the World of MOOCs', *Procedia - Social and Behavioral Sciences*. Elsevier B.V., 174, pp. 427–433. doi: 10.1016/j.sbspro.2015.01.685.
- Beck, R. J., Skinner, W. F. and Schwabrow, L. A. (2013) 'A study of sustainable assessment theory in higher education tutorials', *Assessment & Evaluation in Higher Education*, 38(3), pp. 326–348. doi: 10.1080/02602938.2011.630978.
- Chai, K. C., Tay, K. M. and Lim, C. P. (2015) 'A new fuzzy peer assessment methodology for cooperative learning of students', *Applied Soft Computing Journal*. Elsevier B.V., 32, pp. 468–480. doi: 10.1016/j.asoc.2015.03.056.
- Charband, Y. and Jafari Navimipour, N. (2018) 'Knowledge sharing mechanisms in the education: A systematic review of the state of the art literature and recommendations for future research', *Kybernetes*, 47(7), pp. 1456–1490. doi: 10.1108/K-06-2017-0227.
- Cheung, W. S. U. M. *et al.* (2008) 'TOWARD AN UNDERSTANDING OF WHY STUDENTS CONTRIBUTE IN ASYNCHRONOUS', 38(1), pp. 29–50. doi: 10.2190/EC.38.1.b.
- Davey, K. R. (2011) 'Student peer assessment: Research findings from a case study in a master of chemical engineering coursework-program', *Education for Chemical Engineers*. Institution of Chemical Engineers, 6(4), pp. e122–e131. doi: 10.1016/j.ece.2011.08.004.
- Debeljak, J. and Krkač, K. (2008) "'Me, myself & I": Practical egoism, selfishness, self-interest and business ethics', *Social Responsibility Journal*, 4, pp. 217–227. doi: 10.1108/17471110810856974.
- Demiraslan Çevik, Y. *et al.* (2016) 'Student Peer Assessment in Higher Education: A Meta-Analysis Comparing Peer and Teacher Marks', *Computers and Education*. Elsevier Ltd, 46(3), pp. 287–322. doi: 10.3102/00346543070003287.
- Donhauser, J. and Shaw, J. (2018) 'Knowledge Transfer in Theoretical Ecology: Implications for Incommensurability, Voluntarism, and Pluralism', *Studies in History and Philosophy of Science Part A*. Elsevier Ltd, pp. 1–10. doi: 10.1016/J.SHPSA.2018.06.011.

- Eslami, A. A. *et al.* (2016) 'The Effectiveness of Assertiveness Training on the Levels of Stress, Anxiety, and Depression of High School Students', *Iranian Red Crescent Medical Journal*, 18(1). doi: 10.5812/ircmj.21096.
- Falchikov, N. and Goldfinch, J. (2000) 'Student Peer Assessment in Higher Education: A Meta-Analysis Comparing Peer and Teacher Marks', *Review of Educational Research*, 70(3), pp. 287–322. doi: 10.3102/00346543070003287.
- Guzdial, M. (1997) 'Information Ecology of Collaborations in Educational Settings: Influence of Tool', *CSCL '97 Proceedings*, (December), pp. 83–91.
- John, C. K. (2006) 'Perception of classroom environment, achievement goals, and strategy use among Hong Kong students', (November), pp. 1–18.
- Jolaei, A. *et al.* (2014) 'Factors affecting knowledge sharing intention among academic staff', *International Journal of Educational Management*, 28(4), pp. 413–431. doi: 10.1108/IJEM-03-2013-0041.
- Li, K., Cao, Z. and Qu, D. (2017) 'Fair reviewer assignment considering academic social network', *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 10366 LNCS, pp. 362–376. doi: 10.1007/978-3-319-63579-8\_28.
- Lin, G. Y. (2018) 'Anonymous versus identified peer assessment via a Facebook-based learning application: Effects on quality of peer feedback, perceived learning, perceived fairness, and attitude toward the system', *Computers and Education*. Elsevier Ltd, 116, pp. 81–92. doi: 10.1016/j.compedu.2017.08.010.
- Lin, H. F. (2007) 'Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions', *Journal of Information Science*, 33(2), pp. 135–149. doi: 10.1177/0165551506068174.
- Littlejohn, A. *et al.* (2016) 'Learning in MOOCs: Motivations and self-regulated learning in MOOCs', *Internet and Higher Education*. Elsevier Inc., 29, pp. 40–48. doi: 10.1016/j.iheduc.2015.12.003.
- Müller, C. M. *et al.* (2018) 'Peer influence on disruptive classroom behavior depends on teachers' instructional practice', *Journal of Applied Developmental Psychology*. Elsevier, 56(May 2017), pp. 99–108. doi: 10.1016/j.appdev.2018.04.001.
- Nelson, M. M. and Schunn, C. D. (2009) 'The nature of feedback: How different types of peer feedback affect writing performance', *Instructional Science*, 37(4), pp. 375–401. doi: 10.1007/s11251-008-9053-x.
- Prins, F. J. *et al.* (2005) 'Formative peer assessment in a CSCL environment: A case study', *Assessment and Evaluation in Higher Education*. doi: 10.1080/02602930500099219.
- Reaff, M. *et al.* (2000) 'Computer supported collaborative learning for curriculum integration', *Computers & Chemical Engineering*, 24(2–7), pp. 1473–1479. doi: 10.1016/S0098-1354(00)00538-X.
- Roberts, T. S. (2006) *Group Assessment in E-Learning*.
- Rockwell, S. (2006) 'Ethics of peer review: a guide for manuscript reviewers', *Office of Research Integrity, Yale University*, pp. 1–19.
- Roschelle, J. (1992) 'Learning by Collaborating: Convergent Conceptual Change', *The Journal of the Learning Sciences*, 2(3), pp. 235–276.
- Scott, D. and Usher, R. (2010) *Researching Education Data, Methods and Theory in Educational Enquiry*, Bloomsbury. doi: 10.1017/CBO9781107415324.004.
- SHEEHY, A. M. G. D. and GRIFFIN, K. P. L. (2006) 'Assessment Benefits and Barriers What Are You Committed To?', *The Journal of Physical Education, Recreation & Dance*, 77(8), pp. 46–50. doi: 10.1080/07303084.2006.10597926.
- Shephard, K. and Shephard, K. (2017) 'Higher Education for Sustainability', *International Journal of sustainability in higher education*, 9(1), pp. 87–98.
- Škerlavaj, M. *et al.* (2018) 'Tell me if you can: time pressure, prosocial motivation, perspective taking, and knowledge hiding', *Journal of Knowledge Management*. doi: 10.1108/JKM-05-2017-0179.
- Sluijsmans, D. M. A. (2002) 'Student involvement in assessment: The training of peer assessment skills.', *Heerlen: Open Universiteit Nederland*.
- Stahl, G. and Hesse, F. (2006) 'Social practices of computer-supported collaborative learning', *International Journal of Computer-Supported Collaborative Learning*, 1(4), pp. 409–412. doi: 10.1007/s11412-006-9004-y.



- Staubitz, T. *et al.* (2016) 'Improving the Peer Assessment Experience on MOOC Platforms', *Proceedings of the Third (2016) ACM Conference on Learning @ Scale - L@S '16*, pp. 389–398. doi: 10.1145/2876034.2876043.
- Strijbos, J. W. and Sluijsmans, D. (2010) 'Unravelling peer assessment: Methodological, functional, and conceptual developments', *Learning and Instruction*. doi: 10.1016/j.learninstruc.2009.08.002.
- Sun, D. L. *et al.* (2015) 'Peer assessment enhances student learning: The results of a matched randomized crossover experiment in a college statistics class', *PLoS ONE*, 10(12), pp. 1–7. doi: 10.1371/journal.pone.0143177.
- Theising, K., Wu, K. and Heck Sheehan, A. (2014) 'Impact of peer assessment on student pharmacists' behaviors and self-confidence', *Currents in Pharmacy Teaching and Learning*. Elsevier, 6(1), pp. 10–14. doi: 10.1016/j.cptl.2013.09.020.
- Tolmie, A. K. *et al.* (2010) 'Social effects of collaborative learning in primary schools', *Learning and Instruction*. doi: 10.1016/j.learninstruc.2009.01.005.
- Veugelers, W. (2011) *Education and humanism linking autonomy and humanity*. doi: 10.1017/CBO9781107415324.004.
- Vickerman, P. (2009) 'Student perspectives on formative peer assessment: An attempt to deepen learning?', *Assessment and Evaluation in Higher Education*, 34(2), pp. 221–230. doi: 10.1080/02602930801955986.
- Vuori, V. and Okkonen, J. (2012) 'Knowledge sharing motivational factors of using an intra-organizational social media platform', *Journal of Knowledge Management*, 16(4), pp. 592–603. doi: 10.1108/13673271211246167.
- Wang, Y. *et al.* (2008) 'Game Theory Modeling of Peer Code Review Process', pp. 1–6.
- Wang, Y. *et al.* (2012) 'Assessment of programming language learning based on peer code review model: Implementation and experience report', *Computers and Education*, 59(2), pp. 412–422. doi: 10.1016/j.compedu.2012.01.007.
- Wang, Y. *et al.* (2013) 'E-learning-oriented incentive strategy: Taking EduPCR system as an example', *World Transactions on Engineering and Technology Education*, 11(3), pp. 174–179.
- Wang, Y. *et al.* (2015) 'Toward motivating participants to assess peers' work more fairly: Taking programming language learning as an example', *Journal of Educational Computing Research*, 52(2), pp. 180–198. doi: 10.1177/0735633115571303.
- Wang, Y. *et al.* (2016) 'A multi-peer assessment platform for programming language learning: considering group non-consensus and personal radicalness', *Interactive Learning Environments*, 24(8), pp. 2011–2031. doi: 10.1080/10494820.2015.1073748.
- Wang, Y. *et al.* (2018) 'Inappropriate Reviewer Assignment That Causes Education Inequality in Peer Assessment'.
- Wang, Y. Q. *et al.* (2011) 'Research and practice on education of SQA at source code level', *International Journal of Engineering Education*, 27(1 PART 1), pp. 70–76. Available at: <http://www.scopus.com/inward/record.url?eid=2-s2.0-79958804896&partnerID=tZOtx3y1>.
- Willey, K. and Gardner, A. (2009) 'Improving self- and peer assessment processes with technology', *Campus-Wide Information Systems*, 26(5), pp. 379–399. doi: 10.1108/10650740911004804.
- Zou, Y. *et al.* (2018) 'Student attitudes that predict participation in peer assessment', *Assessment and Evaluation in Higher Education*. Routledge, 43(5), pp. 800–811. doi: 10.1080/02602938.2017.1409872.
- van Zundert, M. J. *et al.* (2012) 'The differential effects of task complexity on domain-specific and peer assessment skills', *Educational Psychology*. doi: 10.1080/01443410.2011.626122.
- van Zundert, M., Sluijsmans, D. and van Merriënboer, J. (2010) 'Effective peer assessment processes: Research findings and future directions', *Learning and Instruction*, 20(4), pp. 270–279. doi: 10.1016/j.learninstruc.2009.08.004.

## Promoting CSR practices in Oil and Gas Industrial Clusters: An Approach for the Regional Growth

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### Abstract

This study reflects the effects of Corporate Social Responsibility (CSR) and its implementation through oil and gas industrial sector specifically district Dadu northern Sindh Pakistan. Present study data was gathered from websites, interviews from local literate as well as illiterate people of the area. The research proposes that industrial clusters can enhance the regional development with the help of CSR. Effective implementation of CSR in industrial clusters can enhance the regional growth i.e. infrastructure, innovation and promote 3Es “enterprise, employment, and education”. In-depth formal and informal interviews were taken from the local community and also from the district government. Oil and gas industrial cluster have worked on quality education and creating job opportunity especially for the female empowerment. CSR also provide vocational training to the local people to start their own business. Overall, it was observed that the CSR investment through oil and gas industrial cluster can contribute regional development in district Dadu, northern Sindh, Pakistan.

**Keywords:** Corporate Social Responsibility; Oil and Gas Industrial Cluster; District Dadu; Regional development.

### Introduction

In recent years the concepts of corporate social responsibility (CSR) define different ways which is basically interaction with business operations including environment and with other stockholders. CSR is very important for the companies also for the regional development. In social context the corporation which is responsible should be a sympathetic institution, also able to think and act beyond the economic interest. The corporation existence has the performance impact on its all individuals and groups, from shareholders to employees to customers, to fellow-breathers of the air and fellow-sharers of the land. A productive organization should have moral/ethical as well as an economic sagacity (Bradshaw, 1980). The CSR is extremely important not only for the local community but also itself for the companies.

The discussions and arguments over the businesses duties or responsibilities have been never-ending. This is for the reason that over the years, society has expected different roles of the businesses. Friedman

et al (1962) believed that only accountability of business increase profits for its owners. Additionally, if organization devoted funds for social benefits, they were essentially decreasing the shareholders returns and employee compensation whereas increasing customer prices. Consequences of such philosophies pressurize the corporations not to contribute funds to charities in society.

The economy is basically comprises on two sectors i.e. urban and rural and Pakistan is the aired and semi aired country in which 70 % of the population lived in rural area which plays a vital role in the development of the country (Ellis, 2000). Further, it is elaborated that agriculture sector and natural resources extraction, production firms contributing more to the Gross Domestic Productions (GDP) of the country. The study elaborates the case of taluka Johi, district Dadu, Sindh province, Pakistan. It is well known that district Dadu is rich in oil and gas resources. The industrial clusters are investing funds in the extraction and production of the oil and gas reservoirs named Zamzama gas field. Government of Sindh is also implementing different policies to develop small and household industries for rural areas but there is lack of provincial policies which can work to implement the regional development plans for the betterment of the societies through these industrial clusters.

The main research objective of this study is to determine whether the oil and gas industrial clusters effectively doing CSR investment by focusing on its components i.e. economic, legal, ethical, and philanthropic responsibilities which significantly impact on the regional growth.

### **Objectives of the Study**

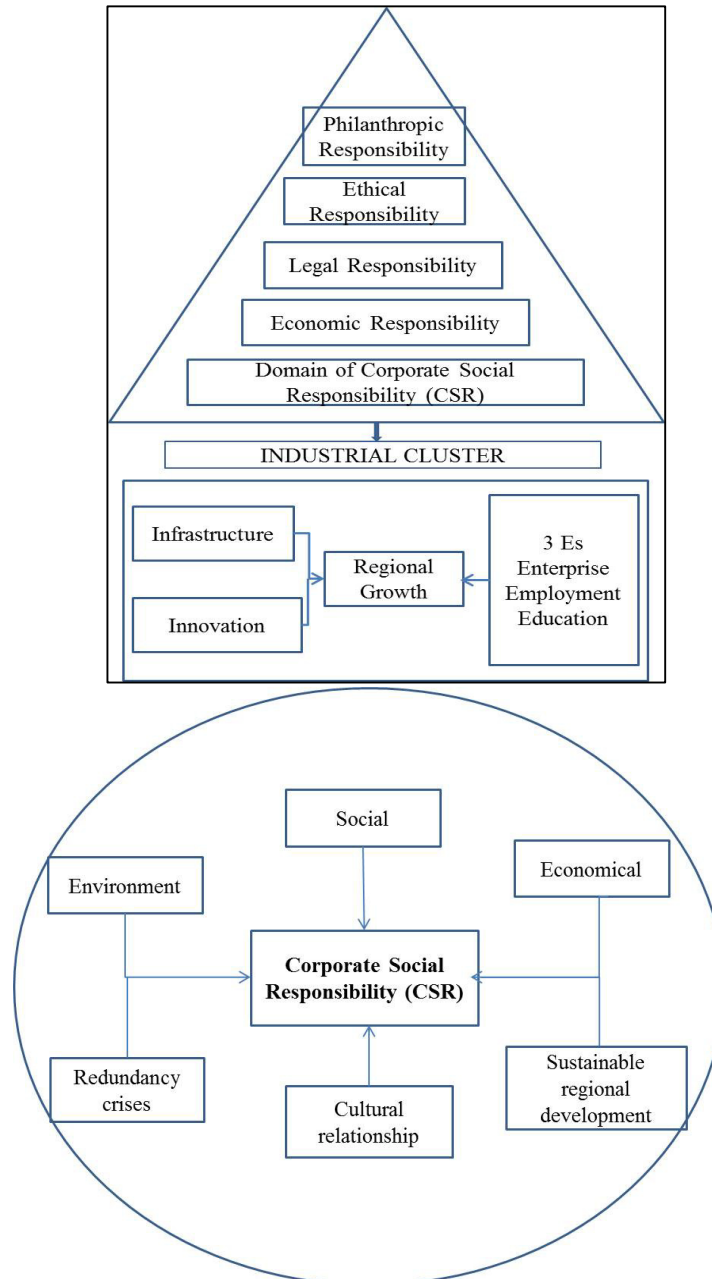
1. To explore the proposed CSR contribution in the transition of oil and gas clusters in Dadu region.
2. This research highlights the potential of oil and gas industrial clusters to provide not only economic benefits but also social and environmental improvements which contribute to regional growth.

The industrial cluster concept to CSR enhances the benefits by obtaining synergic results from the interaction between different corporations and other members of the society (stakeholders). The effects depend on the community organizations for increasing social awareness and responsiveness. The implementation of the industrial cluster approach to CSR can increase the benefits at perspectives of micro (within the company), meso (within the cluster) and macro perspective (outside the cluster and defines the interactions with the society).

### **The Theoretical-Conceptual Model**

The theoretical and conceptual framework is developed from the literature review according to the main objective of the research is given below:

CSR conceptual frame work define that ethical responsibilities is to adopt the code of governance and ethics, and good relations with the government officials, set the funds for the community projects and provide jobs and small investment for the local community. There should be close relationship corporation and community is another aspect of CSR and community development.



*Source: Adopted from Carroll, 1979 for CSR and Suinisheva, Diana Erikovna, 2010 for Clusters and regional economic growth.*

CSR plays a key role in business community and society at regional, national level, which develops the social, economic, environmental cultural relationship which helps for the regional development.

## Literature Review

The academic literature review identified CSR as a critical aspect of the superior conception of corporate social performance (CSP). One of the most basic models of corporate social performance is given by Carroll (1979). The model is based on three crucial dimensions i.e. social responsibility categories, social responsiveness philosophies, and third is focus on social issues. Later on the model was extensively modified by Wartick and Cochran (1985) and Wood (1991), now the models focus on four kinds of CSR. According to Carroll (1979) the CSR categories included economic responsibility, legal responsibility, ethical responsibility and or philanthropic (discretionary)responsibility. The basic responsibility of business is considered as economic component of CSR. It is considered as first obligation for production of goods (tangible) and services (intangible) and set the fair prices which ultimately earn profit and pursue business growth. Second, the corporation obligation is to obey the law, follow the orders to ensure the legislation which comes in legal component. The third component is ethical responsibilities which is considerably not easy to interpret. Carroll (1979) referred this area as "gray area", "involves behaviors and activities that are not embodied in law but still entail performance expected of business by society's members". The fourth category of responsibility is called philanthropic or discretionary or voluntary. This category of social responsibility is based on corporations' discretion which explore that there are no rules and laws or codified expectations which can guide the corporations' actions. For the reason, the fourth dimension of CSR referred to as philanthropic (Carroll, 1991). This conceptual model is unique in that it recognizes that to some degree, economic responsibilities were not totally at the sacrifice of any other type of social responsibility. Instead of a dichotomous economic or social orientation, there is an economic and social orientation. Carroll (1979) proposed the weight age to the four CSR dimensions i.e. "economic", "legal", "ethical", and "philanthropic" were 4:3:2:1. Aupperle (1982) provided the empirical evidence of the weightings of the CSR dimensions proposed by Carroll. His study indicates that there is an inverse relationship between the economic dimension/component and ethical components {legal, ethical and discretionary (philanthropy)}. In an attempt to extend the work, frequent studies have contributed to the notion of social orientations which respond to the newly emerging issues influencing business organizations.

It is depicted that corporation social environment in England is similar to the U.S. Economic responsibility remained the predominated component of CSR. Further elaborated that corporation which not economically sound and involve in charity funds investment are increasing the unemployment, recession and demobilize the economy (Moore and Richardson, 1988). Paluszek (1976) worked on the corporate social environment in Germany, he found that, economic component considered as significant. Dierkes (1980) stated that due to the research on the sustainability of the business organizations, it is perceived that their social responsibilities have changed to the moral responsibilities. These concepts are adding complexity to the role/responsibility of the multinational corporations (MNCs) which are experiencing high difficulty through their activities in home as well as host country environments.

During earlier period, an important economic development strategy is industrial cluster development and in recent period industrial clusters is also considered as the tool for promoting the development in rural regions by creating employment and infrastructure establishment. There is positive interaction between effective industrial cluster and regional economic growth can also urge foundation of a local innovation system (Audretsh, 1998; Costa and Lezzi, 2004; Gordon and McCann, 2005).

Barkley and Henry (2001) defined an industrial cluster as "a loose, geographically bounded collection of similar and or related firms that work together and create competitive improvement for members and regional economy". The concept of industrial cluster was pioneered by Alfred Marshal later this notion

was given by Porter (2000) as the combination of different division including suppliers and related institutions, firms and trade associations which can perform and benefited collaboratively.

According to Lall et al (2003), the two types of industrial clusters which are intra industry cluster and inter-industry cluster. The intra-industry cluster is the cluster where firms are facing similar troubles and using similar technologies and have the collaboration with each other to solve those issues to develop new product within an industry and second type is inter-industry clusters in which firms from the different industries are inter-connected through supply chain management. The case of the oil and gas industrial cluster contribute to sustainable regional growth by providing the employment, wealth and infrastructure, it is a major source of revenues from compromising in the local budgets; a major investor in the social and technical infrastructure (Slavova, 2015). With a view to CSR, the oil and gas industrial clusters strategically contributing individual, social and environmental development in the regional, local and international level. Based on Porter's competition theory and its application in the CSR practices within the industrial cluster, we can say that when clusters carry out explicit CSR as part of their activities, it is beneficial not only for the development of the cluster, but also leads to innovations through collaboration and competition between companies. The positive effects of feedback contribute to the continuous economic growth of the cluster (Høivik, 2010). Collaboration between cluster members is mainly directed towards improving the production factors, human resources, exchange of knowledge and experience, capital and infrastructure, which create conditions for enhancing competitiveness (Porter, 2004) and sustainable development.

The concept of CSR in oil and gas industrial clusters has significance importance at local, country as well as global level. The most important novelty of this research is that no one has pointed this issue in Pakistan, not only at province level but even at country level. It is responsibility of research institution to recommend the policies through empirical research and there is need to develop the ministry of oil and gas industries at provincial level, so that regional development can be made through the CSR components. Limited work has been done on the oil and gas industrial cluster in district Dadu (Kalhor et al., 2017). Present study will discover the factors behind the transition or stagnation state of the oil and gas industry in neglected region of district Dadu.

## **Research Methodology**

### ***Study area***

Dadu (district) is (26°20'N 67°35'E) northern part of the in Sindh, Pakistan. Annual report by ministry of petroleum and natural resources (2016-2017) stated that oil and gas field in Pakistan is divided in to four zones i.e. Zone-I, Zone-II, Zone-III and Zone O (off shore). The Dadu region of northern Sindh comes in Zone-III (Lower Indus Basin), contributing efficiently and effectively more than other zones (ministry of petroleum and natural resources, 2016-2017). The 75% area of Zone-III (northern Sindh) is in abject poverty (UN survey, 2015-16). In rich area there seems poor governance, CSR policy implementation by oil and gas companies were seemed not effective.

### ***Data collection and methods***

From the literature review it is found that CSR in oil and gas industrial cluster can promote the regional development (Zadek, 2003), this research is based on the assumptions (hypothesis) that the CSR through oil and gas industrial clusters in the area can achieve regional development through particular characteristics of a cluster: spatial proximity; collaboration and competition; interaction between stakeholders (businesses, educational institutions, non-governmental organizations).

The research is exploratory in nature, as the issue is emerging in our country needs empirical research solutions for the modern business world. This research is based on the case of taluka Johi, district Dadu, Pakistan. Secondary data is also collected through annual CSR magazines, research journals and primary

data is collected through in depth formal and informal interviews taken from managers of companies, government agencies and local/general public and also researcher face-to-face visits the underlined area.

The method used is the case-study that over the time quite useful in the area of CSR through oil and gas industrial clusters research (Knauseder, 2009; Baumann-Pauly et al., 2013).

### ***CSR Claim by Oil and Gas Industrial Cluster in Dadu***

Orient Petroleum Corporation (Former Bhp, Pakistan), a subsidiary of Hashoo Group, one of the leading investor in Pakistan's oil/gas exploration and production sector has completed acquisition with BHPL. Currently, the field is producing gas at an average rate of 120 MMCFD raw gas (Business Recorder, 2016). Since 20 years OPPL Company is working in Dadu region. OPPL claims for local people and development plans. They focused on provision of quality education, opportunities of sustainable livelihood, infrastructural development and clean drinking water. Orient Petroleum Limited Corporation (OPL) proclaimed that they have supported two community elementary schools having enrolment of 1089 students with 60% girls ratio. They claimed that 45 women teaching staff is engaged in providing quality education to the students. They pinpoint this thought that since last 14 years they are providing budget to NGOs to run the schools, seven schools are running as per their data surveyed. Among two of them were constructed by their own budget and five schools are government closed schools acquired by OPPL Co. Another Corporation is PGNiG Polish Oil & Gas Co (POGC) is working in Kirthar area in District Dadu, company is striving hard in the area to manage CSR activities as a social obligation. The local community is deprived of basics health facilities and drinking water(CSR magazine of PPEPCA, 2016).

BHP Billiton Petroleum has spent more than its PCA obligation on its community program during 2014-15. Status of Budget Spent is as below.

**Table 1: CSR share claimed by BHP Billiton petroleum in Dadu district (2014-2015)**

<b>Year</b>	<b>Obligation</b>	<b>Spent</b>
2014	166,667 \$	486,048 \$
2015 (till June, 2015)	150,000 \$	204,298 \$

Source: (CSR magazine of PPEPCA, 2016)

### ***Production Bonus***

As per Article 23.3 of Petroleum Concession Agreement and Petroleum Exploration and Production Policy 2012, the production funds will be used to the local areas. In this agreement 1.5% of profit should be used for public welfare in the term of education, environment, health, food, water and other developmental works (roads, building).

### ***Provision of quality education claimed by companies***

Different oil and gas companies claimed and supporting the quality education as the basic initiative for the transformation of better society which is the basic rights of the local people. The education awareness was also started by different companies with the help of NGOs and local people through lectures, awareness walk within the area.

Number of schools was claimed by companies that are fully functional and providing quality education. Data collected from local people and representative of different companies and literature review that international companies established about 12 primary schools and TCF. Among 12 schools 10 are government acquired and 2 schools building were constructed also at Allah Bachayo Jamali and Guhram Panhwar and Araz Mohammad Lund villages (Figure 1).



**Fig. 1: Shadabad girls Primary school, Village Araz Muhammad Lund, Johi, district Dadu, Sindh**

### ***The Citizen Foundation (TCF) School (Only School Running in Johi, Dadu)***

Local community people interviewed that during BHP tenure, 12 primary schools were functional and one TCF high school, but now the OPPL is running only TCF where each student is paying 300 to 400 rupees per month. But the actual scenario is that all the 12 schools are now closed not function. During present study it was observed that all the schools are now closed and students have lost their education in middle of the year. Only TCF School is functional at the moment which was established in 2007 (Figure 2). This school is charging 100 rupees for high school and 50 to 70 rupees for primary education. Total 217 students are enrolled from which 30 are female students. In TCF School curriculum is also not according to Pakistan academic course so that student after passing matriculation face lot of difficulty. OPPL and formerly BHPP was claimed many times that they are providing employment with good salary and quality education, but the actual scenario is different during formal and informal interviews it was noticed that school have shortage of staff and the salary package is very low. Principle of the school gets 25000 rupees whereas each High School Teacher (HST) is provided with not more than 15000 rupees. Only four teachers are working and their start salary is 4000 rupees. OPPL reported in their CSR report that 45 female teachers were retrained who are working in 7 schools and it is in record of their remarkable contribution but the actual condition is worst.





**Fig. 2: TCF School (Only functional school in Johi, Dadu)**

Oil and Gas companies are working together with NGOs which are particularly on female education and employment in different villages of the region. These schools also provide employment to the local women and lower staff worker. Table 2, shows that number of schools and their female students strength with teaching staff in different villages of the region. The oil and gas is providing not only quality education but also creates job opportunities for the local people

**Table 2: Schools established in different villages of the local area and their student and teachers strength**

S. No	Name of School	Year	Enrolment girls	Teachers
1	Peer Mashaikh (H.C)	2002-2015	120	03
2	Waleji Miani	2003-2015	105	03
3	Gohram Panhwar (Middle)	2002-2017	250	10
4	Dilawer Panhwar	2003-2015	105	02
5	NorkoPotho	2002-2017	100	03
6	Allah Warayo Panhwar (H.C)	2002-2017	108	03
7	Araz Muhammad Lund	2003-2017	200	04
8	Allah Bachayo Jamali (H.C)	2005-2017	90	03
9	Dhani Bux Laghari	2005-2017	110	02
10	Allah Bachayo Panhwar	2003-2010	85	02
11	Ghullam Hussain Gadhi	2003-2008	75	02
12	Kamal Khan Lund	2003-2015	80	02
		<b>Total</b>	<b>1428</b>	<b>39</b>

### ***Vocational Training Centers***

Oil and Gas industrial cluster companies established number of vocational training centers especially for development of skilled education to the females. The aim of the establishing those centers to develop knowledge and provide them self-employment skills that those women can start their own business. Mostly companies working with local and international NGOs for the regional development including providing technical education. According to CSR magazine of PPEPCA (2016), more than 1000 girls and females were trained and their skills started to be an entrepreneurship. Unfortunately now all the poly technical centers are closed now due to lack of public interest.

### ***Award and Scholarships***

Five scholarships for university level students were awarded to Gas/Oil fields of Sindh. In which no one awarded to district Dadu even after the huge struggle 350 million cubic feet BHP production of gas per day. Now it is 80 to 90 million cubic feet by OPPL.

### ***Employment Opportunities***

Oil and gas industrial cluster is international companies in which rules and regulations applied to the companies for the employees itself or other employment and their rights. The data gathered from interviews and public meetings, secondary data and media shows that the concern shareholders, local communities of the local area of the Dadu. News stories and interviews with local communities validate that local people was ignored for employment and training opportunities, but now a days the companies has started to train and give opportunity to the local people but only lower level. According to the rules and regulation for the industrial clusters described that the rights on employment and other development quotas should be given to the local people at higher level. Data collected during present study shows that the companies hire skilled and non-skilled workers according to their qualification. The employment is only on the daily wages which was approved by the government. During the data collection it was observed that only 30% of the respondents have knowledge about CSR and their rights.

### **Conclusion**

In the last past years, there is much discussion about the CSR investment through industrial cluster. It is well know that the poverty reduction and sustainable development will not be only achieved by the government agencies. Policy makers and government management sector paying attention to promote the private sector and established industrial clusters. CSR is particularly related to multinational companies and other international corporations to promote NGOs, small scale industries in the region.

The aim of the article is to provide a quick overview of the oil and gas industrial cluster potential for the sustainable development in Dadu region, Sindh, Pakistan. Those developments were particularly in female, infrastructure, education, small businesses and employment. It is well known fact that the education is the back bone of development of any society. The companies also provide skill and entrepreneurship trainings that the local people specially women can start their own business. According to the results of the present study shows that the oil and gas industrial cluster is working on primary and secondary education and in this regard they have established number of schools with the new job opportunities.

The main conclusion of the study carried out in accordance with the assumed hypothesis is that the CSR through industrial cluster is to contribute to sustainable regional development is limited both in terms of direct impact – regional growth i.e. infrastructure, innovation and promote 3Es “enterprise, employment and education”. We should also take into account the fact the participation and forms of CSR of local enterprises/subsidiaries of multinational companies are defined by the policies of corporations regulating the rights of their structural units. The economic, social and environmental context, the weak development

of CSR and clusters in the country has an unfavorable impact on using the cluster's potential for sustainable development. The state of development of CSR and clusters in the country, the activities of governments in the field of sustainable development, and the participation of NGOs are also of great importance.

District Dadu, mainly taluka Johi is less developed in agriculture sector and mostly people need skilled training and guide them for self-employment particularly to women. What we see here that oil and gas industrial cluster in district Dadu is not providing their rights in terms of education and employment. We would praise that the schools established by the companies may function properly and provide good and quality education. This is also a fact that the companies are not fully spending their funds on the local area particularly on different development sectors like health and infrastructure. We also have broached the issues that regarding one cluster over another cluster would depend on the supply chain and workforce requirement. The government agencies, NGOs and oil and gas industrial cluster should work together for the regional development. The comparative studies should be conducted to know the real development by the different clusters. We would mention in future work must be carefully done.

## References

- Ali, A., Memon, ZA and Naqvi, IB. (2018). 'Synthesizing corporate social responsibility concepts and its impact on building soft image for firms', *NICE Research Journal of Social Science*. ISSN: 2219-4282, 10, 121-141.
- Audretsch, DB. (1998). 'Agglomeration and the location of innovation activity', *Oxford Review of Economic Policy*, 14, 18-29.
- Barkley, DL and Henry, MS. (2001). 'Advantages and disadvantages of targeting industry clusters. *Clemson, South Carolina*', *Clemson University Public Service Activities*.
- Barkley, David, L and Mark, S. H. (2001). 'Advantages and Disadvantages of Targeting Industry Clusters', REDRL, *Research Report*, 2001.
- Carroll, AB. (1979). 'A three-dimensional conceptual model of corporate performance', *Academy of management review*, 4(4), 497-505.
- Carroll, AB. (1991). 'The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders'. *Business horizons*, 34(4), 39-48.
- Costa, M and Iezzi, S. (2004). 'Technology spillover and regional convergence process: A statistical analysis of the Italian case' *Statistical Methods and Applications* 13, 375-398.
- CSR magazine of PPEPCA, (2016). 'Editorial Board Leader: Jamil Adil Member: Col. (Retd) Shujaat Ghumman. House # 119-A Street 37, F-10/1, Islamabad, Pakistan. Design & Printed by: ENCORE 0334-5095544.
- Dierkes, M. (1980). 'Corporate social reporting and performance in Germany'. *Research in Corporate Social Performance and Policy*, 2, 251-289.
- Ellis, F. (2000). 'Rural livelihoods and diversity in developing countries'. Oxford university press.
- Fassin, Y., Van Rossem, A., Hoivik, H., Garriga, E., Signori, S., Schlierer, H.J and Werner, A. (2010). 'August. Small-business Owner-managers' Perceptions of CSR and business-related Ethical Concepts: A European cross-cultural comparative Analysis', In *Academy of Management Proceedings* (Vol. 2010, No. 1, pp. 1-6). Briarcliff Manor, NY 10510: Academy of Management.
- Friedman, HL. (1962). *Ionic Solution Theory: based on Cluster expansion methods* (Vol. 3). Inter science Publishers.
- Gordon, IR and McCann, P. (2005). 'Innovation, agglomeration, and regional development'. *Journal of Economic Geography*, 5, 523-543.
- Jia, X., Jiang, M and Ma, T. (2015). 'The dynamic impact of industrial cluster life cycle on regional innovation capacity'. *Economic research-Ekonomskaitraživanja*, 28(1), 807-829.
- Kalhor, M., Naqvi, IB., Memon, ZA., Jamali, NM., Kalhor, S and Kalhor SA. (2017). 'The community perception of CSR: A case study of oil and gas industrial cluster of district Dadu, Sindh, Pakistan', *Lasbela Uni. J. Sci. Tech.* 6, 303-308

- Lall, Somik, JK and Chakravorty, S. (2003). 'Diversity Matters: The Economic Geography of Industry Location in India', *World Bank Policy Research Working Paper Series #3072*.
- Luo, X and Bhattacharya, CB. (2009). 'The debate over doing good: Corporate social performance, strategic marketing levers, and firm-idiosyncratic risk' *Journal of Marketing*, 73(6), 198-213.
- Majeed, A and Mahesar, AA. (2016). 'Pakistan's Kirthar fold belt tight gas reservoirs show development potential', *Oil and Gas Journal Dec*, 5.
- Moon, J. (2003). 'Corporate social responsibility and societal governance'. *The Corporate Citizen*, 3(1), 2-9.
- Paluszek, JL. (1976). '*Business and society*', 1976-2000. Amacom.
- Pinkston, TS and Carroll, AB. (1992). 'August. Corporate Citizenship: A Comparative Analysis Of Foreign Affiliates Located in the Us and Their Domestic Counterparts'. In *Academy of Management Proceedings* (Vol. 1992, No. 1, pp. 353-357). Briarcliff Manor, NY 10510: Academy of Management.
- Pinkston, TS and Carroll, AB. (1996). A retrospective examination of CSR orientations: Have they changed?. *Journal of Business Ethics*, 15(2), 199-206.
- Porter, ME. (2000). 'Location, Clusters and Company Strategy', in Clark, G. L., Feldman, M. P., and Gertler, M. S., (eds.), *The Oxford Handbook of Economic Geography*, Oxford University Press, Oxford, 253-274.
- Porter, ME. (2000). 'Location, competition, and economic development: Local clusters in a global economy', *Economic development quarterly*, 14(1), pp.15-34
- Porter, ME., Schwab, K and Sachs, J. (2004). '*The global competitiveness report 2004-2005*'. New York, NY: Palgrave MacMillan.
- Slavova, I and Bankova, Y. (2015). 'Corporate social responsibility in business and management university education: the relevancy to the business practices in Bulgaria', *European Journal of Business and Economics*, 10(2)
- Ullah, I., Rehman, KU., Hameed, RM and Kayani, NZ. (2017). 'Development of CSR through Ethical Leadership: Constructive Role of Ethical Culture and Intellectual Capital', *Pakistan Journal of Commerce and Social Sciences*, 11(3), 977-1004.
- Wood, DJ. (1991). 'Corporate social performance revisited', *Academy of management review*, 16(4), 691-718.
- Zadek, S., Sabapathy, J., Dossing, H and Swift, T. (2003). 'Responsible competitiveness: Corporate responsibility clusters in action', *The Copenhagen Centre/Accountability. January*.

## Typology of the University Business Models for Integration into the International Strategic Alliances

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### Abstract

International educational alliances are a qualitatively new form of integration interaction of educational organizations, taking place against the background of global trends of globalization of world socio-economic processes. The strategy of integration into the world educational space is an integral part of the development strategy of most modern universities. This is facilitated by the development of Internet technologies, various forms of distance learning, network communications, etc., which, in turn, contributes to the intensification of cross-cultural communications and the erasure of national barriers. UNESCO, the United Nations, the World Bank, the Council of Europe and others are actively involved in this process. Within the framework of international inter-university cooperation, exchange programs are organized not only for students but also for teachers, joint research projects are being developed, separate special programs for foreign students, etc. are being created. However, for a full-fledged presence in the international educational space, a university must set itself the strategic goal of it as a priority and restructure its own strategic model for this. This article proposes a typology of university business models, corresponding to various forms of interaction of Russian universities with foreign partners.

**Keywords:** business-model, international educational alliance, strategic integration, educational organizations.

### Introduction

A business model is what distinguishes an organization from others; it is its uniqueness; it reflects the basis of its competitive advantage. In itself, business modeling is an innovative technique for using a business model pattern to correct an existing model and develop new business models. Patterns and techniques for building business models can be used to create and correct businesses, create a model of change at the level of departments or directions in an organization and build their own career.

The business model performs several key functions for the company, it allows a university to achieve:

- Evidence and depth. It is available to display the essence and key processes of the entire business on one sheet of paper, visually, ranging from customers to the directions of financial flows. There are no anymore so useful tools as a business model.
- Maximum use of group intelligence. Visualization and ease of display allows us to provide a single vision, understanding, use of group intelligence and expert experience of all employees and experts
- Versatility and multivariate. It is possible to adjust, design and formulate many new business models even during a few hours.

## Materials and Methods

The concept of strategic models in the context of business modeling is given in the works of B. Wernerfelt (1984), J. Galper (2001), J. Gebauer, & M. Ginsburg (2003), Morris, Schindehutte, & Allen (2005), E. Penrose (1959), A. Slywotsky, D. Morrison, & B. Andelman (1997) and others.

Among the researchers who developed the structure (templates, canvas) of strategic models as business models of start-up projects for the development of organizations at different times can be called the following: A. Brandenburger, & B. Nalebuff (1996), B. Durnota, & P. Augton (2010), B. Doll (2005), I. Ezendu (2002), R. Kolodziej (2003), H. Chesbrough (2006, 2010), K. Christensen, & M. Raynor (2000), J. Magretta (2002), E. Maurya (2012), M. Mayo, & G. Brown (1999), A. Osterwalder (2004), A. Osterwalder, I. Pigneur, & Ch. Tucci (2005), M. Robotham (2011), R. Fitzpatrick (2004), L. Fiel (2004), R. Ford (2006), T. Hulme (2006), etc.

Recently, a small number of research devoted to the alliance capacity of educational organizations (N. N. Masyuk (2012, 2014 a,b,c, 2015), P. V. Petrishchev, N.N. Masyuk, & M.A. Bushueva (2016, etc.) have appeared. However, research on strategic models of universities and their activities in the framework of international educational alliances has not been given sufficient attention so far, which has led to the choice of topic, setting goals, and structure of the study.

Choosing a business model in which an organization will earn its competitive advantage affects its competitiveness (Galper, 2001; Chesbrough, & Rosenbloom, 2002; Gebauer, & Ginsburg, 2003, Fiel, Janssen, Faber, & Wagenaar, 2004, Morris, Schindehutte, & Allen, 2005). It is important to note that, although the selected business model determines the competitive position of the organization (Stewart, & Zhao, 2000), the organization should not be limited to one business model. Several business models can successfully coexist at any given time (Osterwalder, 2004; Osterwalder, Pigneur, & Tucci, 2005; Brandenburger, & Nalebuff, 1996).

Our study aims to show how a university can conduct international activities with various foreign partners in several business models. The methodical approach to the development of a typology is based on the statement that each new program can be considered as a start-up project. Therefore, in the first step, all forms of international activities were divided into 5 groups; within each group, forms of cooperation were not the same, but similar. Further, for each group, excluding the fifth, a version of the business model pattern was found from among the previously known business models. For the fifth group, we could not find a suitable counterpart, so the author's version of the "open" business model was developed.

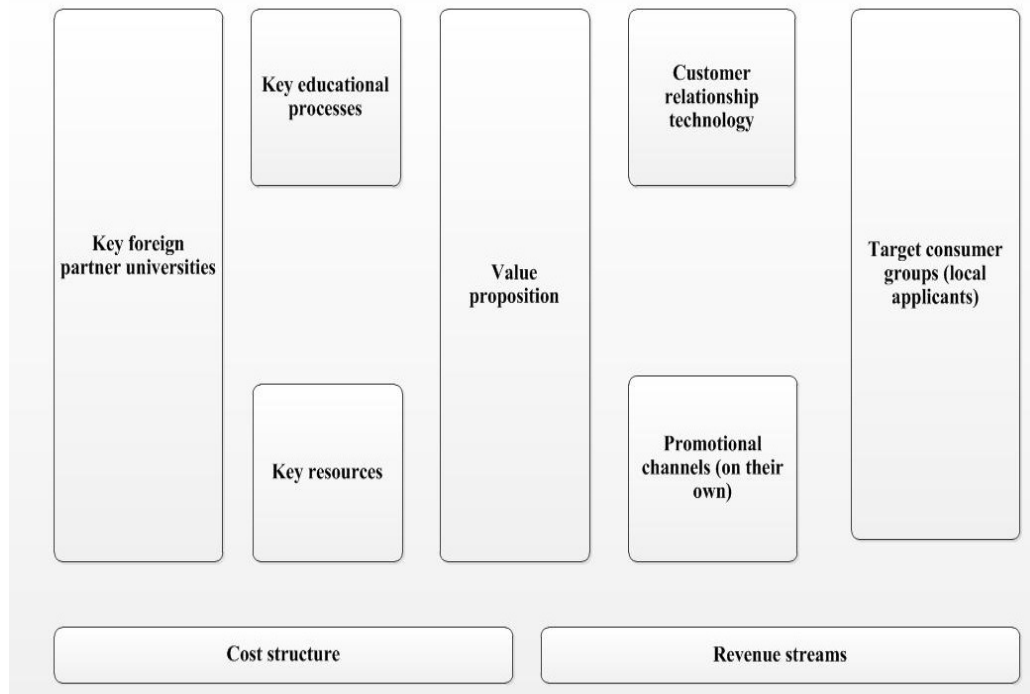
We suggest using the typology of business models as an evaluation scale of the level of international alliance-ability. In the interpretation of the authors – an alliance-ability - is the relevant and sufficient strategic capability of the organization to integrate in a strategic partnership (alliance) effectively (Masyuk, Petrachev, & Bushueva, 2014). Each type of business model is proposed to correspond to the level of international alliance capacity of the university. At the same time, we believe that the first level of alliance-ability corresponds to the basic business model. Accordingly, the fifth highest level of alliance ability will correspond to an "open" business model, within the framework of which the university implements "double-degree" programs.

## Results and Discussion

All arguments in this study are made in relation to Russian universities that work within the framework of international educational strategic alliances with various foreign universities.

**Business model 1 (basic).** At the early stage of international cooperation, there are only study tours of students and teachers, summer schools and language courses. Most often, it is assumed the only departure of Russian students abroad, based on the agreement of academic cooperation of the Russian and foreign universities. Students must be approved by the host university. This type of relationship

corresponds to the outline of the Osterwalder-Pigneur business model (Osterwalder, Pigneur, & Tucci, 2005), which in our case with respect to universities will look like this (Fig. 1). We will assume that this business model corresponds to the 1-st level of the international alliance-ability of the university and it will be taken as a basic model.



**Figure 1 : Organization Base Business Model Template by Osterwalder and Pigneur**

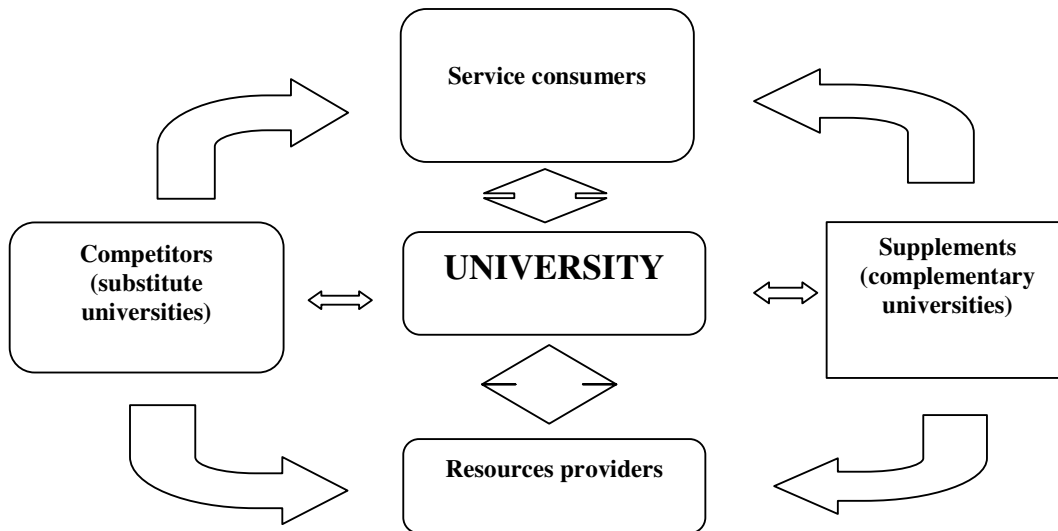
*(1-st level international alliance-ability)*

<b>Key partners:</b> foreign universities	<b>Key Activities:</b> educational services	<b>Value propositions:</b> training and internships abroad	<b>Customer Relations:</b> personal, automated, self-service	<b>Consumer segments:</b> applicants, students, parents
	<b>Key resources:</b> tangible, intangible, human		<b>Channels promotion:</b> by our own efforts	
<b>Cost structure:</b> costs for resources, staff, ongoing activities, promotion channels		<b>Revenue streams:</b> income from one-off transactions, regular income from periodic payments received from customers for value propositions		

**Fig.2: Detailing the basic business model of the university**

**Business model 2.** Academic cooperation between universities is moving towards the development of short (non-language) programs with a duration of less than a semester for students and teachers, including additional education programs, on the basis of mutual agreements and agreements with prior approval of candidates by their host countries.

Both Russian and foreign universities at the same time compete with each other in the international market of educational services. This type of relationship corresponds to the canvas of the Brandenburger-Neilbuff's competitive cooperation business model (Co-opetition) (Brandenburger, & Neilbuff, 1996). With regard to the university, this business model has the following form (Fig. 3) and corresponds to the 2nd level of international alliance. It should be noted here that the international activities of universities in the framework of the 1st and 2nd business models are the simplest and widespread among Russian universities.



**Fig.3: Business model 2 of competitive cooperation (Co-opetition), 2-nd level alliance-ability of universities**

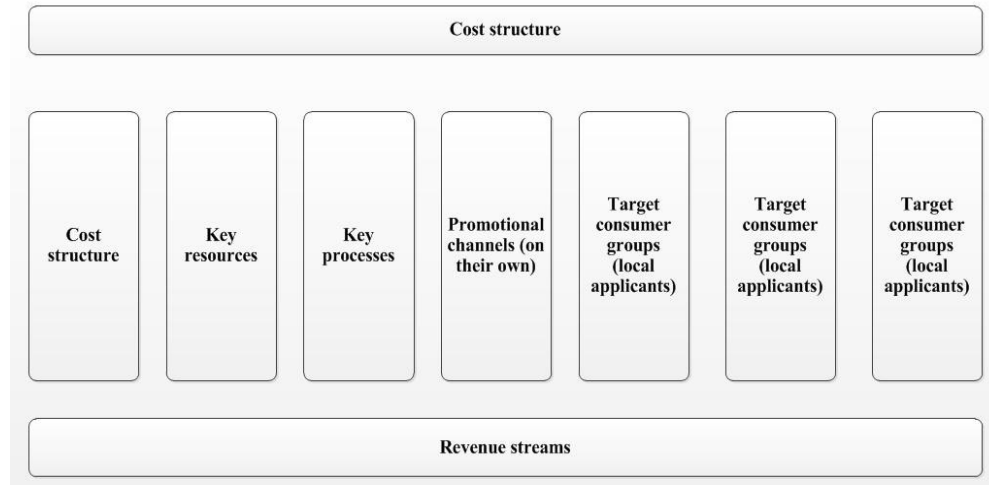
**Business model 3.** The international cooperation of universities is developing in the direction of developing exchange semester non-language programs. At the same time, it is assumed that both Russian students will travel abroad and foreign students enter the Russian university. This type of exchange seems to be the most difficult for Russian universities, since in most cases the language of instruction is English, which often makes it difficult to find teachers who can lecture in a foreign language. For Russian students, studying under such a program abroad also requires a good knowledge of a foreign language, most often, English, which also presents some difficulties. Since in this case partnerships acquire a systemic basis, and key partners can be included in activities at any stage, it can be said that an international educational alliance is being created. This type of relationship corresponds to the business model of value co-creation and partnership of Andreas Zolnowsky (Zolnowski et al, 2013). We will assume that at this stage of the relationship the university has the 3rd level of alliance ability (Fig. 4).

This model is hardly in need of detail, because its main elements are similar to the previous ones. The main difference of this model lies in the fact that the value proposition is the result of joint activities of partners.

**Business model 4.** University partnerships are developing in the direction of creating joint educational programs. At the same time, the main and supporting partners are clearly defined in the agreements on academic cooperation. The main partner owns the educational program, assigns an academic degree, issues a diploma and is responsible for the content of the programs and the quality of education. The program must be accredited in the country in which the main partner is located. The supporting partner provides certain elements of the program (supervision, observation, etc.), conducts individual courses, is also responsible for the content of these courses and their quality, etc. targeted to its target consumers.



The nature of this kind of partnership is close to the business model of diversified markets Erwin Fiel (Fiel et al, 2004). Let us assign this level of development of partnerships to the 4th level of alliance - ability (Fig. 5).



**Fig. 4 : Business model 3 of joint value creation and partnership, 3-rd level international university alliance-ability**

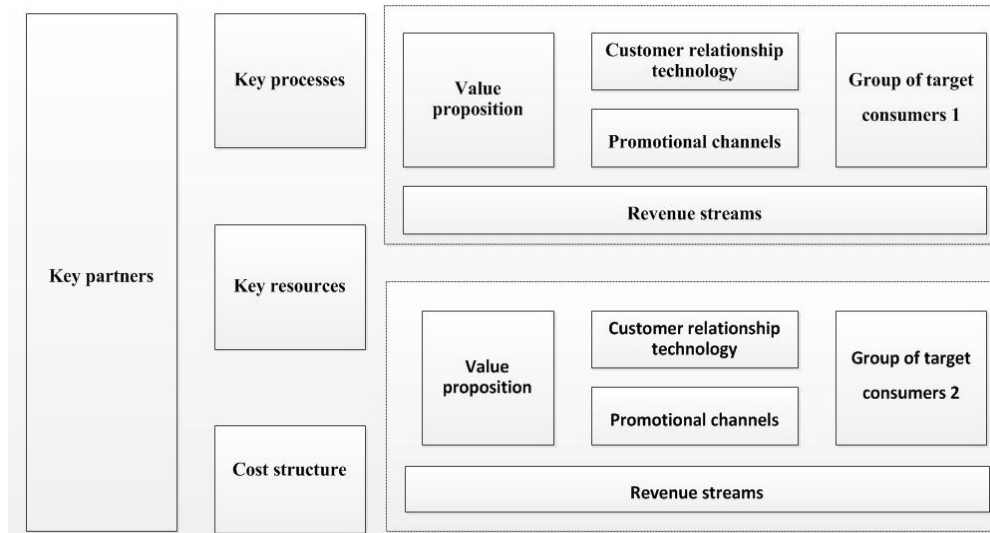
**Business model 5 (“open” business model).** Further development of partnerships within the framework of the international educational alliance leads to the conclusion of multilateral agreements on the mutual recognition of diplomas and the award of joint degrees, which does not preclude the issuance of their diplomas by each university. Partner universities are responsible for the programs, this includes the development and quality assurance, the mutual recognition of individual courses. Programs must be accredited by the relevant ministries and departments of each country.

From the previous analysis of 27 variants of business models in the course of the study, we did not select any ready-made business model template that would be suitable for the realization of the research objectives. Therefore, a new design of a business model template is needed, which would correspond to the full range of international activities of the university. At the same time, it is necessary to understand that higher education institutions have a different approach to developing a strategy and choosing a business model of internationalization and integration, and determining how comprehensive it should be. According to John K. Khudzik, “... there is no universal best model”; rather, we can talk about several good models. The “best” for a particular university will be the model that best takes into account its values, mission, institutional culture and capabilities” (Khudzik, 2016).

Considering the above, it can be argued that the business model template should include such elements as resources (used and replenished at the expense of the partner), dynamic abilities (both used and replenished) and key competencies (used or replenished). Therefore, the authors propose a business model template based on a modification of the Durnota-Augton sustainable development business model and the Osterwalder-Pigneur core business model. Let's call it an “open” business model corresponding to the 5th level of the university’s international alliance capacity (Fig. 6). Let us consider in more detail the content of this model with the detailing of the main elements (Table 1).

**Element 1** "Job that needs to be done (Job to be done)" is the start and significantly distinguishes this model from all previous ones. This distinctive feature is the establishment of systemic partnerships with recruitment agencies. The principle of recruitment (“recruiting”) of students through agencies and agents is widespread and successfully applied by most foreign universities. Russian universities,

on the other hand, distrust recruiters as middlemen, which sharply narrows the possibilities for attracting students to the university, especially foreign students.



**Fig.5 : Business model 4 (business model of diversified markets), the 4th level of alliance - ability**

**Element 2** “Key stakeholders” is present in all models and identifies as stakeholders Russian and foreign universities, students and applicants, parents, recruitment agencies and agents, owners of private universities, etc.

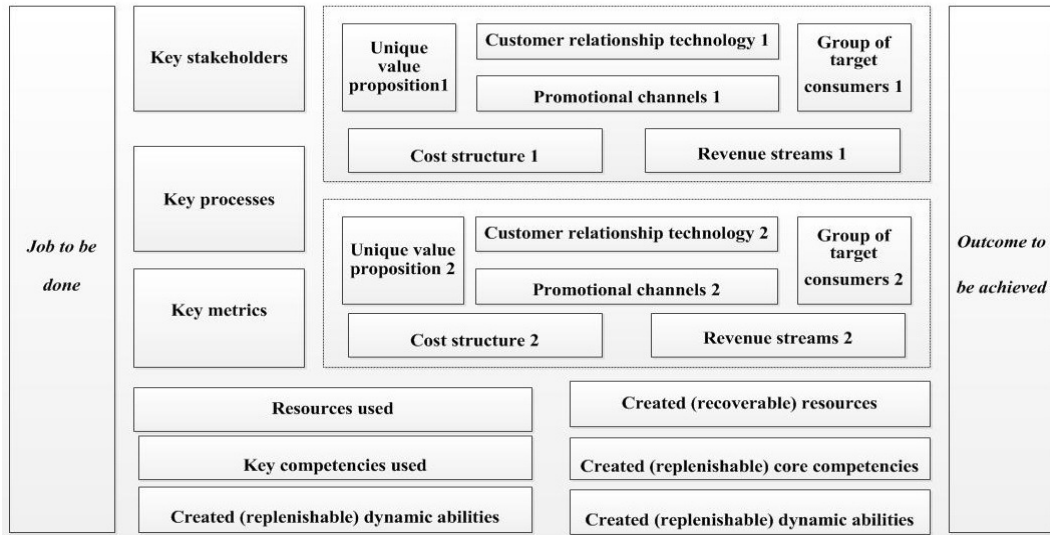
The “Key Processes” (**element 3**) here refers to educational and research activities, although the emphasis in the authors' discussion does on educational services.

The “Key metrics” (**element 4**) are understood as indicators of the effectiveness (efficiency) of the university's activities within the international educational alliance.

Next, we will focus on **element 5** “A unique value proposition 1, 2 ..., n”, which involves not one, but several value propositions. A value proposition is a key factor in maintaining customer loyalty by meeting their needs. The specific content of the value proposition in terms of the characteristics of goods and services, image and reputation, customer relationships depends on the characteristics of the target segment. Having chosen a client value strategy and characteristics for competitive positioning, the company should further elaborate a program of actions that would allow it to form and maintain distinctive values stated in position in the long run. For this purpose, various methods, tools and business models of strategic management can be used. In the general case, in an open business model, there will be as much unique value propositions as how much "double degree" programs are realizing in the university. At the same time, such a partnership, in the author's opinion, is the most effective in terms of the realization of the goals of the alliance and the balance of mutual interests of partner universities.

**Element 6** “Customer Relationship Technology” reflects relationships with customers that are initially personal, based on contact interaction, and develop between consumers and recruiters, and then become reputational (the university's brand begins to work).

**Element 7** “Promotional channels 1, 2 ..., n” corresponds to the existence of partnerships with recruiting agencies and agents who take on the function of attracting students to programs.



**Fig.6: “Open” university business model (5th level of international alliance capacity**

*Element 8* of the “Target Consumer Groups” or “groups of target consumers” shows how many and which consumer groups correspond to each value proposition (in our case, how many consumer groups each double diploma program has).

*Element 9* “Cost Structure” reflects all possible expenses necessary for creating, maintaining, implementing and maintaining a value proposition (“double degree” program) of a university for specific consumer segments, as well as establishing and maintaining relationships with partner universities and specific consumer segments.

*Element 10* “Revenue streams 1,2, ..., n” or “the structure of income” reflects the various methods of income generation (offline and / or online), thanks to which the university makes a profit in monetary terms from the sale of its services to each consumer segment. The main questions to be asked when determining how incomes are received:

- what specific value are our consumers really willing to pay?
- what are they paying for now?
- how are they paying now?
- how would they prefer to pay?
- What exactly is the profit of each revenue stream?

There are two typical options for university income streams:

- 1) income from one-time payments;
- 2) regular income from periodic payments, which the university receives from the implementation of the value proposition to specific consumer segments (the implementation of educational services).

*Element 11* “Used resources” contains information on what material, non-material and human resources the Russian university uses.

*Element 12* “Used abilities” reflects the own dynamic abilities of Russian universities.

*Element 13* “Used Key Competences” shows that Russian universities have their own core competencies.

**Element 14** “Created (replenishable) resources show which material, non-material and human resources can be created or replenished with the help of foreign universities.

**Element 15.** “Created (replenishable) dynamic abilities reflect opportunities to create or replenish dynamic abilities with the help of a foreign partner.

**Table 1: Detailing open university business model**

№	Name of the block (module) of business model	Content
1	<i>Job to be done</i>	Recruiting students for programs
2	Key stakeholders	Russian and foreign universities, students and applicants, parents, recruitment agencies and agents, owners of private universities
3	Key processes	Educational and research activities
4	Key metrics	Key indicators of effusion and effectiveness
5	Unique value proposition 1, 2, ..., n	Double degree programs
6	Customer Relationship Technology 1,2, ..., n	Consumer tips, idea generation, visualization, prototyping, story-telling, scripts
7	Promotion channels 1,2, ..., n	Recruitment agencies and agents
8	Target consumer groups 1, 2, ..., n	Applicants, students and their parents
9	Cost structure 1,2, ..., n	All possible expenses necessary for the creation, maintenance, implementation and maintenance of value propositions.
10	Revenue streams 1,2, ..., n	Various ways of income (offline and / or online)
11	Resources used	Tangible, intangible and human resources of Russian universities
12	Used abilities	Dynamic abilities of Russian universities
13	Key competencies used	Key competencies of Russian universities
14	Created (recoverable) resources	Tangible, intangible and human resources of foreign universities
15	Created (replenishable) dynamic abilities	Dynamic abilities of foreign universities
16	Created (replenishable) core competencies	Key competencies at the expense of foreign universities
17	<i>Outcome to be achieved</i>	The program must be fully implemented and complete the issuance of double degree

**Element 16.** “Created (replenishable) core competencies” reflects key competencies that can be created or completed in the course of integration with a foreign university.

**Element 17** “Outcome to be achieved” is the ultimate goal of the activities within this business model, which includes the full implementation of programs and the release of two (and sometimes three) degrees by each university based on the mutual recognition of disciplines. "Dual degree" or “double degree” today is one of the most relevant areas of higher education.

## Conclusion

In conclusion, the description of any business model should include nine blocks that reflect the logic of the company's actions aimed at making a profit. These nine blocks cover four main areas of business: customer interaction, supply, infrastructure, and financial performance of a company. The business model is similar to a strategic plan that is implemented through organizational structures, processes, and systems. Typology of business models can be used to design, describe, analyze and diagnose business models of any type of organization in any field of activity. Analysis of the relationship between the main elements allows us to identify problems of compliance and sustainability of the business model. The five-level typology of university business models developed by the authors allows us to approximately estimate the level of the international alliance - ability of the university.

At the same time, attention should be paid to the fact that the university can simultaneously operate within several business models, this will depend on the type of partnership, while, according to the authors, the open business model corresponding to the highest, fifth level is the most mature. international alliance capacity of the university. The number of unique value propositions in an open business model will correspond to the number of double degree programs.

## References

- Altbach P. (2005). The American professoriate in comparative perspective. *The Professoriate: Springer, Dordrecht*, 147- 165. doi.org/10.1007%2F1-4020-3383-4\_9
- Brandenburger, A. & Nalebuff, B. (1996). *Co-opetition*. New York: Doubleday.
- Chesbrough, H., & Rosenbloom, R. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529-555.
- Chesbrough H. (2006). *Open business models: How to thrive in the new innovation landscape*. Boston, MA: Harvard Business School Press.
- Chesbrough H. (2010). Business model innovation: Opportunities and barriers / *Long Range Planning*. 43, 2/3, 354–363.
- Christensen C., Raynor M.E. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, 78, 2, 66–77.
- Doll B. (2005). Business design game // Business Model Template. URL: <http://www.slideshare.net/MarcinKokott/business-design-game-business-model-template-43653862>
- Durnota B., Aughton P. Canvas of business models for sustainable development. Retrieved from: <http://bizmodelgu.ru/?s=%D0%B4%D0%B0%D1%80%D0%BD%D0%BE%D1%82%D0%B0%2C+%D0%B0%D1%83%D0%B3%D1%82%D0%BE%D0%BD>
- Ezendu E. Advancing Business Model (). Retrieved from: <http://advancingbizmodel.blogspot.co.nz/>
- Fielt, E., Janssen, W., Faber E., & Wagenaar, R. (2004). *Design Trade-offs for Electronic Intermediaries* In: Janssen, Marijn, Sol, Henk G., Wagenaar, R. doi: 10.1080/10196780802420760
- Fitzpatrik R. (2004) How to Actually Do Customer development (and Not Waste your Time ()). Retrieved from: <http://www.slideshare.net/robfitz/how-to-actually-do-customer-development-and-not-waste-your-time>

- Ford R. (2006). How Students Can Use Learn Startup Principals for Better Grades in Less Time. Retrieved from: <http://www.roryford.com/lean-startup/how-students-can-use-lean-startup-principals-for-better-grades-in-less-time/>
- Galper J. (2001). Three Business models for the stock exchange industry. *Journal of Investing*, 10(1),70-78.
- Gebauer, J. & Ginsburg, M. (2003). The US Wine Industry and the Internet: An Analysis of Success factors for Online Business models. *Electronic Markets*, 13(1), 59-66.
- Hulme T. (2006) Visualizing your business model Retrieved from: <http://inspirationkit.nl/kit-detail/850/visualizing-your-business-model>
- Kołodziej R. (2003). Business Model Canvas cozy Lean Canvas. Retrieved from: <http://cocreation.bblog.pl/wpis,business;model;canvas;czy;lean;canvas>
- Khudzik J.K. (2016). Integration of internationalization of the XXI century into institutional management and university leadership. *International Higher Education*, 83 (special issue), 10-12.
- Magretta J. (2002). Why business models matter. *Harvard Business Review*, May, 86-92.
- Maurya A. (2012). Running Lean. How to Iterate from Plan A to a Plan That Works. *Published by O'Reilly Media*, 03-06.
- Mayo M., Brown G. (1999). Building a competitive business model. *Ivey Business Journal*,63 (3), 18-23.
- Masyuk, N.N., & Baturina, O.A. (2014). The strategic partnership of universities with the business environment: a balance of mutual interests. *Economics and Entrepreneurship*, 12-4, (53-4), 824-829.
- Masyuk, N.N., Mezhonova, L.V., Bushueva, M.A., Baturina, O.A., Baldina, Y.V., Petruk, G.V., & Kuznetsova, Y.P. (2014). *Strategic partnership in the innovative knowledge economy: Multivariate approach*. Vladivostok, Russia: VSUES Publishing.
- Masyuk, N. N., Shilovskaya, L.L., & Petrichev, P.P. (2012). International integration of educational programs. *University Management*, 3, 80-86.
- Masyuk, N.N., Petrichev P.V., & Bushueva M.A. (2014). Strategic Partnership as Evidence of the University Alliance-ability. *Economics and Entrepreneurship*, 12-3 (53-3), 658-662.
- Masyuk, N.N, & Petrichev, P.V. (2015). *International educational alliances in the global economy*. Vladivostok, Russia: VSUES Publishing.
- Morris, M., Schindehutte, M., Allen, J. (2005). The entrepreneur's business model: toward a unified perspective. *Journal of Business Research*. 58 (6), 726-735.
- Osterwalder, A. (2004). The Business Model Ontology - a Proposition in a Design Science Approach. (Doctoral Dissertation), University of Lausa N.N., Switzerland.
- Osterwalder, A., Pigneur, Y., & Tucci, Ch. (2005). Clarifying Business Models: Origins, Present, and Future of the Concept. *Communications of the Association for Information Systems*, 16, 1-25.
- Penrose E. (1959). *The Theory of Growth of the Firm*. NY.
- Petrichev, P.V., Masyuk, N.N., & Bushueva, M.A. (2016). Algorithm and Roadmap of Entering the University in the International Educational Alliance. *Azimuth of Scientific Research: Economics and Administration*, 5, 4 (17), 303-306.

Robotam M. (2011). Business Models. *Growth management consulting LTD*.

Slywotsky A. J., Morrison D. J., Andelman B. (1997). The profit zone: how strategic business design will lead you to tomorrow's profits. *New York, Times Business*.

Wernerfelt B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5, 24, 171—180.

Zolnowski, A., & T Böhmann, T. (2013). Customer integration in service business models. *System Sciences (HICSS), 46th Hawaii International Conference on*, 1103-1112.

## **Equity Pricing and Stock Fundamentals in the Nigerian Capital Market: An Empirical Investigation**

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### **Abstract**

The paper investigated the behaviour of prices of stocks and stock fundamentals in the Nigeria Stock Exchange (NSE). Over the years, prices of equity have been volatile, quite unpredictable and bearish in nature. Individual investors might be worse off by making inappropriate decisions consequent upon the unpredictability of the movements of stock fundamentals in the Nigerian Capital Market. Despite the fluctuation in the stock prices in the market, the engagements of appropriate stock fundamentals by the investors could guarantee positive returns in the market. Data was collected through secondary data apparatus. Panel data from thirty four (34) quoted firms on the floor of Nigerian stock market were obtained from the financial statements and Central Bank of Nigerian Fact Books from 1990 to 2016. In the study, the methods employed were Descriptive Statistics and Pooled Ordinary Least Square. The model measured both the Fixed and Random Effects of the variables, however, the Hausman test of 39.78 with p-value of 0.0000 is significant at 5% level, thus the coefficients of Fixed Effect (FE) models are recommended for prediction of stock prices in the NSE. To make choice of stocks to be included in a portfolio in the NSE, it is recommended that investors should engage Earnings Per Share (EPS) and Capital Gains (cag) to choose return driven stocks.

**Keywords:** Stock Fundamentals, Equity, Positive Returns, Dividend Per Share, Price Earnings Ratio, Earnings Per Share.

### **Introduction**

The stock market is a veritable vehicle to create wealth through dividends and capital gains. The capital gains emanate from capital appreciation from arbitraging processes in the stock market. It is a market where financial assets are bought and sold. The prices of stock market vary tremendously from time to time. On a daily basis, both institutional and individual investors, invest in the market with the objective of earning maximum return at minimal risk. To raise long term funds for expansion, institutions and governments patronize the capital market. The importance of the stock market as a haven for making returns, as well as a lubricant for economic growth and development cannot be really over emphasized, (Olowe, 2008; Hirschey & Nofsinger, 2008).

The objective of every investor is to maximize returns on investment. Therefore, individual and institutional investors strive to keep their investment portfolio so as to ensure positive returns from the choice of stocks. Changes in stock price may be positive or negative, it is positive when there is capital appreciation; and negative, when there is capital erosion. Really, capital appreciation is a function of the



behaviour of fundamentals in the stock market, (Hirschey & Nofsinger, 2008). Previous studies on Portfolio theory and management have confirmed randomness in the movement of stock prices, (Markowitz, 1952; Fama, 1965). Stock price is so unpredictable that investors need to exercise caution in selecting a profitable investment portfolio, (Nwidobie, 2014). The stock market in Nigeria is highly regulated; there is much influence in the market, suggesting the imperfection of the market, (Ojo, 2010). Therefore, it appears that the interplay of demand and supply is not the only factor influencing prices in the Nigerian stock market. Thus, investors need to be more conscious of the behaviour stock fundamentals in making decision to buy or sell a particular stock in the Nigeria Stock Exchange (NSE).

Empirical studies in the conventional Finance areas (determinants of equity pricing, stock market volatility and asset pricing models among others) are more popular about the Nigerian stock market, (Oladeji, Ikpefan & Alege, 2018; Isibor, Ojo & Ikpefan, 2018; Ailmen, Akhanolu & Chibuzor, 2016; Isibor, Ikpefan, Okafor & Ojeka, 2016, Kiran & Chalam, 2015; Osisanwo & Atanda, 2012; Aisyah, Noor & Fauziah, 2009 ).

Despite the existence of few numbers of empirical evidence on the determinant of equity prices in the Nigerian stock market, most of the studies engaged Ordinary Least Square (OLS) without checking time series property of the panel data. Besides, investors continue to look for stock fundamentals that are reliable, efficient and robust to guarantee more returns and safety of assets in the market. Thus, this study investigated the predictors of equity prices in the Nigerian stock market progressing from the OLS to Pooled OLS to determine the most reliable models between the Fixed and Random Effects coefficients. This is to evaluate the predicting power of financial fundamentals that were engaged in the models. The essence is to assist investors in the Nigerian capital market to make informed decision using published financial information to measure and predict the behaviour of stock returns.

## **Literature Review**

### ***Conceptual and Theoretical Framework***

The money and capital markets are important concepts to this study. The money market trades on short term tenor instruments while the capital market deals with financial instruments on a long term basis, (Ojo, 2010; Olowe, 2008; Pandey, 2007). In the capital market, individual investors purchase and sell shares on their own as well as institutional investors which have information asymmetry to invest on behalf of other investors. Individual investors purchase shares in small quantity to make capital gains and earn uncertain future dividends. Information is not freely available to small investors in the market; hence they resort to the use of publicly available information from the Financial Statements of companies, Stock Exchange Fact Books, Central Bank of Nigeria Annual Reports and other information from the apex bank and the regulatory authorities. According to Olowe (1998), Omolehinwa (2006), Pandey (2007) and Akinsulire (2011), there is a functional relationship between return and stock prices; the objective of a rational investor is to maximize returns from an infinite number of securities in the stock market. It is therefore essential for individual investors to use publicly available information to make choice of good stocks to maximize returns and minimize risks. The second theory considered is the Markowitz (1952) Portfolio theory. The theory puts forward a new method of portfolio selection, which had long time ago examined the relationship between expected rate of return, risk from individual stocks and importantly, the covariance between expected rate of returns and risk. The theory emphasizes the diversification option in building an efficient investment portfolio. Another theory considered is the Capital Asset Pricing Model (CAPM) by Sharpe (1964), this theory explains the risk involved in determining the expected rate of return of an asset; the theory was employed to measure relationship between equity price and stock fundamentals. As result of the limitation of CAPM as a one period model, the Arbitrage Pricing Theory (APT) modeled by Ross (1976) was engaged as the underpinning theory to measure the behaviour of stock fundamentals and equity pricing in the Nigerian stock market, (Olowe, 1998; Omolehinwa, 2006;

Pandey, 2007; & Akinsulire 2011). The APT as a multi variable model was relied upon to assess the relationship between stock market prices and stock fundamentals in the Nigeria Stock Exchange (NSE).

Furthermore, the dividend policy theory examines the proportion of earnings to be distributed as dividend to equity holders. It is a very crucial decision in an entity because earnings are an important source of internal funds that can be used to enhance the growth of a firm, (Olowe, 1998; Hirschey & Nofsinger; 2008). In the literature, there are two sides to the argument of dividend policy. The first is the dividend relevancy theory, which postulates that dividends matter in predicting the behaviour of security prices. The theory emanated from the Gordon (1959) dividend models, respectively. The second strand is Modigliani and Miller (1961) hypothesis on dividend irrelevancy, which explains that existing dividend payment, is not important to determine the value of equity of an entity. The proxy of dividend in the study is Dividend Yield (dy). This was employed to measure how much the companies in the case study paid as dividends.

### ***Empirical Review***

Over the years, studies have recognized the relationships between equity pricing and behaviour of stock fundamentals across the advanced, emerging and developing stock markets. Fadiran and Olowokere (2016) engaged financial variables such as Earnings Per Share (EPS), Book Value Per Shares (BVPS), Dividend Per Share (DPS) and Cash Flow (CF) to predict stock prices of equity quoted on the floor of the Nigeria Stock Exchange (NSE). The results of the multiple regression portends mix reactions among the exogenous variables; however, Price Earnings Ratio, which should have been engaged to capture price in relation to earnings was excluded from the exogenous variables; besides, robust Hausman test was not employed to address the consequences of endogeneity related problems inherent in the use of panel data.

Gordon (1959) evaluated the influence of the dividend paid in the previous period and the growth rate of dividend on equity market capitalization rate. However, Nwidobie (2014), Sanjeet (2011) and Pooja (2014) among others investigated factors that determine stock market prices. Gordon (1959) carried out research on determinants of stock prices and found that dividend payment has significant impact on stock prices. The bulk of the empirical studies focus on the reaction between stock market and developments, equity pricing and macroeconomics fundamentals; the results from these studies suggest mix reactions, (Sanjeet, 2011; Pooja, 2014). Chenny and Ng (1998) reported that GDP, money supply, individual consumption and prices of petroleum have positive influence on stock market prices. However, Chen (2003), Ibrahim and Aziz (2003), Maysami and Koh (2000), Booth and Booth (1997), and Mukherjee and Naka (1995) also reported that short term inflation rates, industrial production, exchange rates, and a nation's reserves influence stock market prices.

Conversely, Borrows and Naka (1994), Chen, Roll and Ross (1986) inferred that inflation has an inverse relationship on stock market price. Stock market prices and macroeconomic variables are always areas of interest in finance. In fact, Ray (2013), Sireesha (2013), Naik and Padhi (2012), Erdogna and Ozlale (2005) and Maghayereh (2003) revealed a long-run relationship between macroeconomic variables and stock market prices. From these studies, it was established that the relationships are statistically significant in the long and short run. In fact, Kwon and Shin (1999) established a granger causality and co-integration using the Vector Error Correction model on variables such as exchange rate, trade balances and money supply in the Korean stock market. The variables engaged co-integrated in the order of I(1), ( Also refer to Arshad & Tariq, 2009; Adam & Tweneboah, 2008; Muhammed, 2010; Maku & Atanda, 2009). Few of the empirical studies investigated how financial fundamentals impacted on equity pricing: Muhammed (2010) examined the extent to which Earnings Per Share, dividend per share, gross domestic product and inflation among other variables impacted on stock prices in Pakistan. The investigation was fascinating but the time series properties of the variables were not evaluated. Talla (2015) analyzed dividends, accounting earnings and free cash flows from the annual reports of some selected companies

in Kuwait and found a strong relationship between explained and explanatory variables (stock market price).

In this study, Earnings Per Share (EPS), Price Earnings Ratio and Dividend Per Share (DPS) were used as predicting factors of market prices of two (2) companies, chosen as the case study; whereas in this study, average annual stock prices of the thirty four (34) companies was engaged as the explained variable and investors' capital gains, dividend yield, return on assets and minimum returns captured with log of the product of Shareholders' Funds were employed. The study of Srinivasan (2012) portends that Dividend Per Share has a significant inverse relationship with share prices in the manufacturing, pharmaceutical, energy and infrastructural sectors of India.

However, evidence from Srinivasan (2012) show that Earnings Per Share (EPS), Book Value Per Share (size) and Price Earnings Ratio are crucial factors that determine the market prices of shares of the selected industries. Asset growth was also used in Irfaan and Wishat (2012) to predict pricing of securities whereas Zahir and Khanna (1982), Tsoukalas and Sil (1999), Sen and Singh (2006) and Hartono (2004) studied the empirical relationship between security prices and specific intrinsic variables, such as Book Value Per Share, Dividend Per Share, Earnings Per share, Dividend yield, dividend payout, return on net worth and Price Earnings ratio. The results revealed that Book Value Per Share and Return on net worth are the major determinants of prices of securities in the Indian these empirical studies. The study's findings however, may be limited in making predictions because robust statistics such as Durbin Watson, Unit Root test and Augmented Dickey Fuller(ADF) among others were not conducted to confirm the presence or otherwise of auto-correction.

According to Pushpa and Sumangala (2012), the market price of equity is a positive function of Earnings Per Share (EPS), (refer also to Ohlson, 1995; Ball & Brown, 1968; Collins & Kothari, 1999; Yartey, 2008; Schwert, 1989 ). However, there is a significant mixed relationship in Sanjeet (2011) where EPS, size, Price Earnings ratio and the market price of some companies were investigated in (1985) India. This evidence was also supported in Mohammed (2014) in Amman Stock Exchange in Saudi Arabia where quantitative variables obtained from the Annual Report of listed banks were examined. Furthermore, in Pooja (2014), firm size and Price Earnings Ratio negatively correlated with the expected return (ECR) on common stock. However, the work of Sanjeet (2011) gives credence to the work of Chandra (1981) where size shows a significant positive relationship with the market price of some selected stocks in India. Singh (1995) and Malhora (1987), showed that DPS has a significantly positive relationship with the market price of stocks.

## **Materials and Methods**

In this study, time series panel data was collected from the Annual Reports of thirty four (34) firms and Central Bank of Nigeria Statistical Bulletin from 1990 to 2016. The annual market prices of these thirty four (34) quoted companies were the average of the monthly figures obtained from the Nigeria Stock Exchange's Fact Books. The companies represented the most important companies in the economy, besides the data for the companies were available for the years.

The method adopted was Pooled Ordinary Least Square (OLS) to measure Fixed and Random Effects. The method according to Olusanya, Salisu and Olofin (2016) is suitable in dealing with behavioural differences in individual heterogeneity. The K variables model pooled data across industries together in a single unit. The model progressed from the Multiple Regressions to Pooled OLS to measure the Fixed and Random Effects to recommend the acceptable model. The recommended model consisting of the coefficients of the exogenous variables that could be used to explain the current changes in another variable (say MPS) over and above the explanation provided by past changes in the variable. *A priori*, the evidence from the theory suggests that financial fundamentals obtained from the Annual Reports are regarded as positive indicators of the market price of stocks in the capital market. It could be theorized from the

principle of non-satiation that a rational investor given a basket of stocks indicated in his indifference hyper plane, should prefer more to less, the higher the financial ratio, the more the market price and the more the satisfaction of investors in the stock market.

**Estimating Pooled Ordinary Least Square**

$$asmp_{it} = X_{it}^1 \beta_1 + X_{it}^2 \beta_2 + X_{it}^3 \beta_3 + \varepsilon_{it} \dots \dots \dots 3.1$$

$$asmp_{it} = X_{it}^1 \beta_1 + \varepsilon_{it} \dots \dots \dots 3.2$$

$$asmp_{it} = X_{it}^1 \beta_1 + \alpha + \mu_1 + \eta_{it} \dots \dots \dots 3.3$$

The Pooled estimator is specified in equation 3.1. The specification of the Fixed Effect (FE) is denoted in equation 3.2. The Pooled estimator and the specification of the Random Effect (FE) is denoted in equation 3.3 where  $\alpha$  is the common intercept and disturbance is  $\mu_1 + \eta_{it}$ . The decomposition of the stochastic term is the reason for the model to be called error component model. The individual heterogeneity was captured by the intercept. The  $asmp_{it}$  is the unobservable specific effect, t is time from 1990 to 2016, i represented the company counting from 1 to 34 companies across the sectors in the Nigeria Stock Exchange (NSE) and  $\eta_{it}$  captured the common section time series effect of the model. In the study, Fixed and Random Effect Models are captured with X.  $X$  are vectors such as:  $X = \{eps, cag, roa, dy, per, lrfsf\}$ : The variables are defined below, they were the proxy of the exogenous variables in the study. They were fixed in the model stepwise and independently. The rates of response, the level of significance of the coefficients determine the extent of impact exerted by the exogenous variables on the endogenous variable.

**Variable Representation**

$Asmp$  = the Average Annual Stock Market Price of the stocks,  $eps$  = the Growth Rate of Earnings Per Share of the selected firms in the Nigerian Stock Market,  $cag$  = the Capital Gains by the investors in the stocks in the Nigeria Stock Exchange,  $roa$ = the Return on Assets,  $dy$ =the Dividend Yield,  $per$  = the Price Earnings Ratio  $lrfsf$  = log of the Product of Risk- Free Rate and Shareholders’ Funds

**Descriptive Statistics Results**

**Table 3-4.1: Descriptive statistics**

Stats	N	Mean	Sum	Max	Min	stan.dev	skewness	kurtosis	Median
Asmp	800	23.94015	19152.12	1200	0	83.38493	9.130182	104.1596	3.95178
Eps	794	1.286418	1021.416	53.5436	-52.13	4.456756	2.104869	70.4244	0.4337
Cag	800	1.21985	975.8797	673.684	-7.94615	24.18773	27.01624	749.0625	0
Roa	800	0.216462	173.1697	82.815	-0.41283	3.208439	23.23228	571.7052	0.042626
Dy	794	0.060138	47.74974	1.13636	0	0.10611	5.143994	37.77995	0.034327
Per	797	12.50532	9966.739	949.556	-1353.33	70.43268	-6.11999	222.3321	8.22973
Lrfsf	799	5.049138	4034.262	8.49111	-5.59	1.748211	-2.38437	11.79108	5.35839

Source: Computed by the researcher using STATA 13.

### ***Descriptive Analyses***

Table 3-4.1 reported above shows the average annual stock market price of thirty four (34) companies that were examined in the study. The average stock price was represented with *Asmp*. It has average price of 0 and a maximum of 1,200 naira. The wide disparity between the minimum and maximum values portend that the average annual market price of the stocks significantly differs among companies in Nigeria. This evidence is supported in the empirical studies of Otuteye and Siddiquee (2015a & 2015b), Mohammed (2014) and Pooja (2014). From the table, also, the maximum value of 53.54% suggests that some of the companies in Nigeria have great gains on the growth rate of earnings per share (*eps*). The minimum value of earnings per share (*eps*) is -52.13% suggesting that some companies in Nigeria have unimpressive growth rate of earnings, thus investors should demonstrate enough competence to distinguish poor stocks from good ones using the *eps*. Similarly, this denotes a sort of loss on the earnings per share (*eps*) of those companies. Besides, the drop in the *eps* inversely affects share prices of stocks in the stock market, (Mohammed, 2014; Pooja, 2014).

Moreover, Table 4.1, reported the capital gains (*cag*) made by the investors from the stocks in the Nigeria Stock Exchange, the return on assets (*roa*) and the dividend yield (*dy*), the price earnings ratio (*per*) and the log of product of risk-free rate and shareholders' funds (*lrfsf*) of the selected companies in Nigeria.

The descriptive analyses suggest that some companies had minimum capital gains of -7.95 naira and maximum values of 673.68 naira on the average from 199 to 2016. Also, it shows some firms had high return on assets (*roa*) with the values as low as -0.41%, while other firms have values of return on assets (*roa*) to be as high as 82.81%. The dividend yield of the companies in Nigeria shows that some of the companies pay higher amounts of their profits to shareholders as dividends. Similarly, the ratio of the market price to earnings ratio denoted with *per* has a minimum value of -1353.33 and maximum value of 949.56, interestingly the mean value of the *per* (12.51) is 2.48 times of the opportunity cost of investing the quantum of the companies Shareholders' Funds on Treasury bill in Nigeria. In other words if the Shareholders' Funds are invested in the alternative short term investment vehicle (Treasury bill), lower returns would be made on the average from 1990 to 2016. In the same vein, Table 3-4.1 above shows that not more than 1.21 percent of capital gains (*cag*) on the average are made by the investors who traded their shares during the periods investigated. This implies that investors in the market could expect sumptuous capital gains in the future in the Nigeria Stock Exchange (NSE).

Similarly, Table 3-4.1 shows the mean and the median of Average Annual Stock Market Price of the stocks of 23.94 naira on the average. More so, the average annual stock market prices of the stocks have a median value of 3.95 and the mean value of 23.94 naira on the average. Statistically, a data is skewed to the right when the mean value is greater than the median value, and left skewed when the mean value is less than the median value. From the foregoing analyses, all the observations for most of the variables are skewed to the right except the log of product of risk-free rate and shareholders' funds (*lrfsf*) that is skewed to the left.

That is understandable because investment in Treasury bill is a short term investment and the companies operated in different industries.. Conversely, the skewness of the mean to the right in Table 3-4.1 confirms the possibility of outliers. To determine the spread of the data, the standard deviation (SD) and the kurtosis coefficients in Table 3-4.1 was engaged. The result shows that all the variables have standard deviations which are greater than the mean values. It gives credence to the fact that the observations for each of the variables are greatly spread with outliers. The implication therefore is that the data might not be symmetry in nature. Kurtosis was employed to check the centre of the data. It shows that all the coefficients of kurtoses are greater than 3. It portends that the data has a higher tail suggesting that the data is clustered towards the mean with possible outliers. In the study, Pooled Ordinary Least Square was engaged to have the Best Linear Unbiased Estimators to enhance predictive values of the explained and explanatory variables.

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**Table 4-5.1: Regression Result of 34 Stocks**

	(OLS)	(FE)	(RE)
VARIABLES	Asmp	asmp	asmp
L.asmp			
Eps	12.30*** (0.586)	9.312*** (0.615)	10.13*** (0.598)
Cag	0.296*** (0.108)	0.310*** (0.102)	0.307*** (0.102)
Roa	-0.0288 (0.727)	0.145 (0.684)	0.106 (0.687)
Dy	-38.16* (22.93)	-39.93* (24.14)	-38.57* (23.39)
Per	0.0511 (0.0372)	0.0414 (0.0348)	0.0436 (0.0349)
Lrfsf	3.643** (1.455)	5.322*** (1.667)	4.837*** (1.569)
Constant	-8.037 (8.159)	-12.74 (9.127)	-12.39 (9.374)
Observations	784	784	784
R-squared	0.393	0.269	-
Number of id	-	34	34
F-test	0.0000	0.0000	0.0000
Instruments	-	-	-
AR(1)	-	-	-
AR(2)	-	-	-
Hansen	-	-	-
Hausman	-	-	-
	-	39.78	-

*Source: Computed by the researcher using STATA 13.1*

Note: Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Source: Computed by the researcher using STATA 13.1*

**Table 4-5.2: Order of Coefficients**

Parameters/Explained Variables	OLS Co-efficient	Coefficients Fixed Effects	Coefficients Random Effects	Ranking By Fixed Effects
<i>Eps</i>	12.30	9.312	10.13	1
<i>Cag</i>	0.296	0.310	0.307	2 <sup>nd</sup>
<i>Roa</i>	-0.0288	0.145	0.106	5 <sup>th</sup>
<i>Dy</i>	-38.16	-39.93	-38.57	6 <sup>th</sup>
<i>Per</i>	0.0511	0.0414	0.0436	4 <sup>th</sup>
<i>Lrfsf</i>	3.643	5.322	4.837	3 <sup>rd</sup>

Source: Derived from Table 2 by authors.

**Table 3-5.3: Pairwise Correlation Matrix (34 Stocks)**

	<b>Eps</b>	<b>Cag</b>	<b>Roa</b>	<b>Dy</b>
<b>Eps</b>	1.0000			
<b>Cag</b>	-0.0106	1.0000		
<b>Roa</b>	0.0058	-0.0041	1.0000	
<b>Dy</b>	-0.0122	-0.0219	-0.0250	1.00
<b>Per</b>	0.0259	0.4502	0.0048	-0.0
<b>Lrfsf</b>	0.1253	-0.04011	-0.0458	-0.2

Source: Computed by the researcher using STATA 13.1

**Table 3-5.4: Variance Inflation Factor (34 Stocks)**

Variable	<b>VIF</b>	<b>1/VIF</b>
<b>Cag</b>	1.26	0.7931
<b>Per</b>	1.26	0.7935
<b>Lrfsf</b>	1.12	0.8937
<b>Dy</b>	1.08	0.9258
<b>Eps</b>	1.03	0.9686
<b>Roa</b>	1.00	0.9956

Source: Computed by the researcher using STATA 13.1

### ***Interpretation and Discussions of Results***

The study progressed from Descriptive Statistics, Ordinary Least Square to Pooled Ordinary Least Square to show the proliferation of the regression coefficients across various paths. This is inevitable to examine the time series properties of the panel data obtained from 34 companies consisting of 784 observations and 23 on the average of the sampled companies. To address the consequences of heterogeneity related problems, the full disturbance  $\varepsilon_{it}$  is presumed auto correlated because it contains Fixed Effects (FE), and the estimators are designed in such a way to discard the errors, (Olusanya, Salisu & Olofin; 2016). The Fixed Effect model for autocorrelation was applied to the differenced residuals in order to purge the unobserved and perfectly auto correlated idiosyncratic errors. These results are reported in the lower portion of Table 4.4.1 and Table 4.4.2. The AR (1) and AR (2) are significant at 5%. This implies that the model is useful in ascertaining the validity of the estimates.

The test rule according to Olusanya, Salisu and Olofin (2016) suggests that AR(1) and AR(2) are to be statistically significant, whereas, it is important for AR(1) to be significant, it is not pertinent for AR(2) to be significant. Therefore, the null hypothesis, that is  $cov(\Delta v_{it}, \Delta v_{it-k}) = 0$  for  $k = 1, 2$  and  $3$  is not accepted at a level 0.05 if  $p < 0.05$ . In a situation where  $v_{it}$  are not serially correlated, then the null hypothesis of no serial correlation is rejected at order 1 but not at higher orders. This represents the evidence reported in Table 3-4.1. This suggests that there is no evidence of serial correction at 1 percent level of significance. Given the significance of AR(1) and AR(2) at 1 percent, the estimates can be regarded as consistent, efficient and reliable, (Hansen; 1982, Chamberlain; 1987 and Davidson & MacKinnon; 1993, Olusanya, Salisu & Olofin; 2016).

The analyses of 34 stocks consisting of 784 observations and 23 companies on the average were carried out with Pooled Ordinary Least Square to measure the Fixed Effects and Random Effects between the explained and explanatory variables. This is to determine whether the unobserved effects of individual companies are correlated with outputs of the model on the average. The Fixed Effect and Random Effect allowed the study to control the behaviour of variables that change over time in the model and also, reduce the consequences of variables such as government policies, international agreements and exchange rate among other variables, which did not vary in similar patters across the entities. The results from the Pooled OLS produced F-value of 45.57 with the p-value of 0.000, which is significant at all levels, this portends that the model is a good fit and it shows the overall linear relationship between the explained and the explanatory variables. The Hausman test of 39.78 with the p-value of 0.000 is significant at 5% level. Thus, the study fails to accept the null hypothesis (Random Effect) and accept the alternate hypothesis (Fixed Effect). This portends that the explanatory variables of the Fixed Effect, *cag* (10.13), *Roa* ( 0.106), *Dy* (-38.57), *per* (0.004) and *Lrfsf* (4.83) significantly affect the explained variable (*asmp*). Notice that the capital gains made by the investors in the Nigerian stock market during the period of investigation is 2.097 times of the minimum returns (*Lrfsf*), that is the opportunity cost forgone by investing the shareholders' funds on short term Treasury bill. This suggests that investment in stocks, a long term investment vehicle produced better returns than investment in the short term Treasury bill. The Pooled OLS results show that only *Dy* shows inverse relationship with the explained variable. This in tandem with most empirical studies and it is understandable because not all entities during the period of investigation paid dividends, besides some investors preferred higher capital gains to dividend payments, (Barrow & Naka, 1994; Josphat & Daniel, 2012; Muhammed, 2010; Sanjeet, 2011; Srinivasan, 2012).

In other words, if the amounts to be used to pay dividend is retained, it translates to higher capital appreciation in the future. The study reported the order of importance of the Fixed Effect (FE) parameters in Table 4-5.2. From the table, Earnings Per Share (*Eps*) ranked first suggesting that a company with higher *Eps* should be preferred to a firm with lower *Eps*, more should be preferred to less. Similarly, capital gain (*cag*) ranked second and Price Earnings Ratio (*per*) ranked fourth. Thus, to make a choice of



stock investment in the Nigerian stock market, stocks with high *Eps* and *cag* should be preferred to stocks with lower *Eps* and *cag*.

## Conclusion

Many financial analysts have described the dynamics of stock market prices of various economies across the world. Most analysts have deployed macroeconomics variables among which are exchange rate, Treasury bill rate, Gross Domestic Product, All Share Index and interest rate to explain the behaviour of stock prices in the stock market. In many countries the behaviour of stock prices have also been recognized using financial variables, however, the relationship has been mixed reaction among these financial variables. From the analyses conducted in this study, except for the coefficient of Dividend Per Share (Fixed Effect) which has a significant inverse relationship as reported in Table 4-5.2 (Order of Coefficients) which was supported by the empirical evidence of Srinivasan (2012), the Fixed Effect coefficients of other explanatory are positively significant in tandem with the a priori and theoretical expectations. Besides, the study recognized the speed of responses of the explanatory variable, the *eps* and *cag* are ranked to be better coefficients than other coefficients (*Roa, Dy, Per*) suggesting *eps* and *cag* could be engaged to choose winnable and return driven stocks in the Nigerian stock market.

## Recommendations

### It is therefore recommend as follows:

- a. The individual investor needs to evaluate financial variables reported in the annual reports before selecting stock preferences in his bundles of investment portfolio in the capital market and if need be, seek the opinion of financial experts in selecting stocks to buy and when to sell in the capital market.
- b. Potential investors should deploy and rely more on Earnings Per Share (*Eps*) and Capital gain (*cag*) in selecting winnable driven stocks in the Nigerian Capital Market.
- c. The individual investor as well as institutional investors should spread their stocks across securities that produce better returns using *Eps* and *cag* as measuring barometers.
- d. Potential investors engaging in speculative purchase in the capital market should endeavour to deploy *Eps* and *cag* to select securities in the Stock Market.
- e. Also, investors in the capital market should not hold onto stocks indefinitely, once the prices of stocks are reasonably greater than the buying prices; they should be traded to obtain capital profits and buy the other good stocks with lower prices and higher earnings and likelihood of capital gains.

## References

- Adam, A. M. & Tweneboah, G. (2008). Do macroeconomic variables play any role in the stock market movement in Ghana?, MPRA paper no, 9368, Retrieved on 21 April, 2018 from <http://econpapers.repec.org/paper/pramprapa/9301.htm>
- Ailemen, Ikpefan O., Akhanolu, I. A. and Chibuzor, O. T. (2016). Deregulation of Foreign Exchange Market and its Effect on Industrial Produce in Nigeria, *Asian Journal of Information Technology* 15(13),pp.2101-2107.
- Aisyah, A, Noor, Z. M. & Fauziah, H. T. (2009). Macroeconomic Determinants of Malaysian Stock Market, *African Journal of Business Management*, 3(3) pp. 095-106, Retrieved on 21 April, 2018 from [http://academicjournals.org/article/article1380530324\\_Rahman%20et%20al.pdf](http://academicjournals.org/article/article1380530324_Rahman%20et%20al.pdf)

- Akinsulire, Oye (2010). *Financial Management*, Ceemol Nigeria Limited, Lagos
- Arshad, H. and Tariq, J. M. (2009). An empirical investigation of the causal relationship among monetary variables and equity returns, *The Labore Journal of Economics*, JEL E31, G12, 1491), pp. 115-137, Retrieved on 21 April, 2018 from <https://ideas.repec.org/a/lje/journal/v14y2009i1p115-137.htm>
- Ball, R. & Brown, P. (1968). An empirical evaluation of accounting income numbers, *Journal of Accounting Research*, 6, 159-177. <http://dx.doi.org/10.2307/2490232>
- Barrows, C. W. & Naka, A. (1994). Use of macroeconomic variables to selected hospitality stock returns in the US, *Int. J. Hosp. Mgt.*, 13, 119-128. Retrieve on 25th May 2018 from <http://www.sciencedirect.com/science/article/pii/0278431994900337>
- Booth, J. R. & Booth, L. C. (1997). Economic factors, monetary policy and expected return on stock and bonds, *Economic Review*, Fed Reserve Bank, San Francisco, 2, 32-42 Retrieved 18th March 2018 from [http://econpapers.repec.org/article/fipfedfer/y\\_3a1997\\_3ap\\_3a32-42\\_3an\\_3a2.htm](http://econpapers.repec.org/article/fipfedfer/y_3a1997_3ap_3a32-42_3an_3a2.htm)
- Chamberlain, G. (1987). Asymptotic Efficiency with Conditional Moment Restrictions, *Journal of Econometrics*, 34(3), 305-334.
- Chandra, P. (1981). *Valuation of Equity Shares in India*, Sultan Chand and Sons, New Delhi, India.
- Chen, M. H. (2003). Risk and return: CAPM and CCAPM, *Quarterly Review Economics Finance*, 43, 369-393. retrieve from <http://www.sciencedirect.com/science/article/pii/S1062976902001254>
- Chen, S. J., Roll, F. & Ross, S. A. (1986). Economic forces and stock market, *Journal of Business*, 59(3), 505-523, Retrieved on 21 April, 2018 from [http://www.jstor.org/stable/2352710?seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org/stable/2352710?seq=1#page_scan_tab_contents) <http://dx.doi.org/10.1086/296344>
- Chenny, Y. W. and Ng, L. K. (1998). International evidence on the stock market and aggregate economic activity, *Journal International Finance*, 5, pp. 281-296, Retrieved on 21 April, 2018 from [http://people.ucsc.edu/~cheung/pubs/EquityEconFunda\\_JEF98.pdf](http://people.ucsc.edu/~cheung/pubs/EquityEconFunda_JEF98.pdf) <http://dx.doi.org/10.1086/296344>
- Collins, D. & Kothari, S. P. (1999). An analysis of cross sectional and inter temporal Determinants of earnings response coefficients, *Journal of Accounting and Economics*, 11(2-3), 143-181, Retrieved on 21 April, 2018 from <http://www.sciencedirect.com/science/article/>
- Davidson, Russell & MacKinnon, James, G. (1993). *Estimation and Inference in Econometrics*, Oxford University Press, New York, pp.15-50.
- Erdogan, E. and Ozlale, U. (2005). Effect of macroeconomic dynamics on stock return: The case of the Turkish stock of exchange market, *Journal of Economic Cooperation*, 26(2), 69 - 90, Retrieved on 21 April, 2018 [http://www.sesric.org/jecd\\_articles/ART0501010\\_2.pdf](http://www.sesric.org/jecd_articles/ART0501010_2.pdf).
- Fadiran, T.P. & Olowookere, A.E. (2016). Determinants of Share Price on the Nigerian Stock Exchange, *International Journal of Business and Applied Social Science*, 2(7), pp. 49-60.
- Fama, E. F. (1965). Random walks in stock market prices, *Selected Paper no 16*, retrieved on 29 April, 2018, from <https://www.chicagobooth.edu/~media/34F68FFD9CC04EF1A76901>
- Gordon, M. J. (1959). Dividends, Earnings and Stock Price, *Review of Economics and Statistics*, 41: 99-105. Retrieve on 15<sup>th</sup> January, 2018 from <http://www.jstor.org/stable/1927792?>

Hansen, L. P. (1982). Large Sample Properties of Generalized Method of Moments Estimator, *Econometrica*, 50(4), 1029-1054.

Hartono, J. (2004). The regency effect of accounting information, *Gadjah Mada International Journal of Business*, 6(1), 85-116, Retrieved on 21 February, 2018 from <http://jurnal.ugm.ac.id/gamaijb/article/view/5536>

Hirschey, M. & Nofsinger, J. (2008). Investments Analysis and Behaviour, McGraw-Hill Irwin, New York, United States, pp. 89-389.

<http://dx.doi.org/10.1016/S1062->

Ibrahim, F. W., & Aziz, H. (2003). Macroeconomic variables and the Malaysian equity market: A view through rolling subsamples, *Journal Economics Studies*, 30(1), 6-27. <http://dx.doi.org/10.1108/01443580310455241>

Irfan, C. M. & Nishat, M. (2012). Key fundamental factors and long run price changes in an emerging market: A case study of Karachi stock exchange (KSE), *The Pakistan Development Review*, 41(4), 517-533, Retrieved on 20 April, 2018 from <http://www.researchgate.net/publication/24046327>

Isibor, A., Ojo, J., Ikpefan, O. A (2018). Does financial deregulation spurs economic development in Nigeria? *Journal of Applied Economics Sciences* 12(8), pp.2339- 2350.

Isibor, A.A., Ikpefan, O.A., Okafor, T.C., Ojeka, S.(2016). Impact of money market on the liquidity of some selected quoted banks in Nigeria, *International Business Management* 10(5), pp 646-65.

Josphat, K., K & Daniel, K. T. (2012). Macroeconomic determinants of stock-market development in emerging markets: Evidence from Kenya, *Research Journal of Finance and Accounting*, iiste, 395), pp. 57-68, Retrieved on 23rd June, 2018 from [www.iiste.org/Journals/index.php/RJFA/article/download/2124/2105](http://www.iiste.org/Journals/index.php/RJFA/article/download/2124/2105)

Kiran, C. & Chalam, G. V. (2015). Equity share price determinants-an empirical analysis on steel companies in India, *India Journal of Applied Research*, 5(1),79-83. Retrieved on 21 April, 2018 from [http://www.worldwidejournals.com/ijar/file.php?val=January\\_2015\\_ \\_\\_21.pdf](http://www.worldwidejournals.com/ijar/file.php?val=January_2015_ __21.pdf)

Kwon, C. S. and Shin, T. S. (1999). Co-integration and causality between macroeconomic variables and stock market returns, *Global Finance Journal*, 10(1), 71-81, Retrieved on 21 April, 2018 from <http://www.sciencedirect.com/science/article/pii/S104402839900006X>, [http://dx.doi.org/10.1016/S1044-0283\(99\)00006-X](http://dx.doi.org/10.1016/S1044-0283(99)00006-X)

Maghayereh, A. (2003). Causal relations among stock prices and macroeconomic variables in the small open economy of Jordan, *Economics and Administration*,17(2), 3-12, Retrieved on 21 April, 2018 from <http://www.kau.edu.sa/files/302/Researches>.

Maku, E. O. & Atanda, A. A. (2009). Does macro-economic indicators exert shock on the Nigerian capital market?, Paper no. 17917, *Munick Publication University of Denmark*, Retrieved on 21 April, 2018 from <https://mpira.ub.uni-muenchen.de/17917/>

Malhotra, V. J. (1987). Determinants of market price of a-group and b-group shares, The ICFAI, *Journal of Applied Finance*, 7(3), 45-53.

Markowitz, Harry (1952). Portfolio selection, *Journal of Finance*, 7(1), 77-91. <http://dx.doi.org/10.1111/j.1540-6261.1952.tb01525.x>, <http://dx.doi.org/10.2307/2975974>

- Maysami, R. & Koh, T. S. (2000). A vector error correction model of Singapore stock market, *Int, Review of Economics Finance*, 9:79-96. [http://dx.doi.org/10.1016/S1059-0560\(99\)00042-8](http://dx.doi.org/10.1016/S1059-0560(99)00042-8)
- Modigliani, F. & and Miller, M. (1961). Dividend policy, growth and valuation of shares, *Journal of Business*, 411-433. <http://dx.doi.org/10.1086/294442>
- Mohammed, A. A. (2014). Determinants of equity share prices of the listed banks in Amman stock exchange: Quantitative Approach, *International Journal of Business and Social sciences*,5(1),pp.91-104, [http://ijbssnet.com/journals/Vol\\_5\\_No\\_1\\_January\\_2014/12](http://ijbssnet.com/journals/Vol_5_No_1_January_2014/12). Pdf.
- Muhammed, U. J. (2010). Determinants of equity prices in the stock market, *A Research Journal of Commerce, Economic and Social Sciences*, 4(1), pp. 98-114.
- Mukherjee, T. K. & Naka, A. (1995). Dynamic relation between macroeconomic variables and Japanese stock market, An application of vector error correction model, *Journal of Finance*, 18, 223-237. <http://dx.doi.org/10.1111/j.1475-6803.1995.tb00563.x>
- Naik, K. P. & Padhi, P. (2012). The impact of macroeconomic fundamentals on stock market prices revisited, evidence from Indian data, *Eurasian Journal of Business and Economics*, 5(10), 25-44. Retrieve on 31 May 2018 from <http://www.ejbe.org/EJBE2012Vol05No10p25NAIK-PADHI.pdf>
- Nwidobie, B. M. (2014). The random walk theory: An empirical test in the Nigerian capital market, *Asian Economic and Financial Review*, 4(12). 1840-1848, Retrieved on 21 April, 2018 from [www.aessweb.com/pdf-files/aefr-2014-4\(12\)-1840-1848.pdf](http://www.aessweb.com/pdf-files/aefr-2014-4(12)-1840-1848.pdf)
- Ohlson, J. A. (1995). Earnings, book value and dividends in equity valuation, *Contemporary Accounting Research (Spring)*, 661-687, Retrieved on 21 April, 2018 from <http://users.metu.edu.tr/mugan/Ohlson%201995%20earnings%20bv%20div%20in%20eq%20valuation.pdf>
- Ojo, A. T. (2010). *The Nigerian Maladapted Financial System: Reforming Tasks and Development Dilemma*, The CIBN Press Limited, Lagos.
- Oladejii, T. F., Ikpefan, O. A. and Alege, P. O. (2018). Stock Market Volatility and Non-Macroeconomic Factors: A Vector Error Correction Approach, *Journal of Applied Economics Sciences*, 13(2), pp.303-315.
- Olowe, A. (2008). *Financial Management, Concepts, Financial System and Business Finance*, Brierly Jones Nigeria Limited, Lagos.
- Olowe, A. (2008). *Financial Management, Concepts, Financial System and Business Finance*, Lagos: Brierly Jones Nigeria Limited, 204-246.
- Olusanya, E. O., Salisu, A.A. & Olofin, S.O. (2016). *Applied Panel Data Analysis*, Ibadan University Press, pp. 1-121.
- Omolehinwa, A. (2006). *Work Out Strategic Financial Management, (Notes, Worked Examples and Cases)*, Cleo International, Lagos.
- Osisanwo, B. G., & Atanda, A. A. (2012). Determinants of stock market returns in Nigeria: Time series analysis, *African Journal of Scientific Research*, 19 (1), Retrieved on 21 April, 2018 from [http://www.journalsbank.com/ajsr\\_9\\_3.pdf](http://www.journalsbank.com/ajsr_9_3.pdf)

- Otuteye, E. & Siddiquee, M. (2015a). Avoiding Financially Distressed Companies Using a Value Investing Heuristic, *Journal of Investing*, 24 (3), 73-99
- Otuteye, E. & Siddiquee, M. (2015b). Overcoming Cognitive Biases: A Heuristic for Making Value Investing Decisions, *Journal of Finance*, 16(2), 140-149.
- Pandey, I. M. (2007). *Financial Management*, ninth edition, Vikas Publishing House PVT limited, New Delhi.
- Pooja, S. (2014). India stock market and macroeconomic factors in current scenario, *International Journal of Research in Business Management*, 2, 1-12, Retrieved on 21 April, 2018, [www.impactjournals.us/download.php?..Indian%20Stock%20Market%20](http://www.impactjournals.us/download.php?..Indian%20Stock%20Market%20).
- Pushpa, B. & Sumangala, J. K. (2012). Impact of earnings per share on market value of an equity share: An empirical studies in Indian capital market, *Journal of Finance, accounting and Management*, 3(2), 1-14.
- Ray, S. (2013). Towards Examining the Relationship between Industrial Production and Stock Prices in India, *United States of America Research Journal (USARJ)*, 1 (3), 36-45, Retrieved on 23 April, 2015 from <http://usarj.org/article/viewfile/19/32>
- Rose, S. A. (1976). Arbitrage theory of capital pricing, *Journal of Economics Theory*, 13(3), 341-360. [http://dx.doi.org/10.1016/0022-0531\(76\)90046-6](http://dx.doi.org/10.1016/0022-0531(76)90046-6)
- Sanjeet, S. (2011). Determinant of equity share prices India, *Journal of Arts, Science and Commerce*, 2, 2231 – 4172. Retrieve on 14th March 2015 from [http://www.researchersworld.com/vol2/issue4/Paper\\_6.pdf](http://www.researchersworld.com/vol2/issue4/Paper_6.pdf)
- Schwert, G. W. (1989). *Why Does Stock Market Volatility Change Over Time?*, *Journal Finance*, 44(5), 1115-1153. <http://dx.doi.org/10.1111/j.1540-6261.1989.tb02647.x>
- Sen, S. & Singh, B. (2006). Determinants of equity share prices in India, *The ICFAI Journal of Applied Finance*, 9(7), 35-40, Retrieved on 21 April, 2018 from [www.iiste.org/Journals/index.php/RJFA](http://www.iiste.org/Journals/index.php/RJFA)
- Sharpe, William F. (1964). Capital asset prices: a theory of market equilibrium under Condition of Risk, *Journal of Finance*, 19(3), 425 – 442, Retrieved on 21 April, 2018 from <http://www.jstor.org/stable/2977928>
- Singh, A. (1995). Equity price Behaviour in India Corporate Sector, PhD thesis Guru Nanak Dev. University, Amristar, retrieved on 20 April, 2018.
- Sireesha, B. P. (2013). Effect of Select Macroeconomic Factor and Stock Returns in India, *International Journal of Marketing, Financial Services and Management Research*, 2(6), 197-209, Retrieved on 2 May, 2015 from <http://indianresearchjournals.com/pdf/IJMFSMR>
- Srinivasan, P. (2012). Determinants of equity share prices in India: A panel data approach, *The Romania Economic Review*, XV(46) 205 - 228, Retrieved on 21 April, 2018 from [www.rejournal.eu/sites/rejournal.versatech.ro/files/.../srinivasan.pdf](http://www.rejournal.eu/sites/rejournal.versatech.ro/files/.../srinivasan.pdf)
- Talla, M. A. (2015). The determinants of stock prices in the Kuwait stock exchange: An extreme bond analysis, *Investment Management and Financial Innovations*, 3(2005) 16 - 24, [http://businessperspectives.org/journals\\_free/imfi/2005/imfi\\_en\\_2005\\_03\\_AI-Deehani.pdf](http://businessperspectives.org/journals_free/imfi/2005/imfi_en_2005_03_AI-Deehani.pdf) Retrieved on 21 April, 2018

Tsoukalas, D. & Sil, S. (1999). The determinants of stock prices: Evidence from the United Kingdom stock market, *Management Research News*, 22(5), 1-14, Retrieved on 21 April, 2018 from <http://www.emeraldinsight.com> <http://dx.doi.org/10.1108/01409179910781652>

Yartey, A. C. (2008). The determinants of stock market development in emerging economies: is South Africa different, *International Monetary Fund, Working paper*, WP/08/32, <https://www.imf.org/external/pubs/ft/wp/2008/wp0832.pdf>

Zahir, M. A. and Khanna, Y. (1982). Determinants of Stock Prices in India, *The Chartered Accountants*, 30(8), pp. 521-523.

## **The Role of Energy Efficiency Standards in Achieving Sustainable Economic Development**

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### **Abstract**

In modern conditions of development the energy observation plays the key role because it is the complex technical-economical inspection of organization which is being made to receive authentic information on volume of energy resources used to identify the structure and effectiveness of energy expenses of organization, to detect the possibilities of energy-saving and increase of energy effectiveness. In this article the authors discuss about role of standardization of energy efficiency. The creation of a sustainable model for the development of Kazakhstan's economy is impossible without addressing the issues of improving energy efficiency and energy conservation.

**Keywords:** energy efficiency, energy audit, energy savings, environmental management.

### **Introduction**

At the present stage, there is an objective understanding in world practice of the fact that the sustainability of any economy should be based to a large extent on the implementation of the principles of a "green" economy, which determines the fact that there is a close relationship and a causal relationship between the indicators of environmental degradation and economic indicators. Experts in the field of sustainable development emphasize that it is the growth of energy efficiency that can become the central factor in the formation of an economy based on green technologies. This understanding of the relationship between the importances of energy efficiency growth for green economy development is enshrined in the concept papers of the UN Rio + 20 Conference.

The transition to a green economy has become central to Rio de Janeiro in 2012. Increasingly, they talk about "green" innovations, which mean new technologies with minimal impact on the environment (renewable energy sources, electric transport, biofuel, etc.).

On September 25, 2015, 170 leaders from around the world at the 70th session of the UN General Assembly in New York adopted the Agenda until 2030, whose mission is to end poverty, protect the planet and ensure prosperity for all. The new agenda includes 17 sustainable development goals (LRCs) and 167 tasks. The need to solve environmental problems is reflected in 5 goals out of 17, which confirms the high relevance of green technologies for sustainable development and it is the growing energy efficiency of the economy that contributes to a harmonious and gradual transition to a green economy.

There are many studies worldwide identifying a wide variety of sector-specific and cross-cutting energy efficiency improvement opportunities for industry. Significant numbers of energy efficiency measures is discussed in various studies (Bishop (2015), Bobylev (2012), Bugrov et al. (2016), Klevnäs (2015), IEA (2014), BP and WorlBank statistics, Tleppayev et al. (2016)).

Energy efficiency increases the return of "services" received from each unit of energy. This is especially important given that energy demand usually grows with population growth, development

and income growth. Unlike measures to expand energy supply, however, for example, the construction of a new power plant, energy efficiency may seem abstract and intangible, with success measured in not consumed energy or costs. Thus, it is called "hidden fuel".

Maximizing output per unit of energy increases GDP and can provide other macroeconomic benefits, including job growth, improved trade balance, lower energy prices and increased security of supply. However, it is worth remembering that not all energy efficiency measures are "cost-effective".

Investments should be economically rational, taking into account the opportunity costs and underlying constant and current costs. Nevertheless, studies for the International Energy Agency (IEA) World Energy Outlook show that the introduction of energy-efficient technologies will have a positive economic effect globally up to 2035 in 18 trillion US \$. Energy efficiency increases output because it frees up resources for other, more productive investments, so the IEA estimates that measures to improve the efficiency of economies have a multiplier effect of 2.5 times the cost of energy conservation.

Energy efficiency indicators are usually more labor-intensive than equivalent investments in extractive industries, and create three times more jobs per million dollars of investment. A more energy-efficient economy is also less prone to price and supply shocks and can help lower energy prices. Over the past 25 years, energy markets have changed markedly, becoming globalized and highly volatile, with large, frequent and unpredictable price shocks. While a significant fall in oil prices in early 2015 has provided positive assistance to consumers, long-term price uncertainties persist, and price volatility can have negative economic consequences.

It should also be noted that a more energy-efficient economy can help lower and stabilize prices. In the New Policy of the IEA, which is generally the current start-up for the development of the world market, it is expected that demand for primary energy in 2040 will be 9% lower than in normal mode due to increased energy efficiency. In a more optimistic scenario, it is assumed that the demand for energy will be 15% lower.

As the world practice shows, the increase of only one indicator, namely energy efficiency by sectors of the economy, can largely solve not only internal constraints and development problems, but also mitigate global influence. This fact determines that significant attention has been paid to energy efficiency issues in Kazakhstan.

Thus, the creation of a sustainable model for the development of Kazakhstan's economy is impossible without addressing the issues of improving energy efficiency and energy conservation. The government of the country proceeds from the understanding that a policy of efficient and rational energy consumption should lead to a curbing of growth in their consumption and a significant reduction in the level of environmental impact. Activities in this direction should be based on the processes of development of industry, energy, transport and housing and communal sectors. Already, the economy faces an ambitious task to reduce energy intensity of GDP by at least 40% by 2020.

## **Results**

According experts of the Energy Charter and Association KAZENERGY, we prepared following recommendations for improving energy efficiency in the main energy-consuming sectors of Kazakhstan's economy.

In the energy sector, it is recommended:

- Development of experience in attracting investments in the modernization of obsolete infrastructure in the sectors of production, transmission and distribution of electricity in order to minimize losses.
- Amendments to the legislation in terms of providing reliability and quality of electricity supply, providing for increasing the degree of responsibility for non-compliance with the requirements for the



quality of electricity, both for electricity producing and electric grid companies, and for large electricity consumers. It is also recommended to study the issues of certification of electricity.

- Development and adoption of a state program for the modernization and development of electric grid companies with the definition of required investments and their sources, taking into account the main tasks of the industry: reducing losses, improving the reliability and quality of electricity supply, setting requirements for REC owners by the terms of their achievement, rates.

- Consideration of the possibility of introducing mechanisms for paying for reactive power by large consumers of electricity and giving preferences to electric grid companies to reduce losses, to stimulate measures to compensate for reactive power, and to reduce power losses in electric networks.

- Development of incentive mechanisms for energy saving by introducing changes in the rules and procedure for the formation of tariffs.

At the current stage, most of the proposed initiatives have already been reflected in the program documents, and some are already being implemented in real life.

In the industrial sector, it is recommended:

- Strengthening of state control and organization of monitoring of implementation of energy saving plans, compiled on the basis of the results of energy audits.

- Promotion of compliance with ISO50001 - Energy management by large industrial enterprises.

- Revise or abolish the approved energy consumption norms, due to their inapplicability to some industrial enterprises.

- Revision of existing standards for industrial equipment in order to promote the application of the best technological solutions in the field of energy efficiency, including modernization and construction of new industrial facilities.

- Development and implementation of various mechanisms of state incentives (voluntary programs, subsidies, soft loans, tax incentives) for industrial enterprises in order to support energy saving and energy efficiency measures.

- Training and retraining of personnel on the basis of the departments of profile institutes and universities in the field of energy saving and energy efficiency, conducting professional trainings, as well as programs on qualification and retraining.

In the housing and communal services sector (including lighting) it is recommended:

- Toughening energy efficiency requirements for new and existing buildings and allocating sufficient resources to monitor compliance with legal requirements, as well as building codes and regulations.

- Strengthening the role of author and technical supervision over the progress of construction of buildings and structures.

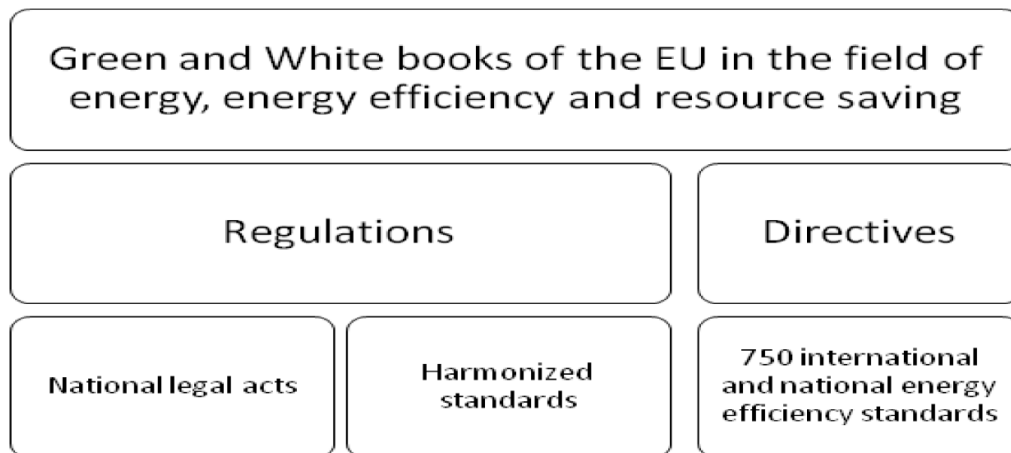
- Implementation of a system of quarterly heat consumption in new buildings to encourage end-users to regulate their level of heat consumption; continued installation of automatic control systems for heat consumption and house heat meters in existing multi-apartment buildings.

- Encouraging regional and local authorities to develop targeted energy efficiency programs to meet audit requirements and to introduce special criteria for energy efficiency in public procurement procedures.

- Development and implementation of financial mechanisms for end-users, stimulating investments in the modernization of existing buildings to increase their energy efficiency.
- In the heat and gas distribution sector, it is necessary to establish long-term tariffs at an economically reasonable level, which provides an investment component for modernization and energy efficiency.
- Strengthening the process of developing and adopting common minimum energy efficiency standards for energy-consuming products within the framework of the Eurasian Economic Union.
- Creation of the necessary conditions to support regional / local authorities in the development and implementation of projects for high-efficiency street / urban lighting; the introduction of incentives in the form of grants or subsidies to facilitate the rapid introduction of energy-efficient street lighting throughout the country.

In accordance with the foregoing, it can be concluded that concrete steps are required to implement real projects in various sectors of the economy to increase energy efficiency and an important tool in this direction is the study and adaptation of both international standards for energy efficiency across the economic sectors and the expansion of the list of national standards. It is standards that are the reference points that should be taken into account when developing and implementing any project.

In this respect, the experience of the European Union in regulating energy efficiency is of interest. So this system has a clear hierarchy and a gradual transition from international standards to national (Figure 1).



**Fig. 1: The experience of the European Union in the standardization of energy efficiency (developed by the author on the basis of Bugrov et al., 2016)**

The result of this consistent and focused work was the adoption of 750 energy efficiency standards by industry, it shows that regulations developed on the basis of the Green and White books of the EU are mandatory and are applied in all countries, and the sections are mandatory in terms of legal results and are regulated reporting. In turn, national standards ensure compliance with the requirements of the directives.

More details should be given to the role of standardization of energy efficiency. So the implementation of these standards allows:

- establish a common terminology and measurements;
- codify best practices and management systems;
- develop a unified system of test, measurement and accounting methods;

- promote best practices in the field of energy efficiency management;
- to harmonize the processes of the general energy saving policy;
- Reduce technical barriers to trade related to energy policy;
- create a unified world space for energy-efficient technologies.

The above advantages from the introduction of standards in the economy have certain prerequisites. Thus, over the past 25 years, the global energy system has undergone unprecedented expansion, and since 1990, energy demand has increased by almost 60% to increase savings that more than doubled in size. Efficiency is an important component of any strategy for providing affordable energy, with an abundance of opportunities to reduce demand and improve the use of energy resources at a lower price than equivalent supply options. By increasing energy efficiency, countries are reducing the need to create a new energy production infrastructure. And, reducing the demand for energy, which often comes from fossil fuels, efficiency plays a key role in suppressing GHG emissions. Countries at all stages of development can win.

Nevertheless, many energy efficiency opportunities are not involved, even if they lead to savings, due to uncoordinated incentives and other market failures. Carbon pricing and the phasing out of fossil fuel subsidies are key elements of any policy framework for energy efficiency, since they provide the right political signal to encourage effective energy use. But a number of non-price barriers, such as efforts needed to change ("hassle"), lack of information and lack of advance finance, can make carbon price pricing more difficult if it is used alone. This is what makes standards such valuable policy tools: within a broader policy package, they can help overcome both internal and external barriers.

Most standards are set at the national level, but it is very important to develop and international cooperation to harmonize and improve energy efficiency standards globally can greatly increase benefits. Convergence on the "global best" standards for home appliances, buildings, industry and transport can expand global markets for efficient technologies, reduce non-tariff barriers to trade and increase market efficiency. This, in addition to the benefits of economic growth, jobs, public budgets, health and competitiveness, resulting from saving energy costs and reducing the use of natural resources.

## **Conclusions**

Based on the above, we can draw conclusions:

1. The growth of energy efficiency of the world economy can become a central factor in the formation of an economy based on green technologies, and therefore consistent with the principles of sustainable development.
2. The increase of only one indicator, namely energy efficiency by sectors of the economy, can largely solve not only internal constraints and development problems, but also mitigate global influence.
3. Creating a sustainable model for the development of the economy of Kazakhstan is impossible without addressing the issues of improving energy efficiency and energy conservation.
4. Standards are valuable policy tools: within a broader policy package, they can help overcome both internal and external barriers to sustainable economic development.

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## References

Bishop, R. (2015) Raising Energy Efficiency Standards to the Global Best. Contributing paper for Seizing the Global Opportunity: Partnerships for Better Growth and a Better Climate. New Climate Economy, London and Washington, DC. [Online], [Retrieved August 1, 2018]. Available at: <http://newclimateeconomy.report/misc/working-papers/>

Bobylev S.N., Zakharov V.M. (2012) 'Green' economy and modernization. Ecological and economic foundations of sustainable development,' *Bulletin Towards a sustainable development of Russia*, 60, 4-8.

BP Statistical Review of World Energy (2015). London. [Online], [Retrieved August 1, 2018]. Available at: <http://www.bp.com/statisticalreview>

Bugrov S.A, Sevostyanov A.A, Mamonov A.M. (2016) 'On the need to develop regional legislation in the field of standards and marking the energy efficiency of power-consuming building equipment,' *Journal Naukovedenie*, Volume 8, 2. [Online], [Retrieved August 1, 2018]. Available at: <http://naukovedenie.ru/PDF/02EVN216.pdf>. Ver. from the screen. Yaz. rus., Eng. DOI: 10.15862 / 02EVN216

Capturing the Multiple Benefits of Energy Efficiency (2014). International Energy Agency, Paris. [Online], [Retrieved August 5, 2018]. Available at: [http://www.iea.org/bookshop / 475-Capturing\\_the\\_Multiple\\_Benefits\\_of\\_Energy\\_Efficiency](http://www.iea.org/bookshop/475-Capturing_the_Multiple_Benefits_of_Energy_Efficiency)

Klevnäs, P., Stern, N., and Frejova, J. (2015) 'Oil Prices and the New Climate Economy'. Global Commission on the Economy and Climate, Briefing paper. [Online], [Retrieved August 10, 2018]. Available at: <http://newclimateeconomy.report/misc/working-papers>

Review of the state policy of the Republic of Kazakhstan in the field of energy conservation and energy efficiency (2014). Energy Charter Secretariat, Brussels, Belgium.

Tleppayev, A., Zeinolla S., Tovma, N. (2016), 'Construction of Kazakhstan's system of energy efficiency indicators for the development of industrial competitiveness' Proceedings of the 28th International Business Information Management Association (IBIMA), ISBN: 978-0-9860419-5-2, 11-12 November 2016, Seville, Spain.

World Development Indicators (2015). Last updated 1 July 2015. [Online], [Retrieved August 1, 2018]. Available at: <http://data.worldbank.org/data-catalog/world-development-indicators>.

## **YouTube: A Medium to Acquire the Academic Knowledge for the Majority of Foreign Students in China**

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### **Abstract**

The majority of foreign students have zero proficiency in the Chinese language prior to coming to China for higher education. Unsurprisingly, they choose English as the study language. Considering the scarcity of lecturers in Chinese universities with high precision in English as a teaching language. International students managing the potential conflicts of communication, acquire the academic knowledge by watching pertinent educational videos on YouTube-EDU. But inaccessibility to YouTube and restriction on using the virtual private network (VPN) in China obstruct them to gain the academic knowledge. This study addresses the communal barriers of language and technology; hindering the academic stay of international students for higher education in China. Time and budget constraints involved in this study, we recruited 5245 international students from 27 Chinese universities as research partakers. Findings of this research study validate the stated argument that due to the language barrier, the majority of foreign students rush to access YouTube-EDU to watch pertinent educational videos. But, inaccessibility to YouTube-EDU, and VPN constraint in China aid difficulties for them to acquire the academic knowledge in their degree program. Although, students firmly believe that studying in China is ideal to excel the learning capability. Yet, educational mavens facilitating the international students to access the YouTube-EDU or to use VPN to access the YouTube-EDU will ease their academic stay in China.

**Keywords:** YouTube, foreign students, language barrier, education, virtual private network

### **Introduction**

Needy students with a dream of overseas education, search for scholarships. Many pursue China as their venue to excel in academics (*African Students Face Challenges in China*, 2013). China's Ministry of education runs a nonprofit organization, namely the China Scholarship Council (CSC). It promotes the funding opportunities for foreign students to study in 274 universities in China (*CSC Scholarships | China Scholarship Council | Chinese government Scholarships*, 2018).

For better academic exposure and international experience, studying in foreign universities is good for pupils (Sumra, 2012). But those who study a degree program in China, face numerous challenges such as the language barrier (*Studying and working in China present challenges - Opinion - Chinadaily.com.cn*,

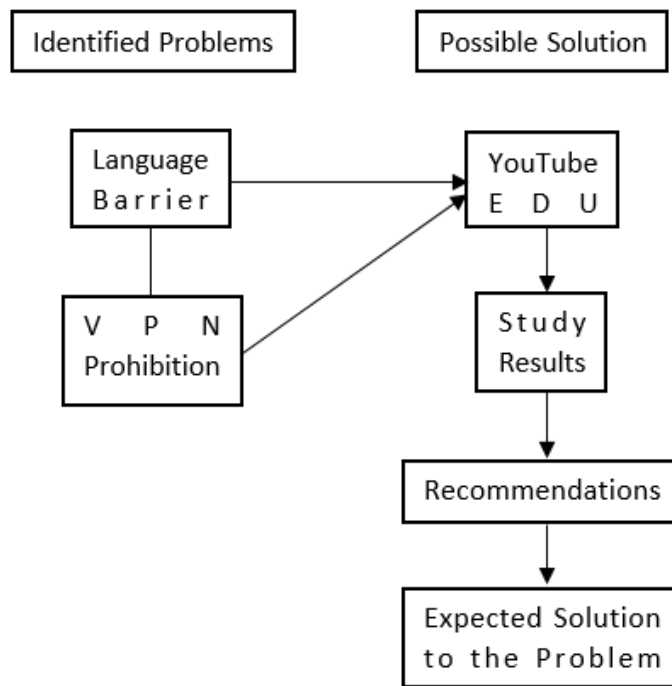
no date). Especially, if English is their study language. Considering the availability of lecturers with high precision in English as the teaching language (*African Students Face Challenges in China*, 2013).

A classroom packed with the international students is of multicultural. In this situation, there is a high chance of conflict occurrences between learners and educators while interacting with each other (H and Zukui, 2010). To avoid such a situation, students often acquire to learn a second language (Yu and Watkins, 2008). But due to time and money constraints, and besides the pressure of submitting the assignments on time. They face hardship in the acquisition of a second language (Wold, 2006). Ergo, the majority of them manage to acquire the academic knowledge from the internet sources (*Pedagogical benefits of video for teaching and learning - The University of Queensland, Australia*, no date; *Effective educational videos | Center for Teaching | Vanderbilt University*, no date; Woolfitt, 2015; Carmichael, Reid and Karpicke, 2017). In particular, they watch pertinent educational videos on YouTube (Buzzetto-More, 2015). Believing, it is an effective method that helps to enhance their learning experience (Chtouki *et al.*, 2012; Woolfitt, 2015).

YouTube is famous for its contribution to society due to the provision of free and easily accessible education (World, Open and Services, no date). Serving in 61 countries around the World (*YouTube a valuable educational tool, not just cat videos*, no date) with six billion-plus hours of video content uploaded every month. Hundreds of millions of people benefit from YouTube by watching pertinent videos for learning purpose. The non-profit channels for online education such as Khan Academy and TED assist millions of students to watch educational videos on YouTube for free. Schools and universities are provided links to these videos for students to watch on demand.

With growing popularity, YouTube created a playlist category “YouTube-EDU”. Partnered with over 300 international universities that facilitates both the educators and learners to upload and watch free lectures (*YouTube a valuable educational tool, not just cat videos*, no date).

YouTube was acquired by the Google incorporation in 2006 (Alhamami, 2013). For various reasons, Google services are banned in China (Wang, 2008). Consequently, the YouTube website (Schwankert, 2007; ‘YouTube blocked in China’, 2009; *These websites are still blocked in China - Business Insider*, no date; *China launches internet crackdown to make it harder for people to avoid its ‘Great Firewall’ | The Independent*, no date; *YouTube blocked in China - CNN.com*, no date). Resulting in inaccessibility to YouTube-EDU for students to acquire the academic knowledge (*School Internet Censorship Impairs a Student’s Ability to Learn – Crimson*, no date; *Entrepreneurs and students stifled under China’s internet controls: Report | ZDNet*, no date). Although, the virtual private networks (VPN) are used to access blocked websites including YouTube (Lai, 2013). But the use of VPN is prohibited in China (*Chinese ban on VPNs and internet control likely to affect its e-commerce sector and scientists- Technology News, Firstpost*, no date; *China blocks VPN access to the Internet*, no date; *China to Block Overseas VPN Services From End of March*, no date; *China moves to block internet VPNs from 2018 | World news | The Guardian*, no date). That creates hitches for the majority of international students to stream the YouTube-EDU and acquire the academic knowledge.



**Fig 1: The study workflow chart**

Fig. 1 indicates the workflow of this study from problem identification to the recommended solution.

### **Purpose of the study**

This study aims to address the common problems faced by the majority of foreign students while studying in China. Such as the language barrier, and stoppages to access the YouTube-EDU including VPN constraint. We evaluate the impact of these barriers on students' academic stay in China. Consequently, we propose the recommendations for concerned stakeholders to take necessary measures in resolving these problems.

### **Literature Review**

The aim of higher education is to enable students to acquire academic knowledge and accomplish their goals (Chtouki *et al.*, 2012). Higher education ripens the personal competencies of students at a maximum level. That motivates and empowers the student to effectively contribute to the creation, progress, and sustainability of the society (*Higher Education in the learning society*, no date).

Students, considering to come to study in China for a degree program face communal barriers of language. Since they have no prior background of Chinese language (*Studying and working in China present challenges - Opinion - Chinadaily.com.cn*, no date). Moreover, considering the availability of lecturers in Chinese universities with high precision in English as teaching language (*African Students Face Challenges in China*, 2013). International students intending to acquire the educational knowledge by watching pertinent videos on YouTube-EDU (Buzzetto-More, 2015). In comparison to the typical class

environment, students like modern electronic methods to acquire the academic knowledge. Such as Web 2.0. In particular, they surf the internet to watch pertinent educational videos on YouTube. As it is suggested in several studies of the healthcare education (Basavanthappa, 2009; Shannon, 2009). They believe, it is an effective method to extract the useful information that enhances their learning experience (Chtouki *et al.*, 2012; Woolfitt, 2015).

With more than one billion global users (*Press - YouTube*, no date), sharing and viewing free videos makes YouTube the handiest and most visited site in Hongkong, China (*Top Sites in Hong Kong - Alexa*, no date). The vast availability of educational videos across various disciplines including social sciences, applied sciences, and natural sciences. Such as agriculture, agricultural operations and related sciences, business, management, marketing and related support services. Communication, journalism and related programs, information technology, education. Forensic science and technology, history, legal studies, library science. Health/medical preparatory programs, visual and performing arts, political science and government. Educational assessment, evaluation, research and statistics, history and philosophy of science and technology (Snelson, 2011). Because of benefiting to the academics and professional researches (Oakleaf, 2009; Welbourne and Grant, 2016), YouTube is a favourite site in China compared to its competitor like Baidu, Tudou, and Youku (Lai, 2013).

YouTube was launched in November 2005 by a few employees of PayPal incorporation. As an online video site for users to upload, download, and watch free videos (*Surprise! There's a third YouTube co-founder - USATODAY.com*, no date). Considering the increasing popularity, the Business Insider Australia termed YouTube as “the World’s most popular online videos site” (*Key Turning Points In History Of YouTube - Business Insider*, no date). Due to an increased growth, and demand for educational videos across a number of disciplines, YouTube drew the attention of educationalists and scholars (Snelson, 2011). De Witt *et al* sightsaw the prospect of YouTube as an educational tool. Saying, “learners remember and understand better when they see, hear and do” (DeWitt *et al.*, 2013). The budding benefits of YouTube make it as an effective medium that assists people to share, view and download the videos for free.

Yet, YouTube is inaccessible in China since 2009 (Schwankert, 2007; ‘YouTube blocked in China’, 2009; *These websites are still blocked in China - Business Insider*, no date; *China launches internet crackdown to make it harder for people to avoid its ‘Great Firewall’ | The Independent*, no date; *YouTube blocked in China - CNN.com*, no date). But, students in HongKong China manage to access YouTube-EDU via using the VPN (Lai, 2013). VPN services allow the transmission of online data (multimedia, numeric, textual etc) of the public networks (non-secure) via using the encrypted tunnels of private (secure) networks (Sobh and Aly, 2011; Gokulakrishnan, 2014). Since due to the inaccessibility of YouTube in mainland China (*Chinese ban on VPNs and internet control likely to affect its e-commerce sector and scientists- Technology News, Firstpost*, no date; *China blocks VPN access to the Internet*, no date; *China to Block Overseas VPN Services From End of March*, no date; *China moves to block internet VPNs from 2018 | World news | The Guardian*, no date), access to academic and scientific knowledge gets difficult for the majority of foreign students (Normile, 2017).

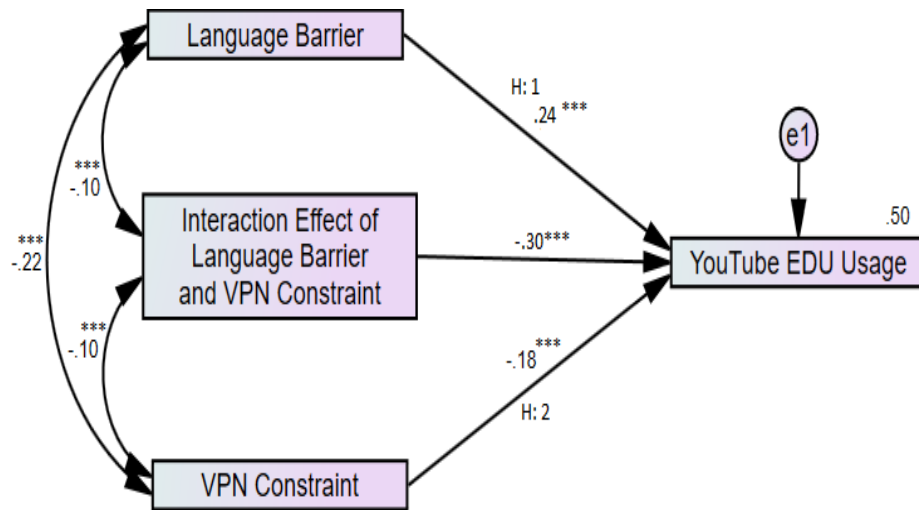
## **The proposition of study hypotheses**

Considering the introduction and literature review sections of this study, we propose these hypotheses.

H: 1 The barrier of Chinese language enforces the majority of foreign students in China to access YouTube-EDU to acquire the academic knowledge

H: 2 VPN constraint causing the inaccessibility to YouTube-EDU, aids difficulties for the majority of foreign students in China to acquire the academic knowledge





**Fig. 2: The study model**

Fig. 2 shows the path coefficients, covariances, and residuals ( $r^2$ ) of the study variables. Indicating the local and global fits of the study model with  $p$ -values  $< 0.005$ .

## Methods

We used a self-designed questionnaire to collect the data from research partakers using a 5-point Likert scale. 1=strongly agree to 5=strongly disagree. A pilot study was conducted to check the reliability of the questionnaire items. Based on the convenient sampling technique, we sent a questionnaire to 6000 foreign students via WeChat (China's social mobile application) groups in 27 Chinese universities. These WeChat groups are created by the teachers and students for the academic purpose to share the information (Zhu and Chhachhar, 2016).

Out of 6000 research partakers, 5501 (92%) responded to our questionnaire. Out of which, we discarded 128 survey forms due to inconsistent feedback was observed from these respondents. In addition, we discarded 92 forms. Because we observed that the respondents incorrectly answered to a question deliberately added to check if they are attentively answering to questionnaire items. Furthermore, we discarded 36 survey forms in which the respondents gave the same ratings to each questionnaire-items that could bring bias in the study results. The exclusion of biased and inattentively filled survey forms eliminated the chance of inaccuracy in the study analysis.

## Statistical software

We used the Statistical Package for Social Sciences (SPSS) and Analysis of Moment (AMOS) v.23 to process the study data. And to find the relationships among study variables, and test the study hypotheses.

**Statistical test**

First, we used the Exploratory Factor Analysis (EFA) to test the adequacy, convergent validity, discriminant validity, and reliability of the study data. We used the initial solution with reproduced correlation matrix, Kaiser-Meyer-Olkin<sup>5</sup> (KMO), and Bartlett’s test of sphericity to measure the sampling adequacy. We used the extraction method with maximum likelihood based on Eigenvalues >1 and convergence at 25 maximum iterations. We used the Promax method for rotation and surpass small coefficient absolute value at .3.

Secondly, we used the Confirmatory Factor Analysis (CFA) to check the validity and reliability measures of the data. Finally, we used AMOS to design the study model and examined the impact and relationships of study variables with path coefficients ( $\beta$ ), covariance, and residuals ( $r^2$ ).

**Results**

In EFA, KMO scores .869 and  $p < .001$  with all commonalities extractions above .3. The study model explains 52% of the variance with 3% non-redundant  $r^2$ . We have all the loadings  $> .5$  as evidence of the convergent validity. As evidence of discriminant validity, we have no substantial cross-loadings. The correlation matrix scores indicate  $< .7$  of all the questionnaire items. The Cronbach’s Alpha indicates robust reliability scores of items with  $> .9$ .

The configure invariance test indicates adequate goodness of fit indexes of the study model. We split the study model into two; a freely estimated model and a constrained model. Then we analyzed a freely estimated model across two groups, i.e., male and female students. This resulted in the comparative fit index (CFI)=.950, root mean square error of approximation (RMSEA)=.340, standardized mean square residual (SRMR)=.0390. Indicating adequate goodness of fit indexes. Finally, we did a matrix invariance test by constraining the two models to be equal which resulted in a chi-square difference with  $p = 0.594$ . Ergo, we claim both models are invariant.

**Table 1: Reliability & validity measures, and the correlations among the variables**

	CR	AVE	MSV	MaxR(H)	VPN Constraint	Language Barrier	Interaction Effect
VPN Constraint	0.852	0.754	0.678	0.859	0.842		
Language Barrier	0.821	0.701	0.500	0.838	0.700	0.800	
Interaction Effect	0.801	0.614	0.422	0.817	-0.627	-0.515	0.601

Note: CR=composite reliability, AVE=average variance extracted, MSV=maximum shared variance, MaxR=maximum reliability

Table 1 shows the convergent validity as evidenced by average variance extracted (AVE) all above .5 (Fornell and Larcker, 1981). A significant difference between the average and maximum shared variance (MSV). Robust composite reliability (CR) all above .7, and the maximum reliability MaxR(H) all above .9 (Raykov, Gabler and Dimitrov, 2016). We have the discriminant validity as based on the square root of AVE being higher than any inter-factor correlation (Fornell and Larcker, 1981).

**Table 2: The goodness of fit measures of the study model**

Measures	$\chi^2$	NFI	NNFI (TLI)	CFI	GFI	SRMR	RMSEA	IFI	PCLOSE
Values	5.589	.901	.919	.950	.917	.0390	.034	.905	.957

Note.  $\chi^2$ =chi-square test; NFI=normed fit index; NNFI=non-normed fit index; TLI=Tucker-Lewis index; CFI = comparative fit index; GFI = goodness of fit index; SRMR= standardized root mean

We did the common method bias test and compared the unconstrained common method factor model to the zero constrained common method factor model. Resulting in a significant chi-square difference ( $\chi^2=201$ ,  $df=6$  and  $p<.001$ ) with shared variance. Thus, we retained the common latent factor (CLF) in the study model. Accordingly, table 2 indicates the goodness of fit indexes as per the standardized cutoff criteria (Hu and Bentler, 1999).

We have no excavated records as evidenced by the Cook’s distance test. Indicating all records are normally distributed within 0.00 to 0.02 range (Manuscript and Magnitude, 2013). We have the variable inflation factors with < 03 values, and the Tolerances with >.1 value. Indicating the normal collinearity statistics of the independent variables (Murray *et al.*, 2012).

**Table 3: Standardized regression weights**

Study variables		Estimate	S.E.	C.R.	P
YouTube EDU Usage	← Language Barrier	.243	.033	19.264	***
YouTube EDU Usage	← VPN Constraint	-.180	.014	-5.319	***
YouTube EDU Usage	← Interaction Effect	-.300	.028	-2.242	***

Note:  $p<.005$

Table 3 shows the standardized regression weights  $\beta$ , standard errors, composite reliability scores, and  $p$ -values. Language barrier ( $\beta=.243$ ,  $p<.001$ ) pushes the majority of foreign students to access the YouTube-EDU. These results support H: 1. VPN constraint ( $\beta=-.180$ ,  $p<.001$ ) causing inaccessibility to YouTube-EDU to acquire the academic knowledge. These results support H: 2. The interaction effects of VPN constraint ( $\beta=-.300$ ,  $p<.001$ ) to access YouTube-EDU. Indicating that VPN constraint dampens the positive relationship between language barrier variable and access to YouTube-EDU variable. That support the narrative of this study.

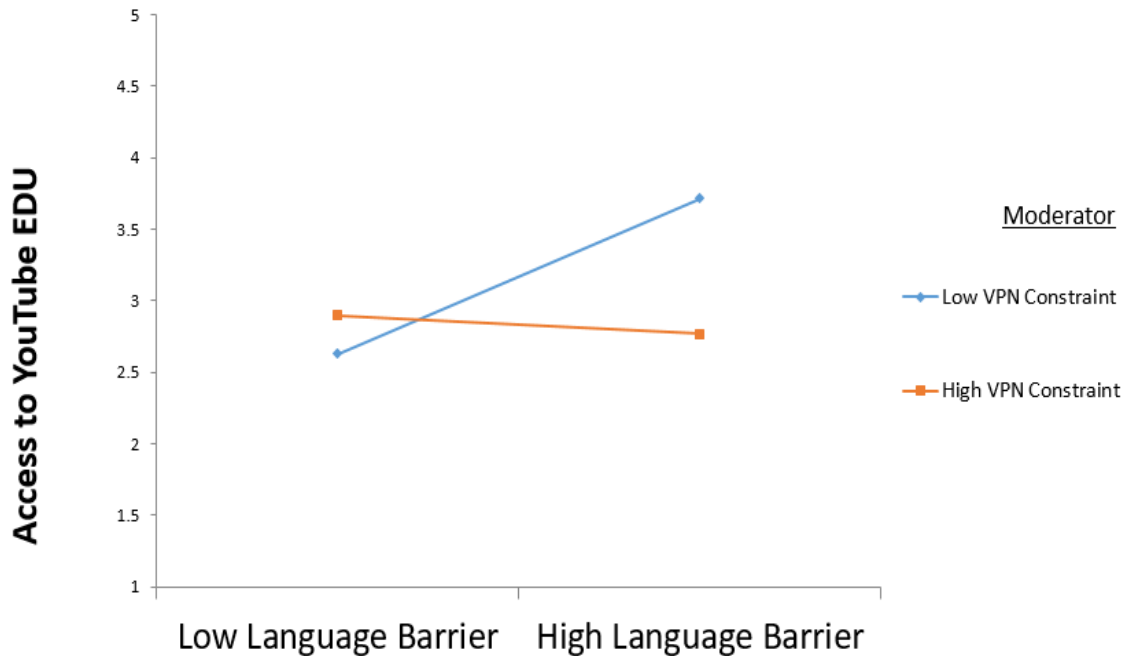
The outcome variable, access to YouTube EDU explaining variance  $r^2=.50$  supports a global fit of the study model (*SEM: Fit (David A. Kenny)*, no date).

**Table 4: The covariance of the independent variables**

Study variables		Estimate	S.E.	C.R.	P
Language Barrier	↔ VPN Constraint	-.281	.059	4.763	***
Language Barrier	↔ Interaction Effect	-.109	.047	-2.296	***
VPN Constraint	↔ Interaction Effect	-.115	.052	-2.210	***

Note:  $p < .005$

Table 4 shows the covariance of study variables with  $\beta$  estimates. The variable of VPN constraint and the language barrier ( $\beta = -.281, p = 0.05$ ) indicate significant negative covariance. The interaction effect ( $\beta = -.109, p = 0.05$ ) indicates significant negative covariance with the language barrier variable. And, Interaction effect ( $\beta = -.115, p = 0.05$ ) indicates significant negative covariance with VPN constraint variable. These covariance effects have negligible standard errors. Indicating; inaccessibility to YouTube-EDU is due to the combined result of the VPN constraint and language barrier variables that aid negative effects on the dependent variable of access to YouTube-EDU.



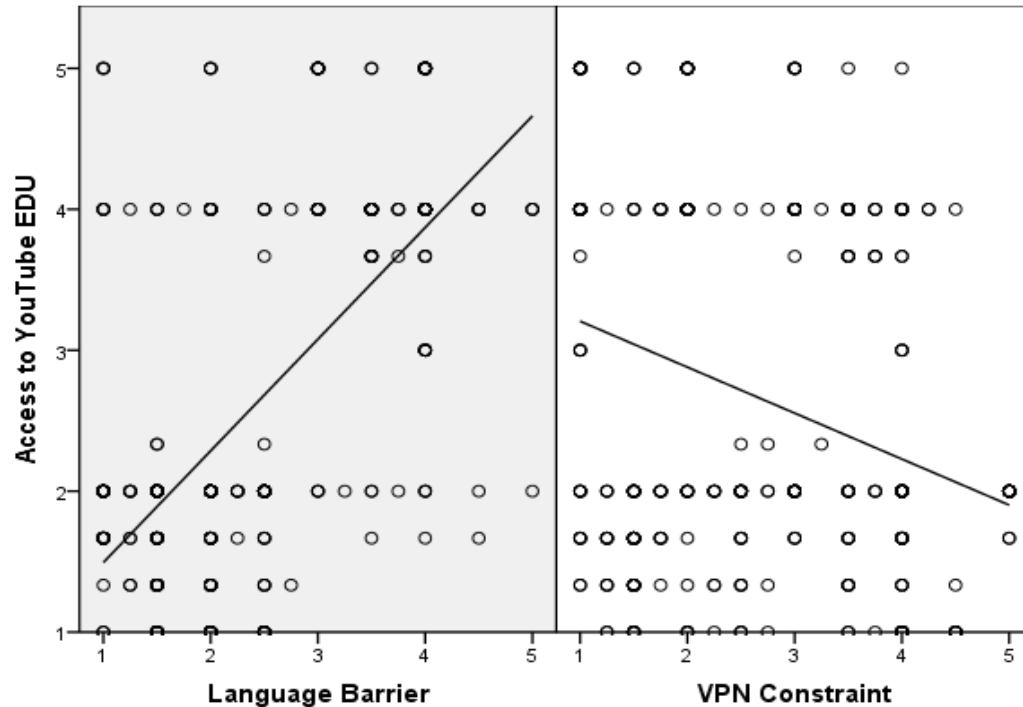
**Fig. 3: The interaction effect of the VPN constraint**

Note: the Vertical axis of access to YouTube EDU indicates 1 as low and 5 as high impacts.

Fig. 3 indicates a significant negative interaction effect of VPN constraint. Dampening the positive relationship between the language barrier and the access to YouTube-EDU variables.

Although, VPN constraint aids difficulties for the majority of foreign students to access YouTube-EDU also as shown in Fig. 2. But, when we analyzed the interaction effect of VPN constraint as shown in Fig. 3. The results indicate that change in VPN constraint from high to low causes access to YouTube-EDU

from low to high. Indicating that students facing a high language barrier, rush to access the YouTube-EDU. But, high VPN constraint hinders students to access the YouTube-EDU. While low VPN constraint highly eases students to access the YouTube-EDU. Yet, language barrier remains high which makes a logical sense of the study narrative.



**Fig. 4: The bar chart of study variables**

Fig. 4 is the bar chart of study variables indicating the relationship of independent variables with the dependent variable. Using the Likert scale of measurement for questionnaire items. The variable of the language barrier is positively associated with the variable of access to YouTube-EDU showing a significant impact. While VPN constraint is negatively associated to access to YouTube-EDU with a significant impact. Indicating; high the language barrier, more the foreign students rush towards to access the YouTube-EDU. Besides, due to inaccessibility to YouTube-EDU and VPN constraint. Students face difficulties to acquire the academic knowledge.

## Discussion

Foreign students with zero proficiency in the Chinese language face communication barrier while interacting with teachers in the classroom. Hence, the findings of H: 1 of this study validate the argument of a previous study regarding the language barrier brings the chances of conflict occurrences between students and teachers (H and Zukui, 2010). That pushes students to acquire the second language (*Studying and working in China present challenges - Opinion - Chinadaily.com.cn*, no date).

The findings of this study endorse the arguments of a previous study. That, due to limited availability of lecturers in Chinese universities with high precision in English as a teaching language (*African Students Face Challenges in China*, 2013) is the reason for foreign students to acquire the educational knowledge by watch pertinent educational videos on YouTube-EDU (Buzzetto-More, 2015). Since they believe,

watching educational videos on YouTube is an effective method to extract the useful information that enhances their learning experience (Chtouki *et al.*, 2012; Woolfitt, 2015).

The findings of H: 2 of this study validate the fact of inaccessibility to YouTube-EDU, and VPN constraint in mainland China (*Chinese ban on VPNs and internet control likely to affect its e-commerce sector and scientists- Technology News, Firstpost*, no date; *China blocks VPN access to the Internet*, no date; *China to Block Overseas VPN Services From End of March*, no date; *China moves to block internet VPNs from 2018 | World news | The Guardian*, no date). Both, aiding difficulties for international students to acquire academic knowledge (Normile, 2017). The scientific evidence of this study is based on the feedback obtained from 5245 foreign students. Studying across numerous study programs in 20 universities of China. Including; agriculture, business, communication, journalism, information technology, education, forensics, history, legal studies, library science, health/medical, visuals, arts, political science, educational assessment, evaluation, research, statistics and philosophy (Snelson, 2011). These findings validate the narrative of this study.

Although, language barrier pushes students to access YouTube-EDU to watch pertinent videos and gain academic knowledge. Hitherto, VPN constraint hinders them to access YouTube-EDU. Ergo, in this study, we used VPN constraint as a moderator and analyzed the interaction effect with access to YouTube-EDU and language barrier variables. We found interesting and obvious outcomes, VPN constraint being a moderator has negative covariance with the variable of the language barrier. That significantly dampens the positive relationship of the language barrier with access to YouTube-EDU variable into a negative relationship. In order words, the VPN constraint actually encourages students not to access the YouTube-EDU. Instead, it inspires students to overcome the language barrier. Results in Fig. 3 also support this argument where we discussed how low VPN constraint eased the students to access YouTube-EDU. Yet, the language barrier remained high.

## Conclusion

Studying in China, a country enriched with ancient heritages, culture, language, and innumerable contributions in contemporary World is ideal. Besides, it provides state of art educational facilities, and financial grants to meritorious and needy students on a global scale. Hitherto, the majority of foreign students face certain barriers while studying in China. Of which, few are discussed here. First and foremost is the language barrier. Since Chinese is not the native language of foreign students, therefore, they choose English as their study language in China for the degree program.

Considering the availability of teachers with high precision in English as a teaching language. The majority of foreign students face communication problems to grasp the subject terminologies taught in the Chinese language. Besides, it is difficult for them to learn a totally new language due to time and budget constraints, and pressure of submitting the assignments on time.

To overcome these barriers and to avoid the potential conflicts with teachers, the majority of foreign students prefer to use the internet. In particular, they watch pertinent educational videos on YouTube-EDU to acquire the academic knowledge. Where they encounter another barrier, the inaccessibility to YouTube-EDU. Ergo, they intend to use the VPN to access YouTube-EDU. But, due to restriction on using VPN, the majority of foreign students face difficulties to acquire the academic knowledge.

Considering the communication barriers between teachers and students. We recommend the concerned mavens of education in China to facilitate foreign students to access YouTube-EDU that ease the academic stay of international students in China.

## Future implications

Besides the VPN constraint, the findings of this study enlighten two main barriers, i.e., language and inaccessibility to YouTube-EDU. Hindering international students to acquire academic knowledge in China. Fixing these issues will attract more foreign students to come to study in China. In addition, managing to allow students to access YouTube-EDU and use VPN will significantly aid the existing educational system (which is quite excellent) to an optimal level. In addition, accommodating lecturers with high precision in the English as teaching language will aid the learning environment of classes packed with international students.

## Study limitations

Like every academic research, this study also has certain limitations. The first limitation in this study was to find and join the WeChat groups of foreign students to recruit the research partakers. We could only find and join the WeChat groups from 20 universities. We send a self-designed questionnaire to 5245 students of these groups. Although, the study results are adequate to draw practical inferences.

The second and last limitation of this study is the time constraint. Researchers gathered the data within a timeframe of 30 days. Extending this time to two months or more could engage maximum foreign students to participate in the study. Their feedback could aid more significance to the study results and support the narrative of this study.

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## References

- African Students Face Challenges in China* (2013) *voanews*. Available at: <https://www.voanews.com/a/african-students-face-challenges-in-china/1963445.html> (Accessed: 12 August 2018).
- Alhamami, M. (2013) 'Observation of {Youtube} {Language} {Learning} {Videos}', *Teaching English with Technology: A Journal for Teachers of English*, 13(3), pp. 3–17.
- Basavanthappa, B. (2009) 'Nursing education', p. 993. doi: 10.5005/jp/books/11100.
- Buzzetto-More, N. (2015) 'Student Attitudes Towards The Integration Of YouTube In Online, Hybrid, And Web-Assisted Courses: An Examination Of The Impact Of Course Modality On Perception', *MERLOT Journal of Online Learning and Teaching*, 11(1), pp. 55–73.
- Carmichael, M., Reid, A. and Karpicke, J. D. (2017) 'Assessing the Impact of Educational Video on Student Engagement, Critical Thinking and Learning : The Current State of Play', *Sage*, p. 22. Available at: [www.sagepublishing.com](http://www.sagepublishing.com).
- China blocks VPN access to the Internet* (no date). Available at: <https://www.usatoday.com/story/tech/2015/01/23/china-internet-vpn-google-facebook-twitter/22235707/> (Accessed: 14 August 2018).
- China launches internet crackdown to make it harder for people to avoid its 'Great Firewall'* | *The Independent* (no date). Available at: <https://www.independent.co.uk/news/world/asia/china-internet-crackdown-virtual-private-networks-vpns-facebook-twitter-youtube-google-whatsapp-a7879641.html>

(Accessed: 13 August 2018).

*China moves to block internet VPNs from 2018 | World news | The Guardian* (no date). Available at: <https://www.theguardian.com/world/2017/jul/11/china-moves-to-block-internet-vpns-from-2018>

(Accessed: 14 August 2018).

*China to Block Overseas VPN Services From End of March* (no date). Available at: <https://www.rfa.org/english/news/china/china-to-block-overseas-vpn-services-from-end-of-march-01312018102313.html> (Accessed: 14 August 2018).

*A Chinese ban on VPNs and internet control likely to affect its e-commerce sector and scientists- Technology News, Firstpost* (no date). Available at: <https://www.firstpost.com/tech/news-analysis/chinese-ban-on-vpns-and-internet-control-likely-to-affect-its-e-commerce-sector-and-scientists-4028223.html> (Accessed: 14 August 2018).

Chtouki, Y. *et al.* (2012) 'The impact of YouTube videos on the student's learning', *2012 International Conference on Information Technology Based Higher Education and Training, ITHET 2012*, pp. 1–4. doi: 10.1109/ITHET.2012.6246045.

*CSC Scholarships | China Scholarship Council | Chinese government Scholarships* (2018). Available at: <https://www.cscscholarship.org/> (Accessed: 12 August 2018).

DeWitt, D. *et al.* (2013) 'The Potential of Youtube for Teaching and Learning in the Performing Arts', *Procedia - Social and Behavioral Sciences*. Elsevier B.V., 103, pp. 1118–1126. doi: 10.1016/j.sbspro.2013.10.439.

*Effective educational videos | Center for Teaching | Vanderbilt University* (no date). Available at: <https://cft.vanderbilt.edu/guides-sub-pages/effective-educational-videos/> (Accessed: 12 August 2018).

*Entrepreneurs and students stifled under China's internet controls: Report | ZDNet* (no date). Available at: <https://www.zdnet.com/article/entrepreneurs-and-students-stifled-under-chinas-internet-controls-report/> (Accessed: 13 August 2018).

Fornell, C. and Larcker, D. F. (1981) 'Evaluating Structural Equation Models with Unobservable Variables and Measurement Error', *Journal of Marketing Research*, 18(1), p. 39. doi: 10.2307/3151312.

Gokulakrishnan, J. (2014) 'A SURVEY REPORT ON VPN SECURITY & ITS TECHNOLOGIES', *Indian Journal of Computer Science and Engineering (IJCSE)*, 05(4), p. 135. Available at: <http://www.ijcse.com/docs/INDJCSE14-05-04-101.pdf>.

H, J. and Zukui, F. (2010) 'Causes of Cultural Conflict in Central Asia and China of Foreign Students', *Journal of Xinjiang Normal University*, 3(31).

*Higher Education in the learning society* (no date). Available at: <https://www.leeds.ac.uk/educol/ncihe/docsinde.htm> (Accessed: 14 August 2018).

Hu, L. T. and Bentler, P. M. (1999) 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives', *Structural Equation Modeling*, 6(1), pp. 1–55. doi: 10.1080/10705519909540118.

*Key Turning Points In History Of YouTube - Business Insider* (no date). Available at: <https://www.businessinsider.com/key-turning-points-history-of-youtube-2013-2> (Accessed: 16 August 2018).



2018).

Lai, K. (2013) 'How are our undergraduates using youtube? A survey on music students' use of youtube and the library's multimedia collection', *Music Reference Services Quarterly*, 16(4), pp. 199–217. doi: 10.1080/10588167.2013.843361.

Manuscript, A. and Magnitude, S. (2013) 'NIH Public Access', 31(9), pp. 1713–1723. doi: 10.1109/TMI.2012.2196707.Separate.

Murray, L. *et al.* (2012) 'Variance Inflation Factors in regression models with dummy variables', *Annual Conference on Applied Statistics in Agriculture*, pp. 1–18. Available at: <http://newprairiepress.org/agstatconference%0Ahttp://newprairiepress.org/agstatconference/2012/proceedings/12>.

Normile, D. (2017) 'Science suffers as China plugs holes in Great Firewall', *Science*, 357(6354), p. 856. doi: 10.1126/science.357.6354.856.

Oakleaf, M. (2009) 'Writing information literacy assessment plans: A guide to best practice', *Communications in Information Literacy*, 3(2), pp. 80–90. doi: 10.1002/asi.

*Pedagogical benefits of video for teaching and learning - The University of Queensland, Australia* (no date). Available at: <http://www.uq.edu.au/teach/video-teach-learn/ped-benefits.html> (Accessed: 12 August 2018).

*Press - YouTube* (no date). Available at: <https://www.youtube.com/yt/about/press/> (Accessed: 16 August 2018).

Raykov, T., Gabler, S. and Dimitrov, D. M. (2016) 'Maximal Reliability and Composite Reliability: Examining Their Difference for Multicomponent Measuring Instruments Using Latent Variable Modeling', *Structural Equation Modeling*, 23(3), pp. 384–391. doi: 10.1080/10705511.2014.966369.

*School Internet Censorship Impairs a Student's Ability to Learn - Crimson* (no date). Available at: <https://crimsonnews.org/4811/opinion/school-internet-censorship-impairs-a-students-ability-to-learn/> (Accessed: 13 August 2018).

Schwankert, S. (2007) 'YouTube blocked in China; Flickr, Blogspot restored'. Available at: [http://www.infoworld.com/article/07/10/18/YouTube-blocked-in-China\\_1.html](http://www.infoworld.com/article/07/10/18/YouTube-blocked-in-China_1.html) (Accessed: 13 August 2018).

*SEM: Fit (David A. Kenny)* (no date). Available at: <http://davidakenny.net/cm/fit.htm> (Accessed: 2 August 2018).

Shannon, C. S. (2009) 'An Untapped Resource', *Nonprofit and Voluntary Sector Quarterly*, 38(5), pp. 828–845. doi: 10.1177/0899764008319624.

Snelson, C. (2011) 'YouTube across the disciplines: A review of the literature', *MERLOT Journal of Online Learning and Teaching*, 7(1), pp. 159–169. Available at: [http://scholarworks.boisestate.edu/edtech\\_facpubs/11/](http://scholarworks.boisestate.edu/edtech_facpubs/11/).

Sobh, T. S. and Aly, Y. (2011) 'Effective and Extensive Virtual Private Network', 2011(January), pp. 39–49. doi: 10.4236/jis.2011.21004.

*Studying and working in China present challenges - Opinion - Chinadaily.com.cn* (no date). Available at:

<http://www.chinadaily.com.cn/a/201804/28/WS5ae42d83a3105cdcf651b2f2.html> (Accessed: 12 August 2018).

Sumra, K. B. (2012) 'Study on Adjustment Problems of International Students Studying in Universities of The People ' s Republic of China: A Comparison of Student and Faculty / Staff Perceptions', *International Journal of Education*, 4(2), pp. 107–127. doi: 10.5296/ije.v4i2.1181.

*Surprise! There's a third YouTube co-founder - USATODAY.com* (no date). Available at: [https://usatoday30.usatoday.com/tech/news/2006-10-11-youtube-karim\\_x.htm](https://usatoday30.usatoday.com/tech/news/2006-10-11-youtube-karim_x.htm) (Accessed: 16 August 2018).

*These websites are still blocked in China - Business Insider* (no date). Available at: <https://www.businessinsider.com/websites-blocked-in-china-2015-7> (Accessed: 13 August 2018).

*Top Sites in Hong Kong - Alexa* (no date). Available at: <https://www.alexa.com/topsites/countries/HK> (Accessed: 16 August 2018).

Wang, N. (2008) 'Control of Internet search engines in China -- A study on Google and Baidu By', (August).

Welbourne, D. J. and Grant, W. J. (2016) 'Science communication on YouTube: Factors that affect channel and video popularity', *Public Understanding of Science*, 25(6), pp. 706–718. doi: 10.1177/0963662515572068.

Wold, J. (2006) 'Difficulties in Learning English As a Second Or Foreign Language', *All Regis University Theses*. Available at: <https://epublications.regis.edu/theses/333>.

Woolfitt, Z. (2015) 'The effective use of video in higher education', (October), pp. 1–49. Available at: <https://www.inholland.nl/media/10230/the-effective-use-of-video-in-higher-education-woolfitt-october-2015.pdf>.

The world, T., Open, I. and Services, I. T. (no date) *More Praise for The World Is Open*.

*YouTube a valuable educational tool, not just cat videos* (no date). Available at: <http://theconversation.com/youtube-a-valuable-educational-tool-not-just-cat-videos-34863> (Accessed: 13 August 2018).

'YouTube blocked in China' (2009). Available at: <http://www.herdict.org/web/explore/detail/id/CN/2071> (Accessed: 13 August 2018).

*YouTube blocked in China - CNN.com* (no date). Available at: <http://edition.cnn.com/2009/TECH/ptech/03/25/youtube.china/> (Accessed: 13 August 2018).

Yu, B. and Watkins, D. (2008) 'Motivational and Cultural Correlates of Second Language Acquisition', *Australian Review of Applied Linguistics*, 31(2), pp. 1–22. doi: 10.2104/ara10817.

Zhu, X. Y. and Chhachhar, A. R. (2016) 'Descriptive analysis regarding the use of Wechat among university students in China', *Asian Social Science*, 12(2), pp. 151–157. doi: 10.5539/ass.v12n2p151.

## **Indexing and Classification of Multilingual Medical Documents**

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### **Abstract**

Classification process is characterized by identifying clusters within multidimensional data based on a similarity measure. Hence different researchers from several domains are working on the classification problem. The situation is more and more complex and needs powerful techniques for information retrieval especially on a domain that attracts a lot of attention from the data mining community: the biomedical domain. So, this paper attempts to address the problem of classification of multilingual medical documents. In this overview, several types of research using different classification approaches have been presented. A comparison between these approaches highlighted their negative and positive points.

**Keywords:** Multilingual classification, Medical document, Indexing Method,

### **Introduction**

The overwhelming volume of multilingual documents available on the web has created difficulties for information processing and management operations such as information retrieval, information extraction.... For multilingual documents, the situation is even more complex and needs powerful tools for information management and retrieval. Several techniques have been proposed in this field. In this context, the present paper studied multilingual documents classification issues according to the different points of view of research.

The classification or clustering of multilingual documents represents a real challenge for researchers. It is a rich and important area since when we say classification of multilingual medical documents we cannot eliminate the exponential of information in the biomedical domain. In others terms, the classification of multilingual medical documents is needed given the exponential growth of knowledge in biomedical fields. The process of text clustering is composed of two different phases the first ones is the preprocessing phase and the second is the clustering phase. The preprocessing phase is divided into two parts feature extraction and feature selection.

The extraction feature method contains two different categories, term frequency-based method, and semantic-based method. The first one is defined as a method that represents a document with counting words number (computing the words frequency) but the second method is defined by words and their relations.

Most frequency-based methods use vector space model to represent textual documents.

However, semantic annotation or relation between words are lost when textual documents are represented into a vector.

The selection feature method is characterized by its ability to remove redundant information and reduce the dimensional feature.

Example of selection feature methods are the latent semantic indexing, corpus-based method.

So, to help preventing the problem related to the loss of relations between words in the extraction feature method and the problem related to the reduce of the dimensionality of term vector document in the selection feature method, we propose to use a new approach which based on deep learning for classification of multilingual documents in the biomedical domain. This approach is proposed to address the different issues presented by different techniques of classification. In this context, we need to employ deep learning in order to generate a good representation of medical documents for the classification process.

Knowing that traditional selection methods can lose information that affects the effectiveness and the performance of classification process. In our work deep learning method represent a good solution to resolve this kind of problem.

This paper presents and introduces various research works focused on representation and classification of multilingual documents. The following sections relate our work. Section 1 gives an overview of the most important research work related to the representation method of multilingual documents. Section 2 discusses some related works of classification. Section 3 presents a comparative study of classification techniques. Section 4 presents our contribution and Finally, section 5 concludes with some future research directions.

## **Indexing Methods of Multilingual Documents (Overview)**

### ***Definition of Indexing Method***

Indexing means trying to model or to represent a collection of documents efficiently and effectively. The goal of indexing is to identify the information in any document and represent it through a set of entities called index to facilitate comparison between different document representations.

The comparison process is used to select all the documents satisfying user needs in term of information, by comparing index and query representations in the same space, using a comparison function.

Indexing is an important step in the process of classification. The performance of this process depends on the methods of indexing. There are several methods of index such as:

**Concept Index:** This method extends each vector of terms with new entries of the concepts that appear in the text.

**Latent Semantic Index called context:** Harbeck and Ohler (1999) defined this method as a method which stores the frequencies of words in a document in two dimensional representations.

**Ngram Index:** DeerWester et al. (1990) defined this method as a method which stores data sequences of a given length with their frequency distributions.

### ***Related work***

A multilingual document is defined as a document that contains more than one language at the same time.

Document representation for classification of multilingual documents is typically based on the traditional approach bag of words. These methods deal with words and not with the semantic relationship between words. To help to prevent this issue, different studies were interested in the semantic annotation.

So, there are many works proposed for the representation process to practical problems. We provide some specific examples characterized by the purpose of the clustering of multilingual documents.

### **Proposal of a statistical method of semantic indexing for multilingual documents:**

Mallat et al. (2016) proposed a statistical approach based on conceptual network formalism.

In their approach, they used a formalism as an indexing language to represent concepts and their weighting.

They exploited the conceptual network formalism as an indexing language for the representation process. These concepts describe the content of the document. Their approach is based on two steps, the first one is characterized by the extraction of index terms using the multilingual lexical resource (Euro WordNet) and the second step is the representation of index concepts through conceptual network formalism that means the identification of taxonomic and non-taxonomic relations. The mapping of representation of index terms to the representation of index concepts is generated using the EWN resource and the association rules model.

After finishing the representation step, they proposed a new algorithm to update the statistical measure.

The key idea and the goal of their approach are to represent the semantic content of the document based on the notion of concept.

To extract the concepts, they identified simple and compound terms then they used a weighting formula based on the statistical and semantic measure.

To resolve the problem related to the ambiguity of terms they proposed a disambiguation process based on the treatment of polysemy and homonymy ambiguity.

To evaluate and validate their approach they compared their proposed work with different other methods of indexing based on a corpus of TREC evaluation campaign 2001 and 2002 of the ad hoc task.

They showed that their approach presents a high performance and provides encouraging results in the conceptual representation of the content of documents against to the classical method. In addition, they showed that their work provided a good effectiveness in terms of response time.

### **Semantic indexing of multilingual documents:**

In their paper, Harrathi (2009) proposed a semantic method for indexing multilingual documents.

They created a new method of extraction to resolve the traditional representation (i.e. Bag of words). So, they proposed a method based on the relationship between words.

The key idea was the use of the ontology or thesaurus to improve the efficiency of the indexing process.

In their work Harrathi used a statistical techniques and tools to extract terms denoting concepts from documents such as ontology, thesaurus, etc.

The concept extraction process represents two different steps the first one is the identification of simple and composed terms, the second is the mapping of the representation of terms to the representation of concepts.

### **Latent semantic indexing-based approach to multilingual document clustering**

Chih-Ping et al. (2007) proposed a latent semantic indexing method (LSI) based multilingual document clustering (MLDC) that use latent semantic indexing analysis and constructed a multilingual semantic space.

They constructed a multilingual indexing system based on MLDC using LSI. To cluster the target multilingual documents, they proposed a good balance between monolingual and cross-lingual clustering effectiveness.

## **Classification Approaches of Multilingual Documents**

### ***Definition of the classification method***

The classification has become an important task for assigning objects into clusters or groups such that a collection of objects in the same class are similar and objects from different class are dissimilar.

There are several methods of classification such as supervised, unsupervised, and hybrid classification.

**Supervised Classification:** In supervised classification, the class associated with each document is known and the evaluation of this method is done through a cross-validation.

**Unsupervised Classification:** That means a clustering without a priori known of the number of classes, we choose an arbitrary  $k$  clusters.

**Hybrid Classification:** Hybrid classification is also called combined classification. It represents the combination of both supervised and unsupervised classification methods.

In this research, we are interested in unsupervised classification. The classification phase consists of building a classification model to classify a new document which is represented by a vector of descriptors. Each document will be processed in the same way as the others documents.

### *3.2 Related work*

Over the past years, information retrieval and classification of multilingual documents have attracted more and more attention.

In this section, we review the literature relevant to this research: we present the state of the art that tackled this research area.

### **Ontology-Based Multilingual Information Retrieval:**

Guyot et al. (2005) proposed an approach based on the use of a multilingual ontology for information retrieval without using any translation of documents or for queries.

Guyot et al. resolved the problems related to the automatic translators by using a multilingual ontology; Then they proved the feasibility of his approaches independently of the query language. The results show that there is no dependency on automatic translators. In addition, when it is needed to add a new language, only the ontology is added. Nevertheless, this approach suffers from some limitations such as incomplete and dirty used ontology.

### **Improving Classification of Multi-Lingual Web Documents using Domain Ontologies:**

Litvak et al. (2006) proposed a method for classification of web documents based on the multilingual ontology for the conceptual representation of the documents.

Litvak and al deal with the problems related to web documents classification by using domain ontology. So, researchers created a new model for classification in a given domain to facilitate the classification of new documents.

Then, Litvak and al evaluated their proposed approach in a specific domain. They used the domain ontology related to the web document about the production of certain chemicals.

Litvak and al proved that their methodology presents a good result by increasing the training set.

### **Multilingual Medical Documents Classification Based on MesH Domain Ontology:**

Elberrichi et al. (2008) proposed a new method for classification of web documents based on domain ontology.

In their work, Elberrichi and al proposed two approaches. The first one is a translation approach: translation approach used to translate vectors. Their representation is then enriched by adding the hyperonyms. The second approach is a multilingual ontology approach: in this approach, Elberrichi and al used a multilingual ontology to map the term vector to its corresponding concepts then they enriched this representation by adding the hyperonyms.

To validate and test their approach they used the most popular measure by the supervised classification community the F-Measure composed by the average of the precision and the recall.

Then, they showed the feasibility and the performance of their work, they implemented it into a specific domain (the biomedical domain) and they proved that multilingual classification can be dealt without any problems with the conceptual ontology and can give good results in term of precision and recall.

### **Framework for Categorization of multilingual Texts**

Jalam et al. (2004) proposed a novel framework for the categorization of multilingual texts. The key idea of their approaches is defined by the use of the translation method towards a references language.

In their work Jalam and al used two new steps for the process of classification: the identification of the text language, then the translation of the text into the learning language.

### **Multilingual document classification via transductive learning**

Romeo et al. (2015) proposed a new method of multilingual document classification based on the use of transductive learner named Robust multi-class graph transduction.

The key idea is to use a scale large multilingual knowledge base, BabelNet to support the modeling of different languages in written documents into a conceptual space without using requiring of any language translation process. They proposed to use the multilingual lexical of BabelNet in order to generate document representation that corresponds to BabelNet synsets.

In other terms, they exploited lexical knowledge of BabelNet in order to represent a document that corresponds to babel net synsets.

Therefore, they decided to employ the representation model which model a document as a bag of synsets constraint to the classic bag of words model.

Then Romeo and al evaluated their approach on two multilingual document collections RCV2 and Wikipedia.

To measure the effectiveness and the performance of their approach, they used F-Measure, precision and recall measurements and they showed the effectiveness and the performance of their work, as it supported the transductive learner to have good results in terms of classification.

### **Construction of supervised and unsupervised learning systems for multilingual text categorization**

Lee and Yang (2008) proposed to construct supervised and unsupervised learning systems for the classification of multilingual textual documents. In their work, they employed vector machines (SVM), latent semantic indexing (LSI) and self-organizing maps (SOM) for the implementation task.

Lee and Yang proved that their model including both supervised and unsupervised learning generated encouraging results for multilingual text categorization. They showed the performance of their approach in terms of accuracy and precision.

### **Categorization of multilingual scientific documents by a compound classification system**

Jaroslav et al. (2017) proposed a new method for classification of multilingual scientific documents using a compound classification system.

In addition, they proposed a classification method for documents that included text parts in different languages.

Therefore, they used a multinomial naïve Bayes and long short-term memory algorithms to facilitate classification task.

A compound classification system was proposed to resolve the problems of documents classification which include different parts in many languages. The objective of their work was to generate good results in terms of classification. Their compound classification system is composed of three layers: the first one is a pre-processing layer; the second layer is a monolingual or multilingual classification of the whole documents or their parts. The third layer is a multilingual decision module that can classify documents sufficiently.

The researchers proved that their proposed work can classify multilingual textual documents which contain parts in various languages.

### **Comparison between Classification Approaches**

There are many techniques used to classify multilingual documents such as classification using bag of words, classification using ontology and many others.

In this section, a comparison of classification approaches which use different techniques will be presented. The comparison of these methods will be explained in the following table (Table1):



**Table1: Comparative study of classification techniques**

Method	Simplicity	Document representation	Translation	Semantic annotation	Ambiguity	Reduction of dimension vector	Loss of information
Bag of word	*	*					*
Antology	*	*		*	*		*
Dictionary	*	*	*	*	*		*
Latent semantic indexing LSI		*		*		*	*
Transductive learning		*	*	*			*

Regarding the comparison of different well known methods, we noticed:

Dictionary does not cover entire vocabulary, and terms may be ambiguous or have multiple meaning.

A multilingual ontology supports the free modification by any user which introduces incoherence knowledge.

Classification of documents by latent semantic indexing can be done using a selection of a new feature for the construction of semantic space but it suffers from the irrelevant feature and can lose some important of them.

Transductive learning method based on the use of large multilingual knowledge base, BabelNet in order to support the modeling of different language written documents into a conceptual space without using requiring of any language translation process and without reduction of the dimensional feature.

Moreover, several efforts are made to use them as method for classification documents in different domains have failed to produce satisfactory results.

To evaluate the performance of their methods, researchers used different datasets for example in the proposed Ontology method, researchers used the biomedical benchmark corpus Ohsumed and the MeSH ontology, in the latent semantic indexing method, researchers used the parallel documents corpus, collected from a dissertation and thesis digital library, finally in the transductive learning method, researchers used two multilingual documents collection RCV2 and Wikipedia but without producing encouraging results.

Finally, we can conclude that the methods employed for the classification process suffer from limits and drawbacks such as the loss of information and the reduction of the dimensionality term vector document. Hence the necessity to use the deep learning approach for good conceptual representation of textual multilingual documents and to facilitate the classification task.

## Discussion

Considering the limitations of traditional method especially for document classification we propose a new approach which based on the use of DL. Deep learning (DL) has appeared as a new approach of Machine Learning (ML) area which has been based on the use of keys aspects of Artificial Intelligence (AI).

So, the key idea is founded on the use of a deep learning technique based on word2vec method in order to generate a new conceptual representation of multilingual textual documents which characterized by the word and its context to retain the loss of relations in the process of feature extraction.

First, we collect a set of documents in the biomedical domain extracted from the benchmark corpus Oshumed. The next step is processing the extracted documents. It consists of text cleaning, detection language and representation task (which is characterized by modeling the document as a vector based on the use of word2vec method).

After this process, we decide to use a one of deep learning technique in order to generate a new conceptual representation for a good classification.

## Application Domain

To show the effectiveness and the feasibility of our work, we decide to implement it in a domain that attracts a lot of attention from the data mining community: the biomedical domain.

## Datasets

The selected documents are from the biomedical benchmark corpus Oshumed which consists of the title and/or abstracts of 270 medical Journals published between 1987-1991. The Oshumed collection is characterized by different categories such as Virus diseases, Eye Diseases, Bacterial infections and many others.

## Deep learning Software

Deep learning offers a high-level interface in order to design, to represent and to validate a deep neural network such as Caffe, TensorFlow, PyTorch, Keras, Deep learning4j and many others.

**Caffe:** is a deep learning framework characterized by its ability to design all models types such Convolutional neural network (CNN), Recurrent neural network (RNN)... Caffe promotes expressive architecture which encourages application and innovation.it is installed and run on Ubuntu and it requires the CUDA nvcc compiler to compile its GPU code and CUDA driver for GPU operation.

**TensorFlow:** is a deep learning library for numerical computation using data flow graphs. It is an open source software library which is characterized by a flexible architecture. This architecture lets you use computation to one or more CPU or GPU.

**PyTorch:** is a deep learning library that provides tensor computation feature with strong GPU and deep neural networks feature. It provides tensors that can live on the CPU or the GPU and accelerates scientific computation needs such as slicing, indexing, and many others.

**Keras:** is a deep learning library for Theano and TensorFlow. It is a high-level network library written in python characterized by its ability to run on top of either Theano and TensorFlow. It supports the convolutional neural network, the recurrent neural network as well as combinations of the two. Keras represents an extensible solution to building complex machine learning models.

**Deeplearning4j:** is a deep learning library written in Java and Scala. It can import neural models from major frameworks via Keras including TensorFlow, Caffe, and Theano bridging the gap between python and java.

In our work, we are going to use Keras with TensorFlow associated with python language and compiled in Anaconda framework.

## Conclusion

The exponential growth of information available on the internet, such as medical databases that collect multilingual scientific documents, generates the difficulty to find and organize information. Hence, we need effective techniques and tools for information retrieval and information management. In this context, the classification of multilingual documents can be considered as a rich and important area that represents a promising branch of research.

In this paper, the fundamental concepts and the different techniques used for indexing and classification were introduced, such as classification using ontology domain, classification using dictionary...A comparison of methods employed for classification was presented. So, we can state that the classification process suffers from limits and have some drawbacks such as the loss of information and the reduction of the dimensionality of document vector. For these reasons and to help to prevent these issues we propose to use deep learning approach for good conceptual representation of textual multilingual documents and to facilitate the classification task.

## Summary

In order to obtain a good and robust classification of textual multilingual documents a new approach based on deep learning has been proposed. To conclude, this paper proposes to use a new method of deep learning to represent textual multilingual medical documents and then, based on this representation we will exploit a specific algorithm for the classification process in order to generate a good result in terms of performance, accuracy, and precision.

## References

Chih-Ping, W., Christopher, C.Y. and Chia-Min, L. (2007) 'A latent semantic indexing-based approach to multilingual document clustering', *Decision support systems* 45 (2008) 606-620.

DeerWester, S., Dumais, S.T, Furnas, G.W, Landauer, T.K. and (1990) 'Indexing by latent semantic analysis', *Journal of the American society for information science*.

Elberichi, Z., Taibi, M. and Bellagoun, A. (2008) 'Multilingual Medical Documents Classification Based on MesH Domain Ontology', *Computer science department*, arXiv preprint arXiv:1206.4883

Guyot, J., Radhouani, S. and Flaquet, G. (2005) 'Ontology-based multilingual information retrieval', CEUR Workshop.

Harbeck, S and Ohler, U. (1999) 'Multigram for language identification', Proceeding of the 6th European Conference on Speech communication and Technology.

Harrathi, F. (2009) 'Extraction de concepts et de relations entre concepts à partir des documents multilingues : approche statistique et ontologique', PhD Thesis, Lyon University. LIRIS, INSA Lyon.

Jalam, R., Clesh, J. and Rakotomalala, R. (2004) 'Cadre pour la catégorisation de textes multilingues', 7èmes Journées internationales d'Analyse statistique des Données Textuelles. Louvain-la-Neuve, Belgique 2004, pp. 650–660.

Jaroslaw, P., Marcin, M. and Slawomir, D. (2017) 'Categorization of multilingual scientific documents by a compound classification system', Conference Paper June 2017.

Lee, C.H., and Yang, H.C. (2008) 'Construction of supervised and unsupervised learning systems', Expert Systems with Applications 2008.

Litvak, M., Last, M. and Kisilevich, S. (2006) 'Improving classification of multi-lingual web documents using domain ontologies', KDO05 The Second International Workshop on Knowledge Discovery and Ontologies. Porto, Portugal October 7th. 2006.

Mallat, S., Hkiri, E, Maraoui, M. and Zrigui, M. (2016) 'Proposal of the Statistical method of semantic indexing for multilingual documents', IEEE International Conference on Fuzzy Systems.

Romeo, S., Ienco, D. and Tagarelli, A. (2015) 'Multilingual document classification via transductive learning', Paper presented at the 6th Italian Information Retrieval Workshop, May 2015, Cagliari, Italy. CEUR Workshop Proceedings, 1404, 4p., 2015.

## **Deontología Y Responsabilidad Social Universitaria: Cimientos Para La Innovación Social En Época De Postconflicto**

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### **Resumen**

El propósito del artículo es analizar correlacionalmente la deontología y responsabilidad social universitaria como cimientos para innovar socialmente en época de postconflicto. La investigación se desarrolla bajo el paradigma positivista, descriptivo, transeccional, no experimental, de campo, con análisis de regresión lineal “bivariada” y múltiple “paso a paso”. Los hallazgos destacan la necesidad de coadyuvar al proceso de construcción de paz desde la esfera académica, mediante la planeación e implementación de formación cognitiva y protección psicosocial. Se concluye que las universidades requieren centrarse en desarrollar saberes y alternativas de relaciones -desde el deber ser- en proyectos de innovación social que consoliden valores, criterios y principios de integración en la evolución y desarrollo de nuevas relaciones dentro del contexto societario postconflicto.

**Palabras Clave:** deontología, responsabilidad social universitaria, innovación social.

### **Abstract**

The purpose of the paper is to analyze correlation between the ethics and social responsibility as a university foundation to innovate socially in post-conflict era. The research was conducted under the positivist paradigm, descriptive, transeccional, no experimental, of field, with linear regression "bivariate" and multiple "step by step" analysis. The findings highlight the need to contribute to the process of building peace from the academic sphere, through planning and implementation of training cognitive and psychosocial protection. It is concluded that universities need to focus on developing knowledge and relationships -from alternatives duty ser- social innovation projects that strengthen values, standards and principles of integration in the evolution and development of new relations in the post-conflict societal context.

**Keywords:** deontology, university social responsibility, social innovation, post-conflict.

### **Introducción**

El artículo presenta un análisis correlacional (desde la perspectiva hipotética) sobre como la deontología y responsabilidad social universitaria pueden convertirse en cimientos de la innovación social en época de postconflicto, considerando que el 26 de Septiembre de 2016 se firmó el acuerdo final de paz entre las Fuerzas Armadas Revolucionarias de Colombia (FARC) y el Gobierno de Juan Manuel Santos, y en

forma paralela se promueve un espacio para negociar con la insurgencia del Ejército de Liberación Nacional (ELN), por lo tanto, el sector universitario tiene el deber de incorporarse como componente articulador de las relaciones modales entre los sectores involucrados.

En este orden de ideas, este artículo se organizó en cuatro partes, en las cuales se expone como la deontología y la responsabilidad social universitaria guardan una estrecha relación, en cuanto a proveer formación ética y moral de la ciudadanía:

En la primera parte, se despliegan los antecedentes teóricos e investigativos sobre los cuales se estipula el cuestionamiento del rol que requiere asumir el sector universitario y los elementos que puede utilizar para facilitar la transición de la sociedad en épocas de postconflicto.

En la segunda parte se presenta la metodología utilizada en la ejecución de la investigación, la cual se realizó desde una concepción paradigmática positivista con análisis estadísticos que incluyen el funcionamiento de la estructura explicativa de los referentes teóricos en función de la responsabilidad social universitaria.

En la tercera parte se presentan los hallazgos producto de la investigación sobre deontología y responsabilidad social universitaria y como pueden constituirse en cimientos para fortalecer los procesos de innovación social en época de postconflicto, coadyuvando así al proceso de transición hacia a construcción de paz.

Finalmente, en la cuarta parte se promueven conclusiones relacionadas con los aportes de las instituciones de educación superior que formaron parte del proceso de investigación.

## **Despliegue Teórico De La Investigación**

El sector universitario es un actor vital en la sociedad, aun mas cuando en naciones se presentan conflictos armados, tal como es el caso de Colombia, donde concurre desde principios de los años 60 un escenario de trance armado permanente en el cual la universidad, ha asumido en oportunidades diversos caracteres de agente pasivo, activo, responsable, generador de violencia e inclusive víctima del desarrollo de tal conflictividad.

Dentro del contexto universitario existen dos elementos que pueden complementarse para asistir como bases de complejión a la innovación social en establecer relaciones comunitarias fundadas en la paz: a) la deontología entendida como la creación de conciencia de responsabilidad, partiendo del postulado que todo valor está íntimamente relacionado con la idea de un bien y sustentado en la naturaleza racional del hombre (Fernández y Pino, 2005); y b) la responsabilidad social universitaria fundamentada en el nuevo humanismo que coadyuve a establecer relaciones estables del ser humano en sociedad, desestimando en consecuencia las condiciones de conflictividad, sustituyéndolas por una transformación hacia la cooperación humana (Martin, 2009).

Afrontar época de postconflicto demanda resolver un acumulado traumático (individual, colectivo, directo o indirecto) que se manifiesta en síntomas de indiferencia, depresión, rabia, temor, desconfianza, dolor, odio, y para solucionar tales heridas se hace necesario reconstruir la memoria histórica, el tejido social, la confianza e impulsar la restitución y reparación transformadora individual y colectiva. (Bouvier, 2014).

Partiendo de estas definiciones, se cuentan con experiencias a nivel nacional e internacional sobre el aporte de universidades a la construcción de paz, y en este sentido Echavarría, Bernal, Murcia, Gonzalez (2015) refieren que la motivación ética y moral de construcción de paz emplaza al florecimiento humano

bajo un proyecto que configure la diversidad de criterios y formas no violentas de convivencia, es decir, aprender a vivir en la pluralidad con los aprendizajes que ello implica.

### **Deontología: Conciencia De Responsabilidad Basada En El Ideario De Bien Sustentado En La Naturaleza Racional Del Hombre.**

Partimos del aporte de Frances (2008) quien afirma que la deontología es la ciencia normativa que tiene como objeto crear conciencia de responsabilidad, y parte del postulado que todo valor está íntimamente relacionado con la idea de un bien vinculado con la naturaleza racional del hombre, desde su concepción espiritual y libre para construir el bien moral, mientras Habermas (1999) indica que en la dignidad de la vida humana, en un ordenamiento justo y de relaciones de respeto y paz, ninguna persona tiene el derecho a disponer de otra o a controlar sus posibilidades de acción sustrayendo parte esencial de su libertad bajo ningún medio.

Sin embargo, destaca López (2007) que para la deontología kantiana existe una diferencia entre obrar según el deber (obrar instrumentalmente cumpliendo el deber con arreglo a otro fin) y obrar por el deber mismo (obrar moralmente en virtud del deber mismo), subrayando que para consolidar la segunda de las premisas se hace necesaria la presencia de la inclinación así como la voluntad que no son impuestas por las normas, sino que deviene de quien elige la racionalidad independientemente de la inclinación al hecho que pueda ser considerado como necesario o bueno; esta noción Kantiana es universal y rige las acciones a través del imperativo categórico también denominado “de la moralidad”.

La deontología establece al sector universitario una obligación moral de relacionarse con el contexto social, para poder fomentar la transformación de la cultura de violencia hacia la construcción de paz promoviendo valores, conocimientos, habilidades, actitudes, creencias y prácticas que se sustenten en el respeto de ideas diferentes y la dignidad humana.

La deontología de conformidad con Echavarría et al (2015) promueve el cultivo de la humanidad para crear condiciones de vida desde la pluralidad, lo cual implica la construcción del futuro con base a deseos colegiados, comunes y respetuosos de la particularidad de cada ser humano, haciendo énfasis en el ejercicio de la libertad como factor coadyuvante de la convivencia en pluralidad, donde generar aprendizajes a partir de este principio ético sea la condición de toda vida política.

### **Responsabilidad Social Universitaria**

La responsabilidad social, constituye la otra variable cuyo propósito es vincularla con la función que ejerce el sector universitario en su labor diaria. Para Guédez (2006), la responsabilidad social es una combinación de aspectos legales, éticos, morales y ambientales, así mismo es una decisión voluntaria, no impuesta, donde se establece como principal estandarte en su cultura organizacional, la ética, la moral, los principios cívicos y ciudadanos y todo lo referente a sus valores.

Por su parte, De la Cuesta (2002), plantea que, de acuerdo a la práctica de la responsabilidad social como actividad organizacional, se debe abordar en los ámbitos económicos, social y medio ambiente, asimismo, plantea la transparencia informativa respecto a los resultados alcanzados en tales ámbitos; y finalmente el escrutinio externo de los mismos.

La Organización Internacional del Trabajo (2007), plantea que la responsabilidad social es el conjunto integral de políticas, prácticas y programas centrados en el respeto por la ética, las personas, las comunidades y el medio ambiente. En este mismo sentido Soto y Cárdenas (2007) explican que fundamentalmente, el concepto de responsabilidad social es un concepto ético, que requiere la

modificación de las ideas acerca del bienestar humano y realza el interés de la actividad del negocio que se relaciona con el mejoramiento de la calidad de vida, desde el punto de vista social.

Por su lado, la Organización de Estados Americanos – OEA y el Banco Interamericano de Desarrollo – BID (2007), señalan que es una política vinculada a la calidad ética de la gestión del colectivo universitario, a través de los impactos educativos, cognitivos, laborales y ambientales que la universidad logre generar en la sociedad.

La Responsabilidad Social Universitaria (RSU) según Vallaey (2012), debe articularse holísticamente en todas las áreas de la institución por cuanto se encarga de promover los principios éticos y de desarrollo social equitativo para la formación de ciudadanos responsables y la producción de saberes. Por su parte, Castañeda, Ruiz, Vilorio, Castañeda & Quevedo (2007), perfilan doce aspectos que deben ser asumidos como resultado de los cambios permanentes a los cuales están expuestas las instituciones de educación superior: Ética, equidad social, medio ambiente, sostenibilidad ciudadana y democrática, compromiso con la comunidad, calidad, crecimiento económico, marketing responsable, evaluación crítica, pluridisciplinariedad, e interdependencia.

De acuerdo con el Ministerio de Educación de España (2011) la Responsabilidad Social Universitaria es una reconceptualización del conjunto de la institución universitaria a la luz de valores, objetivos, formas de gestión e iniciativas que implican un mayor compromiso con la sociedad y con la contribución a un nuevo modelo de desarrollo más equilibrado y sostenible. Este enfoque se aplica tanto en su visión y gestión interna como en su proyección exterior, es decir, en su relación con las personas y los entornos social, económico, ambiental y cultural de sus labores.

Por tal motivo, la Responsabilidad Social Universitaria puede ser comprendida como un compromiso de todas las personas involucradas en el contexto universitario en dar respuestas plenas a la dignidad de las personas y la sociedad con su desarrollo y bienestar.

### **Deontología y Responsabilidad Social Universitaria: Convergencia de Innovación social en pro de la paz.**

La deontología y la responsabilidad social universitaria son términos que no pueden ser tratados en distintos aspectos debido a la importancia que representan al ser capaces de evolucionar hasta una etapa donde puede y desea conciliar el interés de quienes pertenecen a la institución de educación superior y las demandas de la sociedad.

Para Guédez (2008), la deontología y la responsabilidad social universitaria no representan grados consagatorios, por el contrario, crecen y se afianzan, se alcanzan y reorientan a lo largo de una secuencia continua e ininterrumpida, donde estas conjugaciones funcionan hacia lo interno y externo, evolucionando en complejidad y exigencia para dar respuestas a las exigencias de los seres humanos que viven en sociedad.

Bajo ese mismo orden de ideas, la responsabilidad social universitaria, es entendida hoy en día como una línea estratégica que facilita la participación en procesos de desarrollo sociales de los países. Pelekais y Aguirre (2008), expresan implicaciones de una deontología de la responsabilidad social universitaria congruente, donde el crecimiento de esa responsabilidad comienza cuando se reconoce que hay actos propios, como la calidad, cuyas consecuencias vitales le pertenecen, y se refieren al individuo como a su origen. Este reconocimiento de pertenencia se origina a medida en que, social y privadamente, se eliminan las excusas. El auténtico responsable se siente como tal en medio de ellas, porque pudo haberlas previsto, porque debió adelantarse, porque debió salir a su encuentro, afrontándolas.



Una aproximación a la deontología de la responsabilidad social universitaria en pro de la paz, sugiere la modalidad de presencia, que previene y convoca el orden en cuanto a instaurar horizontes de acción, donde se presentan mediaciones primarias (acciones y sus efectos en el campo de la naturaleza y de los seres humanos) o secundarias; dimensiones mediatrices en las que se sitúan las obras de acción (la construcción del saber, la creación estética, la instauración de la paz en lo político).

En este mismo orden de ideas, para Pizzolante (2009), las universidades socialmente responsables, cumplen con un conjunto de normas y principios referentes a la realidad social, económica y ambiental que se basa en valores, que le ayudan a ser más competitiva, y establece como principales estándares en su cultura organizacional, la ética, la moral, y todo lo que se refiere a valores. Estas directrices en acción como base pueden ser: a) Dignidad Humana, b) El bien común, c) Participación Social, d) Principio de Solidaridad, e) Calidad de Vida, f) Cuidado del Medio Ambiente, g) Desarrollo Humano. H) Transparencia, i) Desarrollo Científico y Ético. Por consiguiente, una Universidad Socialmente Responsable cuenta con políticas, programas y estrategias que favorecen a un pleno desarrollo humano en la sociedad.

De acuerdo a Jensen y Miller (2008), mediante la correlación de la deontología y la responsabilidad social universitaria, se pueden obtener soluciones a problemas sociales como la construcción de la paz en época de postconflicto de manera eficaz, eficiente y sostenible. El carácter amplio de la innovación social le permite ser un producto, proceso de producción, tecnología, un principio, una idea, una pieza de legislación, un movimiento social, una intervención o alguna combinación de ellos.

En concordancia con lo anteriormente señalado, la Comisión Europea (1995) plantea en su Libro Verde de la innovación, que, ante los problemas de una sociedad, la innovación puede ser una opción para mejorar la calidad de vida de las comunidades a cualquier nivel: salud, seguridad, transporte, comunicaciones, seguridad en del trabajo y medio ambiente, entre otros beneficios que puede proveer. En este sentido, se presenta la tabla N° 1 en la cual se indican algunos criterios que pueden considerarse como características de una innovación con carácter social:

**Tabla 1: Características de la innovación con carácter social**

Propuesta	Características
Albuquerque (2003)	Aumentar la calidad de prestaciones, producto de los incrementos en la productividad; dinamizar el potencial creativo e innovador en la solución de problemas en ambientes propicios y estimulantes; satisfacer los cambios en las necesidades de la demanda.
Comunidad Europea (2011)	Proceso participativo de empoderamiento, aprendizaje y bienestar; implica cambios en las actitudes, valores fundamentales, estrategias, políticas, estructuras organizativas y procesos, sistemas de entrega y servicios, métodos y formas de trabajo, responsabilidades y tareas de las instituciones y los vínculos entre los diferentes actores
Comisión Europea (1995)	Calidad de vida de las comunidades a cualquier nivel, salud, seguridad, transporte, comunicaciones, seguridad en del trabajo y medio ambiente, entre muchos otros beneficios
Phills, Deiglmeier y Miller (2008)	Mejora de productos, procesos de producción, tecnologías, ideas, legislaciones, movimiento social, una intervención en la comunidad, o alguna combinación.

	Solución a un problema social que es más eficaz, eficiente y sostenible que las soluciones existentes y el valor creado se acumula principalmente en la sociedad (beneficios o reducción de costos). Intervienen gobiernos y organizaciones con o sin fines de lucro.
Future Trends Forum (Fundación de la Innovación Bankimer, 2010)	a) la innovación planificada y aplicada a los modelos de negocio y productos; b) la habilidad de las empresas privadas para resolver de manera más efectiva que los gobiernos, los problemas sociales y medioambientales; c) la innovación colaborativa como ecosistema del futuro para poner en común las ideas de una mayor variedad de agentes en un entorno abierto a la participación; y d) la función de la tecnología (comunicaciones, Internet) para facilitar la innovación colaborativa.
Harris y Albury (2009)	La innovación social está orientada por el bien social, público y necesidades sociales mal servidas u obviadas por el mercado o el estado y provista por el sector público, privado o de terceros y necesariamente deben abordar los principales desafíos sociales.
Westall (2007)	Centrada en objetivos sociales, productos de calidad, nuevos métodos de organización y/o de producción, gobernabilidad, nuevas relaciones de mercado y nuevas formas jurídicas
NESTA (2008)	Nuevos productos, servicios o modelos para cumplir con necesidades básicas insatisfechas. Puede ser transmitida a través de una profesión o sector (educación o salud) o geográficamente de un lugar a otro.
OCDE (2010)	Satisfacer problemas sociales no provistas por el mercado a través de productos y servicios, procesos de integración laboral y formas de participación. Se trata del bienestar de individuos, comunidades, consumidores y productores.

*Fuente: León, Batista, Contreras (2012)*

### **Caracteres Metodológicos**

La investigación se desarrolló bajo el paradigma positivista, descriptivo, transeccional, no experimental y de campo. La población estuvo conformada por cinco (05) universidades privadas del Departamento Atlántico de Colombia. En materia de recolección de datos se realizó a través de una encuesta con base a un cuestionario, con escala ordinal multivariada y opciones múltiples de respuesta.

La muestra estuvo conformada por personal administrativo y docentes adscritos vinculadas directamente con actividades Deontológicas y de Responsabilidad Social, representados por 120 personas en total entre Decanos, Directivos de Bienestar Social, Docentes e Investigadores (muestra censal finita). Se aplicó prueba piloto para calcular la confiabilidad mediante el procedimiento de Test y Retest, validado posteriormente con el coeficiente de Hoytt, arrojando una confiabilidad de 0,94 lo que refiere consistencia en el constructo instrumental.

Para la recolección de datos, se utilizó en una primera instancia la regresión lineal “bivariada” el cual permitió obtener el coeficiente de correlación que facilitó establecer la potencia explicativa de la variable

independiente deontología, en razón del término de la responsabilidad social universitaria; ahora bien para profundizar en esta relación se empleó el análisis de regresión “paso a paso” con la finalidad de detectar cuales de los componentes e indicadores de las bases éticas predicen a las condiciones de estudio a la responsabilidad social universitaria; los datos se tabularon en forma automatizada mediante el programa SPSS versión 21, y analizados según las consideraciones de Hernández, Fernández & Baptista (2004), Tamayo y Tamayo (2011)

## Hallazgos Producto De La Investigación

Los resultados arrojados demuestran que, en el modelo utilizado en las instituciones de educación superior, así como el rol deontológico que asumen en cuanto al desempeño de formación cognitiva y protección psicosocial para la construcción de paz en época de posconflicto, presenta debilidades en las acciones concebidas para el apoyo al proceso de transición. Sin embargo, desde el punto de vista correlacional de las variables puede observarse una tendencia que debe ser fortalecida para aprovechar la fusión de elementos.

## Hallazgos Estadísticos

Con el propósito de generar una explicación de la Responsabilidad Social Universitaria en función de la Deontología como cimientos de la innovación social en épocas de postconflicto, se evaluaron los datos cuantitativos que se muestran en la tabla 2, resultando que la mejor explicación de una variable en razón de la otra es el modelo cubico contenido en la Tabla N° 3, debido a que el R cuadrado es de 0,473. Sin embargo, al compararlo con el modelo lineal la ganancia en la bondad de ajuste es solo del 4%, por otro lado, la disminución en el error estándar de estimación es de 0,008 Tabla 3 y 4. En consecuencia siguiendo el principio de parsimonia, adicionalmente al hecho que el valor de  $r=0,66$ , considerado alto para una investigación no experimental, ex po facto como es el caso presente, se selecciona el modelo lineal, el cual queda establecido como:

$$\text{RESPONSABILIDAD SOCIAL} = 0,943 \quad \text{DEONTOLOGIA} = -3,05$$

**Tabla 2: Resumen y Estimaciones del Parámetro.**

Dependencia de la Variable: Responsabilidad Social									
Resumen del Modelo					Parámetros Estimados				
Ecuación	R Cuadrado	F	Df1	Df2	Sig.	Constante	b1	b2	b3
Lineal	0,432	15,24	1	20	0,001	-0,305	0,943		
Logarítmica	0,408	13,8	1	20	0,001	-1,089	3,303		
Inverso	0,38	12,256	1	20	0,002	6,295	-11,154		
Cuadrático	0,469	8,401	2	19	0,002	5,343	-2,197	4,25	
Cubico	0,473	8,537	2	19	0,002	2,904	0	-2,17	0,061
Compuesto	0,415	14,163	1	20	0,001	1,059	1,335		
Potencia	0,398	13,205	1	20	0,002	0,824	1,019		
S	0,377	12,087	1	20	0,002	2,093	-3,473		

Crecimiento	0,415	14,163	1	20	0,001	0,057	0,289		
Exponencial	0,415	14,163	1	20	0,001	1,059	0,289		
Independencia de la Variable: Deontología									

Fuente: Elaboración propia (2018)

**Tabla 3: CUBICO**

Resumen			
R	R Cuadrada	R Cuadrado Ajustado	Std. Desviación Estándar o Error de la Estimación.
0,688	0,473	0,419	0,65
<i>La Variable Independiente está basada en la Deontología</i>			

Elaboración propia (2018)

Para profundizar más en la naturaleza de la explicación de la Responsabilidad Social en función de la deontología se identificaron los indicadores de esta que mejor la explican, empleando la regresión múltiple paso a paso, cuyo resultado permitió obtener un modelo cuya bondad de ajuste es del 83,4% el cual permitió determinar que de todos los indicadores que los explican, en las condiciones de estudio a la Responsabilidad Social Universitaria son: Valores para crear paz, Aprendizaje Colectivo en Innovación Social, Actitudes (Tabla 4) es decir que estos indicadores son los que a la postre hacen que la deontología explique el comportamiento de la organización en términos de la responsabilidad social. De este modo el análisis multivariado queda conformado de la siguiente manera:

$$\text{RESPONSABILIDAD SOCIAL} = 0,747 \text{ VALORES} + 0,499 \text{ CONOCIMIENTOS} - 0,450 \text{ ACTITUD}$$

**Tabla 4: Bondad de ajuste estimado con los indicadores de la deontología**

Resumen				
Modelo	R	R Cuadrado	R Cuadrado Ajustado	Std. Desviación Estándar o Error de la Estimación.
1	,726a	0,527	0,504	0,6
2	,788b	0,621	0,581	0,651
3	,834c	0,696	0,645	0,507
a) Predictores: (Constante) Valores para crear paz				
b) Predictores: (Constante) Valores para crear paz, Aprendizaje Colectivo en Innovación Social				
c) Predictores: (Constante) Valores para crear paz, Aprendizaje Colectivo en Innovación Social, Actitud.				

Fuente: Elaboración propia (2018)

### Exégesis de hallazgos

Ahora bien, se presenta una aproximación de los indicadores, en este orden de ideas la deontología es considerada un pilar fundamental dentro del ser humano como persona, porque permiten permear conductas éticas en la sociedad, destacando que es una cualidad real que poseen las acciones, las sociedades y las personas; y además se encuentran inherentes en cada una de ellas como parte de su

propia naturaleza, y que ser ético implica actuar con inteligencia, considerando la mejor manera de lograr los objetivos propuestos, así como el valor de esos objetivos, de modo que los objetivos perseguidos sean dignos de alcanzarse.

### Hallazgos sobre Deontología

Los resultados de la Tabla N° 5 indican que el coeficiente de correlación lineal es de ,432 para el resumen lineal basado en Deontología por lo que el 40% de la variabilidad se explica por las variables predictores. Es decir, que a pesar de existir los valores como elementos constitutivos de la deontología existen debilidades en cuanto a plantear formalmente el marco ético-social dentro del cual la universidad debe llevar a cabo sus acciones, y que en consecuencia la conducta de los individuos dentro del contexto universitario no logra encausarse plenamente dentro de las funciones de las instituciones de educación superior relacionadas con generar transformaciones culturales y sociales favorables a la consolidación de prácticas y valores de paz, representaciones de igualdad y justicia, inclusión, buen vivir y democracia.

**Tabla 5: LINEAL**

Resumen			
R	R Cuadrada	R Cuadrado Ajustado	Std. Desviación Estándar o Error de la Estimación.
,658	,432	,404	,658
La Variable Independiente está basada en la Deontología			

*Fuente: Elaboración propia (2018)*

Adicionalmente, los valores dentro de la institución de educación superior no están legitimando a plenitud su existencia ante la sociedad, por cuanto no satisfacen necesidades humanas que se traducen en bien común bajo la óptica de compromiso social y cumplimiento de sus obligaciones. Desde esta perspectiva, las instituciones de educación superior no promueven con énfasis la formación en valores que fortalezcan las interacciones sociales en función del florecimiento humano.

En materia de aprendizaje colectivo en la Tabla N° 4, se observa resistencia de las personas que se ven obligadas a adaptarse a nuevas capacidades, procesos y a actualizar los conocimientos periódicamente, ser permanentes, compartir y desarrollar conocimientos (,788) con un 62% de variabilidad. El aprendizaje colectivo a pesar de estar presente en la variable en estudio, existe debilidad en cuanto a las competencias que se desarrollan para trabajar en la resolución de problemas mediante la innovación social. Aun cuando está presente en los individuos que forman parte de la universidad, se observa que presentan debilidad en cuanto a enfrentar las situaciones de carácter social.

En cuanto a la Actitud, se percibe en la Tabla N° 4 que existe debilidad en un promedio alto sobre las acciones de entrega diligente a las tareas asignadas (,834) con un 69% de variabilidad, implicando disposición para dar oportuna y esmerada atención a los requerimientos y trabajos encomendados, apertura y receptividad para encausar peticiones, demandas, quejas y reclamos del contexto social, limitándose solamente a las tareas que han sido asignadas dentro del nivel de rendimiento y jornada horaria establecida.

### Responsabilidad Social Universitaria

De acuerdo a los resultados de la Tabla N° 5 se precisa que al momento de realizarse el análisis Responsabilidad Social Universitaria fundadas en los indicadores de la deontología que explica su existencia se encuentra que la variable “Valores para crear paz”, mantiene una preponderancia (,697),

(,437) y (,717) dentro del margen de los coeficientes no estandarizados y estandarizados que regulan las actividades de Responsabilidad Social Universitaria, ello significa que es compartida por todos los miembros y enmarcan sus acciones dentro del bien común para crear paz, haciendo la salvedad que la mayor parte de estas actividades son orientadas dentro del contexto organizacional.

**Tabla 6: Indicadores de la Deontología que explican la responsabilidad Social**

**Coefficientes**

Modelo	Coefficientes No Estandarizados	Coefficientes Estandarizados		t	Sig.
	B	Desviación Estándar	Beta		
1. (Constante) Valores para crear paz	0,533	0,602		,886	,386
	,697	,148	,726	4,725	,000
2.(Constante) Valores para crear paz Aprendizaje Colectivo en Innovación Social	,278	,565		,493	,628
	,437	,181	,455	2,415	,026
	,323	,149	,409	2,166	,043
3.(Constante) Valores para crear paz Aprendizaje Colectivo en Innovación Social Actitud	,533	,534		,997	,332
	,717	,213	,747	3,363	,003
	,394	,141	,499	2,790	,012
	-,444	,211	-,450	-2,104	,050
a) Dependencia de la Variable: Responsabilidad Social					

*Fuente: Elaboración propia (2018)*

En tal sentido, se evidencia que las acciones corresponsables se encuentran en los orígenes y el contexto propio de la organización, en función a las actuaciones compartidas entre los miembros de ésta. Igualmente, se percibe que la corresponsabilidad ha consolidado una relación entre identidad y pertenencia. Ello indica que existe una alta moral dentro de la organización aun cuando la relación gobierno-empresa-sociedad es débil lo cual dificulta a su vez que la sociedad civil pueda identificarse con organizaciones no gubernamentales, organizaciones de desarrollo social e instituciones de educación superior.

Con base a ello, el logro de esta articulación se define en asumir posiciones congruentes, así mismo que actualmente la responsabilidad social universitaria solo alude el compromiso obligatorio impuesto en la academia, además se observan pocas de extensión e investigación que interactúen con los sectores sociales para socializar el conocimiento y la orientación justa en su aporte social.

**Conclusiones**

En materia de deontología, existen indicadores (valores para crear paz, aprendizaje colectivo en innovación social y la actitud), que debido a las debilidades que presentan dificultan la concepción del marco ético-social dentro del cual la universidad debe llevar a cabo sus acciones, hecho que está ligado a

la afirmación de Fernández y Pino (2005) quienes refieren que la deontología señala a la libertad de la voluntad como elemento capital de la reflexión moral lo cual al no ser ejecutado a plenitud desvirtúa el poder desarrollar transformaciones culturales que puedan basarse en valores de paz, representaciones de igualdad y justicia, inclusión, buen vivir y democracia (marco ético social).

Partiendo de la correlación positiva existente entre la deontología y la responsabilidad social universitaria, se puede inferir que el sector universitario está llamado a ejercer un rol protagónico en fortalecimiento del rol de participación e integración que deben ejercer todos los ciudadanos. Tal afirmación coincide con Guédez (2008), quien refiere que esta conjugación funciona hacia lo interno y externo de la universidad, evolucionando en complejidad y exigencia para dar respuestas a las exigencias de los seres humanos que viven en sociedad.

En consecuencia, con un sistema educativo que parta de bases éticas y morales, se puede ofrecer a la sociedad posibilidades ciertas de pensar la paz, esta afirmación se alinea con Habermas (1999), quien señala que la dignidad de la vida humana se circunscribe a relaciones de respeto y paz.

La deontología y la responsabilidad social generan un espacio de comunicación con la sociedad donde se enfocan a llevar a cabo proyectos de acción social, que devienen en la construcción de paz como respuesta a una demanda ética y moral ejercida de la sociedad. Este resultado coincide con Westall (2007) al referir la innovación social debe centrarse en los objetivos sociales, nuevos métodos de organización, de producción, gobernabilidad, nuevas relaciones de mercado y nuevas formas jurídicas, lo cual abriría un espacio idóneo para las nuevas concepciones de integración y participación.

Finalmente, se logró determinar que las universidades Colombianas requieren centrarse en desarrollar saberes y alternativas de relaciones -desde el deber ser- en proyectos de innovación social que consoliden valores, criterios y principios de integración en la evolución y desarrollo de nuevas relaciones dentro del contexto societario postconflicto, puesto que en la actualidad se realizan esfuerzos aislados para los cuales no se ha indicado una estandarización sobre la forma en la cual abordar los conflictos derivados de la convivencia en sociedad y por ende de una cultura de paz.

## Referencias Bibliográficas

Bouvier, V. (2014). "Colombia: la construcción de la paz en tiempos de guerra". Editorial Universidad del Rosario (Bogotá).

Castañeda, G., Ruíz, M., Vilorio, O., Castañeda, R. & Quevedo, Y. (2007). "El rol de las universidades en el contexto de la responsabilidad social empresarial". *Revista Negotium*. Ciencias Gerenciales, 3(8), 100-132.

Comisión Europea. (1995). "Libro Verde de la Innovación". European Commission Publications (Bruselas).

Comisión Europea. (2011). "Estrategia renovada de la UE para 2011-2014 sobre responsabilidad social de las empresas". Comunicación de la Comisión al Parlamento Europeo, al Consejo, al Comité Económico y social europeo de las regiones. Oficina de Publicaciones de la Unión Europea (Bruselas).

De la Cuesta, M. (2002). "Inversiones Éticas en Empresas Socialmente Responsables". Universidad Nacional de Educación a Distancia – UNED (Madrid).

Echavarría, C., Bernal, J., Murcia, N., González, L., Castro L. (2015). "Contribuciones de la institución educativa al postconflicto: Humanizarte, una propuesta pedagógica para la construcción de paz". *Revista Cuadernos de Administración*. Universidad Javeriana Bogotá. 15-25.

- Fernández, E. y Pino, L. (2005). "Filosofía y ética gerencial para las empresas del siglo XXI". *Revista de Estudios Interdisciplinarios en Ciencias Sociales (TELOS)*. Universidad Rafael Bellosillo Chacín. 7 (1), 37-50.
- Francés, A. (2008). *Compromiso social: Gerencia para el siglo XXI*. Ediciones Instituto de Estudios Superiores de Administración – IESA (Caracas).
- González, M., (2014). "La Dimensión Ética en el Modelo Jurídico Multidimensional Propuesto por Fernando Martínez Paz". *Revista de la Facultad*, Vol. V N° 2 Nueva Serie II (2014) 233-241.
- Guédez, V. (2006). "Ética y práctica de la responsabilidad social empresarial. aporte de la empresa al capital social". Editorial Planeta (Caracas).
- Guédez, V. (2008). "Ser confiable. Responsabilidad social y reputación empresarial". Editorial Planeta (Caracas).
- Habermas, Jürgen. (1999). "Una consideración genealógica acerca del contenido cognoscitivo de la moral". En: *La inclusión del otro. Estudios de teoría política*. Paidós (Barcelona).
- Hernández, R., Fernández, C. & Baptista, P. (2004). "Metodología de la Investigación". Mc Graw Hill (México). 4° Edición.
- Jensen, R., Nolan H. (2008). "Giffen Behavior and Subsistence Consumption". *American Economic Review*. Vol. 98, no. 4, september 2008 (pp. 1553-77).
- León, M., Baptista, M., Contreras, H., (2012). "La innovación social en el contexto de la responsabilidad social empresarial". *Revista FORUM Empresarial*. Vol. 17, Núm. 1, pp. 31-63.
- López, R. (2006). "La Ética y la Moral: Trascendencia del Funcionario Público". Trabajo Monográfico. Universidad Católica Andrés Bello. (Caracas).
- Martín, V., (2009). "Responsabilidad Social Universitaria". Cuadernos Curso Responsabilidad Social Empresarial. (Caracas).
- NESTA. (2008). "Social innovation: New approaches to transforming public services". Policy Briefing, 1-4. Disponible en: [http://www.nesta.org.uk/library/documents/social\\_innovation\\_pb.pdf](http://www.nesta.org.uk/library/documents/social_innovation_pb.pdf). [Consultado el 14-01-2017].
- OECD. (2010). "Social entrepreneurship and social innovation". SMEsEntrepreneurship and Innovation. Disponible en [http://ec.europa.eu/internal\\_market/social\\_business/docs/conference/oecd\\_en.pdf](http://ec.europa.eu/internal_market/social_business/docs/conference/oecd_en.pdf). [Consultado el 10-05-2016].
- Organización de Estados Americanos, Banco Interamericano de Desarrollo. (2007). "¿Cómo enseñar ética, capital social y desarrollo en la Universidad? Estrategias de RSU". Iniciativa Interamericana de Capital Social, Ética y Desarrollo del BID. (Chile).
- Phills Jr., J., Deiglmeier, K., y Miller, D. (2008). "Rediscovering social innovation". *Stanford Social Innovation Review*, 6(4), 34-43.
- Pizzolante, I., (2012). "Modelo de fortalecimiento institucional para la comunicación estratégica en empresas socialmente responsables." Disponible en: [http://gumilla.org/biblioteca/bases/biblo/texto/COM2010152\\_20-26.pdf](http://gumilla.org/biblioteca/bases/biblo/texto/COM2010152_20-26.pdf). [Consultado el 18-01-2016].



Tamayo y Tamayo, M. (2011). "El proceso de la Investigación Científica". Editorial Limusa Noriega Editores. (México).

Vallaey, F. (2011), "Les fondements éthiques de la Responsabilité Sociale". Tesis de Doctorado. Université Paris Est Créteil. Disponible en: <http://blog.pucp.edu.pe/item/149507/these-de-doctorat-les-fondementsethiquesde-la-responsabilite-sociale>. [consultado el 15-01- 2015].

Vallaey, F. (2012). "Responsabilidad Social Universitaria". En Memorias Octava Cátedra Abierta de Extensión 2012. ISSN: 2027-5765. Medellín. Colombia. (pp. 21-45).

## **Analysis of the VAT Gap Influence Factors in European Context**

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### **Abstract**

This paper analyzes the level of influence of the economic, fiscal and social factors on the Value Added Tax gap. VAT gap is the difference between the estimated VAT liability and the VAT actually paid in the state budget. This study focuses on the years between 2000 to 2015 and is based on a multiple Panel regression for 26 European countries. For the purpose of this paper 12 explanatory variables were used. Conclusions revealed increasing gap influences for the majority of the economic explanatory variables; however, variables such as the Corruption Perception Index revealed decreasing influences on the VAT gap. Moreover, a high level of VAT gap highlights a high tax evasion level and also the presence of activities linked to shadow economy, therefore better fiscal discipline and control are needed.

**Keywords:** VAT gap, tax evasion, shadow economy, fraud

### **Introduction**

Tax evasion is a problem which grows proportionally with the expansion of the economy and causes negative effects that eventually affect citizens by disrupting their activities. Although difficult to fight and quantify tax evasion, economists are doing significant efforts in estimating tax evasion and implementing fiscal control methods in order to reduce this phenomenon.

Corruption and various interests are a few of the most important factors which sustain activities related to tax evasion. Moreover, when it comes to elements eligible to VAT, we talk about a considerable tax base. From overlooking to give a receipt for the goods sold in a store to import activities which lead to “carousel” frauds, VAT evasion is a current, real problem with a negative impact on economy and society.

A complex economy such as the one of the European Union, in which VAT is harmonized, deals with VAT evasion. This paper analyses the influence of economic, fiscal and social factors on the gap computed as the difference between the estimated VAT liability and the VAT that is actually received within a period of time. A special report of the European Court of Auditors regarding intra-community VAT frauds, the most common used VAT fraud is the “missing trade intra-community trade” which involves a dummy company. Within the fraud scheme, a trader from state A (VAT intra-community system member) sells goods to a trader or a dummy company from state B. The dummy company, which is registered as VAT payer in state B, benefits from an intra-community goods delivery exempted from VAT, offers the goods on the internal market at competitive prices and receives VAT from clients. Finally, this dummy company do not pay the VAT to state budget and disappears without a trace. This type of fraud is recognized as carousel fraud in which several parts are involved. “Carousel” fraud scheme gets complicated when, besides the dummy company other buffers are involved, sometimes without them consciously knowing they are a part of a fraud scheme. Moreover, third countries may appear in the scheme.

Carousel schemes comprise high quality and value goods such as precious metals (gold, silver and platinum), precious stones, mobile phones and sensitive computer parts (CPU's). Other common traded goods are the intangible ones such as carbon credits, electricity and gases. In addition, schemes involve trade with mass produced fruits and vegetables which are not available in some countries and do not grow in every period of the year and have a high yield and compete with goods locally produced. Fighting such tax fraud implies an efficient cooperation between authorities from each member state in order to exchange information through adequate mechanisms and instruments.

This paper studies the influence of a number of economic, fiscal and social factors on VAT gap for 26 European countries (EU members) between 2000 and 2015. The paper is sectioned as it follows: first section is the introduction which presents conceptual information about VAT and tax fraud types; second section highlights the VAT gap evolution in Romania; third section comprises the literary review and the last section is dedicated to the empirical analysis with its results and conclusions.

### Romania and the VAT gap

Romania is the country which registered the highest estimated VAT gap values relative to the total estimated VAT liability for the entire period of time from 2000 to 2015. Figure 1 shows values between 34% and 49%. The maximum value of 49% was registered for two non-consecutive years, in 2001 and 2009.

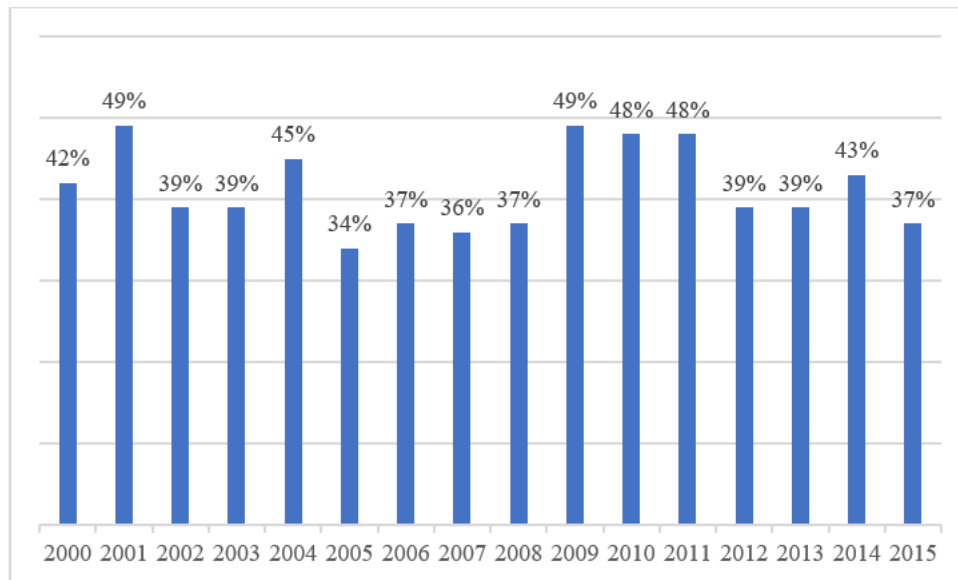


Fig 1. VAT gap evolution in Romania between 2000 – 2015

Furthermore, the estimated level of the Romanian shadow economy as GDP percentage is shown in figure 2 and expresses high values with a minimum of 22,73% in 2014 and a maximum of 34,4% in 2000.

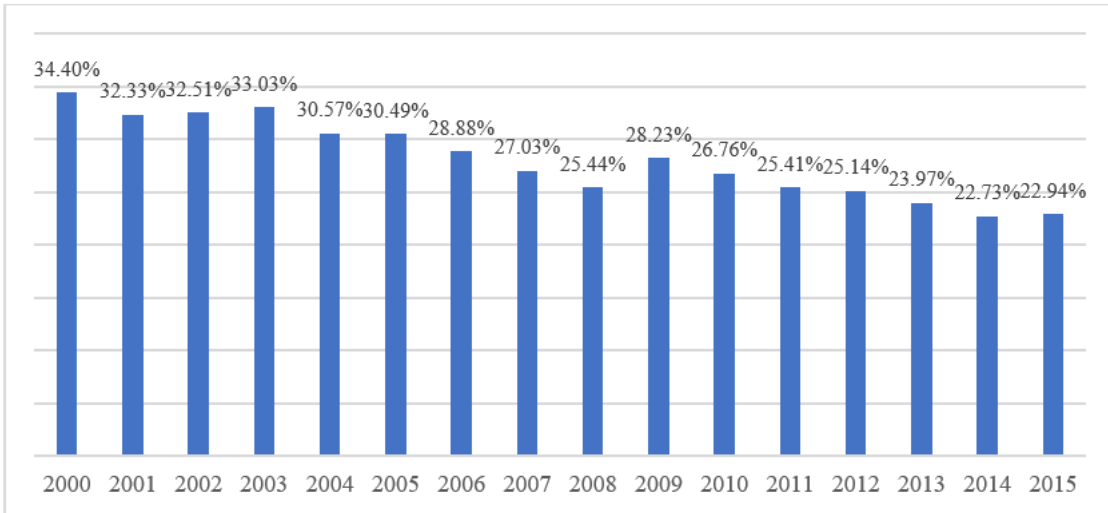


Fig 2. Romanian shadow economy as GDP percentage

The following figure shows the VAT gap for all the analysed countries. The reference year is 2015 and most importantly Romania is highlighted as the member with the highest gap value.

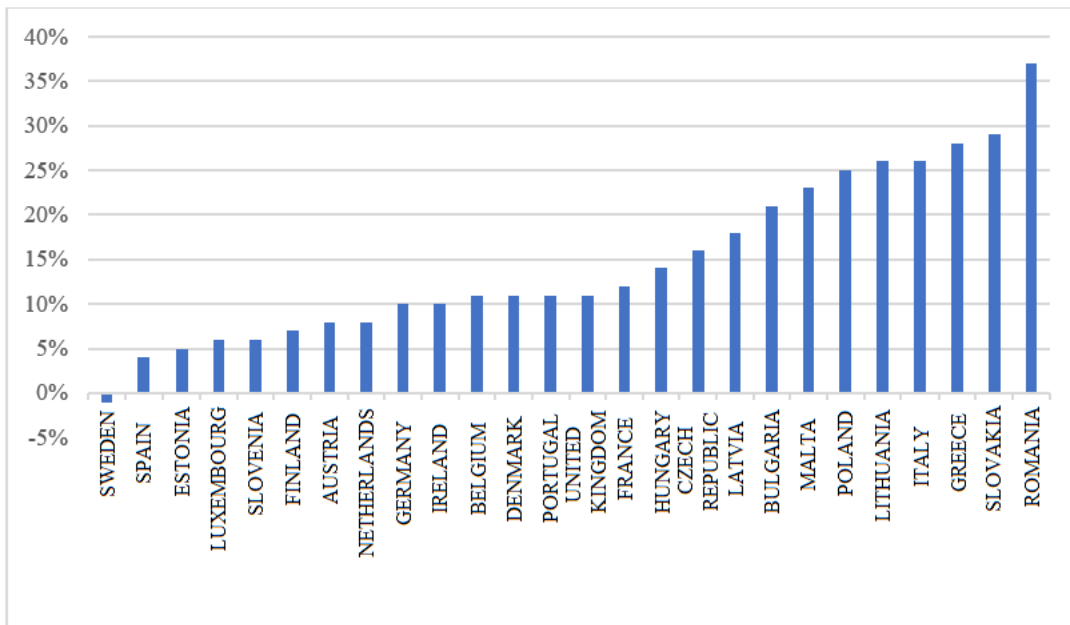


Fig 3. VAT gap in 2015 (total VAT liability percentage)

## Literature Review

Empirical studies based on VAT gap estimations consider the effects of the influencing factors. A remarkable amount of VAT gap estimations are completed by **CASE**, thus for the purpose of this study a part of the **CASE (2013, 2014, 2015 and 2017)** data are used. Moreover, data regarding shadow economy are based on the paper by **Schneider F. și Medina L. (2018)**.

**Zidkova H. and Pavel I. (2016)** examine the statistical significance of 21 explanatory variables upon the VAT gap (dependent variable) by using a multiple Panel regression (2000 – 2011), only four variables were significant. Their analysis demonstrated that an increase in VAT revenues as GDP percentage has a negative impact on the dependent variable. Also, the authors established that an increase in the standard rate of VAT would have a positive impact and household consumption as GDP percentage would also increase the gap. On the same note, for the period of time between 2000 and 2011, **Majerová I. (2016)** determines the influence of three variables on the gap: Corruption Perception Index, economic growth and VAT rate (used to highlight the fiscal burden) by using a regression model. Only the first two explanatory variables are significant with the CPI negatively influencing the gap. Economic growth has positive impact.

**Agha A. and Haughton J. (1996)** analyze the impact of some certain influencing factors upon VAT tax evasion by using data for 17 countries, members of the OECD, for 1987. Authors consider a compliance index as dependent variable and a few explanatory variables that are characteristic for each country. Conclusions revealed that a high VAT rate is linked to a lower compliance level, so this limits VAT revenues to 25%; VAT system compliance gets lower as the number of rates increases. Additionally, most of the OECD countries collect a VAT amount of approximately 8% of GDP but only from rates between 14% and 22%.

**Christie E. and Holzner M. (2006)** estimated the degree of fiscal compliance in 25 European countries (2000 – 2003) by using a fixed effects regression. Explanatory variables consisted in indirect and direct taxes and social contributions. The authors' study confirmed the hypothesis that tax evasion is positively correlated to tax rates. Also, unequal income leads to an increase in tax evasion and the quality of judicial system plays a very important role in justifying tax evasion that is highly linked to shadow economy. Moreover, authors found that tax evasion decreases with the same amount as the revenues from tourism activities as GDP percentage increases.

**D'Agosto E. et al (2014)** focus on the VAT gap influence factors for 20 Italian regions from 2007 to 2010 by using a Panel model regression and explanatory variables regarding public administration such as added value in the public sector, social and economic environment and both public and private consumption. Their results proved a positive correlation to the economic environment, business cycle and taxation perception in particular geographical areas.

**Aizenman and Jinjark (2005)** evaluate the political economy and structural factors for 44 countries by explaining the level of efficiency in collecting the VAT by using a Panel data model from 1970 to 1999. Authors mainly considered that the efficiency in collecting taxes is determined by audit techniques and penalties for not paying. Theoretically it is considered that efficiency is driven by economic and political consideration, also political instability would reduce the efficiency in tax collection. Additionally, structural factors such as urbanization level, agriculture and imports ease tax evasion. In order to compute the dependent variable, authors divided the aggregate consumption VAT revenues to the standard rate of VAT. The conclusions of the analysis display that an increase in the viability of the political regime would increase the efficiency in VAT collection.

**Bird et al (2004)** studies tax evasion in developing countries by using as explanatory variables social and institutional factors such as government efficiency index and GINI coefficient.

Authors of **Reckon (2009)** study quantify and analyze the VAT gap in 24 European Union state members for the years 2000 to 2006. The study approaches a Panel data regression model with random effects. The only significant independent variable was the Corruption Perception Index for which it was demonstrated it has negative impact on VAT gap. The results of the **CASE** reports are based on estimations of the VAT gap in the European Union state members.

**CASE (2013)** computes gap estimations for 2000 – 2011 years and concludes that VAT losses result from a high unemployment rate and most of the countries with deficitary tax collection register higher values of the gap. Within this study, authors seek to evaluate business turnover and VAT rate by using as main variable of control the Corruption Perception Index because it is highly likable this would influence the level of fiscal discipline. **Barbone et al (2012)** do a correlation assesment for 25 EU members for a period of time of seven years, jointly 2000 – 2006m and proves a positive correlation between the VAT gap and the administrative costs related to VAT collection. The conclusions bring forth the concern of VAT compliance and frauds correlated to it.

## Research Methodology and Database

The analysis of the VAT gap influence factors as well as the assessment of their impact are based on a multiple regression model. Data used corresponds with 26 of the 28 EU member states (no estimations were made for Cyprus and Croatia due to no data). Values of the variables are displayed in a Panel model with 26 cross-sections, 416 observations and time ranges from 2000 to 2015. The software programmes used are Eviews 7 and Microsoft Excel 2016.

The variables used in the estimation are shown in Table 1, influence factors consisting in economic, fiscal and control variables. The econometric analysis is based on a regression equation with relative estimated values of VAT gap as dependent variable (data is processed from CASE studies – Center for Social and Economic Research).

VAT gap is the difference between the estimated VAT liability and the actual VAT received in the state budget during a period of time. High values of the gap underlines the presence of activities linked to shadow economy that emerge to impoverishment and economic destabilization remarkably determined by distinct interests and a high level of corruption.

The following is the regression equation:

$$\text{VAT\_GAP}_{it} = \alpha_0 + \alpha_1 \cdot \text{VAT\_REVENUES}_{it} + \alpha_2 \cdot \text{UNEMPL}_{it} + \alpha_3 \cdot \text{SHADOW\_EC}_{it} + \alpha_4 \cdot \text{REAL\_GDP}_{it} + \alpha_5 \cdot \text{NPISH\_CONS}_{it} + \alpha_6 \cdot \text{IND\_VAL}_{it} + \alpha_7 \cdot \text{IMPORTS}_{it} + \alpha_8 \cdot \text{HOT\_REST}_{it} + \alpha_9 \cdot \text{GDP\_GRATE}_{it} + \alpha_{10} \cdot \text{GDP\_CAP}_{it} + \alpha_{11} \cdot \text{CORRUPT}_{it} + \alpha_{12} \cdot \text{AGRIC\_VAL}_{it} + \epsilon_{it}$$

Where i stands for the number of countries (EU – 26) and t for the year (2000 – 2015).

The estimation of the regression equation is performed with the least squares method by taking in consideration 416 observations (annual data). The hypothesis parameters are the following:

$$H_0: \alpha_0 = \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 = \alpha_9 = \alpha_{10} = \alpha_{11} = \alpha_{12};$$

$$H_1: \text{there is at least one } \alpha_{ij} \neq 0$$

No random or fixed effects were used for the purpose of the empirical analysis. Moreover, according to F-statistic probability, the model is valid.

**Table 1. Variables**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
<b>I. Dependent variable</b>		
<b>VAT gap (VAT_GAP)</b>	Values are expressed as relative percentage of total VAT revenues	CASE
<b>II. Explanatory variables</b>		
<b>1. Economic variables</b>		
<b>GDP per capita (GDP_CAP)</b>	Natural logarithm of real GDP per capita	Eurostat (national accounts) Database
<b>Real GDP (REAL_GDP)</b>	Deflated GDP natural logarithm	Online Eurostat Database
<b>Economic growth (GDP_GRATE)</b>	GDP growth rate	WorldBank Database
<b>Unemployment rate (UNEMPL)</b>	Unemployed persons expressed as percentage of the active population with ages between 15 and 64 year old	Online Eurostat Database
<b>Final household consumption and NPISH (Non-governmental institutions)</b>	As GDP percentage	
<b>Final consumption of restaurants and hotels (HOT_REST)</b>	As total final consumption percentage	

<b>Value added from agriculture, forestry and fishing activities (AGRIC_VAL)</b>	Various activities net production as GDP percentage	
<b>Added value from industry (including constructions) (IND_VAL)</b>		
<b>Imports (IMPORTS)</b>	Imports expressed as GDP percentage	
<b>2. Fiscal variables</b>		
<b>VAT (VAT_REVENUES)</b>	VAT received as percentage of total fiscal revenues	Online Eurostat Database
<b>3. Control variables</b>		
<b>Corruption Perception Index Percepția și libertatea de corupție (CORRUPT)</b>	This variable is based on the Corruption Perception Index (CPI), a composed index which measures, through questionnaires, the level of corruption perceived by the population of different 183 countries; it is measured with a score from 0 (very corrupt country) to 100 (very low corrupt country).	The Heritage Foundation online database
<b>Shadow economy (SHADOW_EC)</b>	Estimated values of the shadow economy as GDP percentage	Schneider F., Medina L., (2018), <i>Shadow Economies Around the World: What Did We Learn Over the Last 20 Years?</i>

## Results

Table 2 comprises the descriptive statistics of the model's variables and displays medium, maximum and minimum values as well as their standard deviations. The VAT gap recorded between 2000-2015 a medium value of 16,76%, a minimum value of -1% (Sweden, 2015) and a maximum value of 49% (Romania; 2001 and 2009). Also, the values of the GDP per capita and real GDP are logarithmated. Others are expressed in percentages.



**Table 2. Descriptive statistics of the variables**

	<b>Mean</b>	<b>Maximum</b>	<b>Minimum</b>	<b>Std. Dev.</b>
<b>VAT_GAP</b>	0.16769	0.49	-0.01	0.10547
<b>AGRIC_VAL</b>	0.02541	0.13046	0.0023	0.01885
<b>CORRUPT</b>	63.0817	100	26	19.8568
<b>GDP_CAP</b>	9.79104	11.4355	7.4654	0.78926
<b>GDP_GRATE</b>	0.02397	0.25557	-0.1481	0.03749
<b>HOT_REST</b>	0.07975	0.192	0.021	0.03716
<b>IMPORTS</b>	0.56663	1.875	0.229	0.297
<b>IND_VAL</b>	0.24555	0.38404	0.10671	0.0532
<b>NPISH_CONS</b>	0.55648	0.70772	0.30048	0.08142
<b>REAL_GDP</b>	12.0081	14.8455	8.5926	1.60169
<b>SHADOW_EC</b>	0.1811	0.353	0.0769	0.06717
<b>UNEMPL</b>	0.08848	0.2747	0.018	0.04357
<b>VAT_REVENUES</b>	0.20664	0.349	0.127	0.04191

In a statistical inference perspective, econometric tests were performed in order to investigate whether the errors are identically and independently distributed or not. Correlation matrix was analyzed altogether with the testing of residual normality by using Chi-square test. Because the model examines consecutive data, stationarity was also determined with the Dickey-Fuller test (ADF test).

In the reference literature more variables are taken in consideration such as: per capita consumption, government expenditure, tertiary education and fiscal variables such as the number of VAT rates. For the purpose of this paper it was decided these variables mentioned above to be excluded because they were either inter-correlated to GDP per capita, Corruption Perception Index and other VAT variables.

**Table 3. Econometric estimation results (no effects)**

Dependent Variable: VAT_GAP				
Method: Panel Least Squares				
Sample: 2000 2015				
Periods included: 16				
Cross-sections included: 26				
Total panel (balanced) observations: 416				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.408314	0.188067	-2.171111	0.0305
VAT_REVENUES	-0.869085	0.140876	-6.169140	0.0000
UNEMPL	0.165399	0.094703	1.746503	0.0815
SHADOW_EC	-0.222619	0.093977	-2.368864	0.0183
REAL_GDP	-0.015275	0.004873	-3.134513	0.0018
NPISH_CONS	0.537683	0.085996	6.252403	0.0000
IND_VAL	0.342518	0.090123	3.800554	0.0002
IMPORTS	0.068828	0.023435	2.937017	0.0035
HOT_REST	-0.650808	0.111081	-5.858844	0.0000
GDP_GRATE	-0.410345	0.101700	-4.034850	0.0001
GDP_CAP	0.074017	0.015029	4.924972	0.0000
CORRUPT	-0.003156	0.000366	-8.630165	0.0000
AGRIC_VAL	3.090624	0.344828	8.962805	0.0000
R-squared	0.584874	Mean dependent var		0.167692
Adjusted R-squared	0.572513	S.D. dependent var		0.105465
S.E. of regression	0.068956	Akaike info criterion		-2.479956
Sum squared resid	1.916217	Schwarz criterion		-2.353997
Log likelihood	528.8307	Hannan-Quinn criter.		-2.430152
F-statistic	47.31574	Durbin-Watson stat		0.477756
Prob(F-statistic)	0.000000			

Table 3 features the EViews output of the econometric estimation and table 4 highlights the estimated coefficients together with their probabilities. Moreover, statistical levels of significance are 5% and 10%.

**Table 4. Explanatory variables estimated coefficients and their probabilities**

Independent variables	Coef	Prob	Determine
C	-0.408314	0.0305	
VAT_REVENUES	-0.869085	0.0000	VAT gap decrease with 0,87%
UNEMPL	0.165399	0.0815**	VAT gap increase with 0,16%
SHADOW_EC	-0.222619	0.0183*	VAT gap decrease with 0,22%
REAL_GDP	-0.015275	0.0018	VAT gap decrease with 0,01%

<b>REAL_GDP</b>	-0.015275	0.0018	VAT gap decrease with 0,01%
<b>NPISH_CONS</b>	0.537683	0.0000	VAT gap increase with 0,53%
<b>IND_VAL</b>	0.342518	0.0002	VAT gap increase with 0,34%
<b>IMPORTS</b>	0.068828	0.0035	VAT gap increase with 0,06%
<b>HOT_REST</b>	-0.650808	0.0000	VAT gap decrease with 0,65%
<b>GDP_GRATE</b>	-0.410345	0.0001	VAT gap decrease with 0,41%
<b>GDP_CAP</b>	0.074017	0.0000	VAT gap increase with 0,07%
<b>CORRUPT</b>	-0.003156	0.0000	VAT gap decrease with 0,0031%
<b>AGRIC_VAL</b>	3.090624	0.0000	VAT gap increase with 3,09%

Legend: \*significance level of 5%; \*\* significance level of 10%.

Explanation of the determine section: When the explanatory variable increases with one percentage point, the dependent variable would increase/decrease with the estimated value of the coefficient.

On one hand, in a great proportion, the factors taken in consideration have a positive influence on the dependent variable. On the other hand, from a qualitative perspective an increase in VAT gap is undesirable, but targeting such increasing factors would lead to a better management and prevention of activities associated with VAT gap increasement.

$R^2$  coefficient stands for the fact that 58,48% of VAT gap is related to the variation of the explanatory variables ( $R^2$  adjusted is 57,25%). The regression model is valid due to F statistic test probability ( $H_0$  is rejected: invalid model;  $H_1$  is accepted for a 99,9999% probability: valid model). The correlation coefficient,  $r$ , computed as  $\sqrt{R^2}$  is 0,76477.

## Conclusions

The study stresses on the impact of the economic, fiscal and social factors that influence the VAT gap by assessing through econometric tests their social and economic consequences. VAT tax evasion is difficult to quantify due to the size of the tax base. Also, fighting tax evasion becomes more difficult when greed for benefits from different groups or persons intervenes. VAT gap and shadow economy estimation methods are extremely helpful instruments because they measure losses, determine the factors that influence the gap and fix reduction objectives. Unfortunately, Romania is still the country with the higher level of VAT evasion compared to the other 25 countries.

Firstly, an increase in unemployment rate (UNEMPL) leads to an increase in the gap which may imply that unemployed people and people able to work may be involved in illicit activities or may work without a contract (undeclared work). Another variable that increases the gap is the final consumption of households and NPISH (NPISH\_CONS), its impact may be interpreted as it follows: consumers use

goods and services which are not invoiced or they are invoiced at a lower value in order to reduce the payable VAT (examples: services given by small companies, goods bought from obscure sellers, fruits and vegetables, cereals etc). Value added from industrial activities, construction, agriculture, fishing and forestry contribute as well in increasing the gap, fact which may be justified by a deficient control of authorities and ill-intentions of producers, sellers and business people.

Secondly, and perhaps the most important explanatory variable of the study, imports, have the impact of increasing the gap because they ease carousel frauds. Other than that, two surprising results are given by VAT revenues and the size of the shadow economy with both having a decreasing impact on the gap. Moreover, increasing the Corruption Perception Index leads to VAT evasion reduction.

Finally, the paper reveals the need for a greater commitment in fiscal control and a greater lever of fiscal discipline in favor of reducing the VAT gap.

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## References

Agha A. and Haughton J.,(1996), *Designing VAT Systems: Some Efficiency Considerations*, The Review of Economics and Statistics, 78, No. 2, pp. 303 – 308;

Aizenmann J. and Jinjara Y. (2005), *Collection Efficiency of Value Added Tax: Theory and International Evidence*, NBER Working Paper No. 11539;

Barbone L. Bird R.M. and Vazquez-Caro J. (2012), *Costs of VAT: A Review of the Literature*, CASE Network Reports, No. 106, pp. 2 – 66;

Bird R., Martinez-Vazquez M. and Torgler B. (2004), *Societal Institutions and Tax Effort in Developing Countries*, CREMA Working Paper No. 2004-21;

CASE (2013): Study to Quantify and Analyse VAT Gap in EU-27 Member States. [Final Report.] Hague: CPB Netherlands Bureau for Economic Policy Analysis.] Available from: <[http://ec.europa.eu/taxation\\_customs/sites/taxation/files/resources/documents/common/publications/studies/vat-gap.pdf](http://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/common/publications/studies/vat-gap.pdf)>;

CASE (2014): 2012 Update Report to Study to Quantify and Analyse VAT Gap in EU-27 Member States [Report for the European Commission]. Hague: CPB Netherlands Bureau for Economic Policy Analysis. Available from: <[http://ec.europa.eu/taxation\\_customs/sites/taxation/files/resources/documents/common/publications/studies/vat\\_gap2012.pdf](http://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/common/publications/studies/vat_gap2012.pdf)>;

CASE (2015): 2013 Update Report to Study to Quantify and Analyse VAT Gap in EU-27 Member States [Report for the European Commission]. Hague: CPB Netherlands Bureau for Economic Policy Analysis. Available from: <[https://ec.europa.eu/taxation\\_customs/sites/taxation/files/docs/body/vat\\_gap2013.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/docs/body/vat_gap2013.pdf)>. CASE (2017): Study and Reports on the VAT Gap in the EU-28 Member States: 2017 Final Report. Available from: <[https://ec.europa.eu/taxation\\_customs/sites/taxation/files/study\\_and\\_reports\\_on\\_the\\_vat\\_gap\\_2017.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/study_and_reports_on_the_vat_gap_2017.pdf)>

Chiarini B., Marzano E. and Schneider F.,(2009), *Tax Rates and Tax Evasion: An Empirical Analysis of Structural Aspects and Long-Run Characteristics in Italy*, IZA Working Paper No. 3447;

Christie E. and Holzner M. (2006), *What Explains Tax Evasion? An Empirical Assessment based on European Data*, The Vienna Institute for International Economic Studies Working Papers, June 2006;

Curtea Europeană de Conturi: *Combaterea fraudei intracomunitare în domeniul TVA: sunt necesare eforturi suplimentare*;

D'Agosto E., Marigliani M. and Pisani S., (2014), *Asymmetries in the Territorial Vat Gap*, Discussion topics, Rome: Italian Revenue Agency;

<http://ec.europa.eu/eurostat/data/database>;

<https://www.heritage.org/index/explore>;

Hutton E. (2017), *The revenue administration – Gap Analysis Program: Model and Methodology for Value-Added Tax Gap Estimation*, International Monetary Fund, Technical Notes and Manuals;

Majerová I. (2016), *The Impact of Some Variables on the VAT Gap in the Member States of the European Union Company*, Oeconomia Copernicana; Torun Vol. 7, Iss. 3, (Sep 2016): 339-355;

Novyzedlak V. and Palkovicova J. (2012), *Estimate of Value Added Tax Revenue Loss. Bratislava: Institute for Financial Policy, Ministry of Finance of the SR*;

Reckon LLP. (2009), *Study to Quantify and Analyse the VAT Gap in the EU-25 Member States*. Available from:

<[http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/tax\\_cooperation/combating\\_tax\\_fraud/reckon\\_report\\_sep2009.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/tax_cooperation/combating_tax_fraud/reckon_report_sep2009.pdf)>;

Schneider F. and Medina L., (2018), *Shadow Economies Around the World: What Did We Learn Over the Last 20 Years?*, IMF Working Paper;

Zidkova H. and Pavel J. (2016), *What causes the VAT Gap?*, Ekonomický časopis, 64, 2016, č. 9, s. 811 – 826.

## **Influencia del Neuromarketing en la Decisión de Compra de los Consumidores del Sector Retail: Un Caso de Estudio.**

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### **Abstract**

El neuromarketing consiste en la aplicación del conocimiento sobre las neurociencias a las acciones del marketing tradicional. Sin embargo, no existen estudios sobre la influencia de este sobre los consumidores del sector retail. El objetivo de la investigación consiste en determinar la influencia de la aplicación del neuromarketing en la decisión de compra de los consumidores del sector retail en una ciudad chilena. Para llevar a cabo esta investigación, se encuestaron a más de 400 consumidores y la información obtenida se procesó mediante métodos estadísticos. Como resultado se obtuvo que un 66% de los consumidores se sienten influenciados a realizar una compra debido a la publicidad. Respecto a esto, los factores que más influyen en la decisión de compra son: color, oferta, envase y comerciales, que corresponden al neuromarketing visual, el cual es el que influye mayoritariamente. Por otro lado, la música ambiental, que corresponde al neuromarketing kinestésico, también influye en la decisión de compra, pero en menor medida. En base a los resultados obtenidos, se puede concluir que los consumidores del sector retail compran de manera inconsciente, esto debido a la influencia de alguna técnica del neuromarketing, con lo que se puede afirmar que este último es efectivo en el proceso de compra, es decir, que influye en la decisión de compra de los consumidores de la ciudad.

**Palabras clave:** Neuromarketing, Neurociencia, Marketing, Decisión de Compra, Sector Retail.

### **Introducción**

El marketing es un concepto en constante evolución, por lo que existe una gran cantidad de definiciones, las más relevantes son aquellas planteadas por Stanton et al (1992), Howard (1993), Kotler (2005) y por la American Marketing Association (2013), las cuales coinciden en que el concepto de marketing apunta a identificar y satisfacer las necesidades de los consumidores.

Si bien las herramientas tradicionales utilizadas en marketing como encuestas o focus group, siempre han estado acompañadas de estadísticas, economía, psicología, etc. no siempre entregan resultados favorables incluso si los resultados de los mismos muestran un escenario positivo, es por esto que se incorpora al área de marketing la ciencia para comprender la psicología del consumidor con la utilización de los avances tecnológicos ante estímulos que despiertan diferentes regiones del cerebro que nos permiten responder mejor a las necesidades de los clientes.

La neurociencia, por otro lado, de acuerdo a la definición de Kandel (2007) “representa la fusión, bastante reciente, entre distintas disciplinas, entre ellas; la biología molecular, la electrofisiología, la neurofisiología, la anatomía, la embriología y la biología del desarrollo, la biología celular, la biología comportamental, la neurología, la neuropsicología cognitiva y las ciencias cognitivas”. Beiras (2008) agrega que “el término neurociencias hace referencia a campos científicos y áreas de conocimiento diversas, que, bajo distintas perspectivas de enfoque, abordan los niveles de conocimiento vigentes sobre el sistema nervioso”.

Los avances producidos por la neurociencia en los años noventa han permitido conocer con mayor profundidad el comportamiento del cerebro en la acción de compra, que permitirán conectar de manera más eficiente el producto o servicio con el cliente y satisfacer sus necesidades, generando una mayor empatía en la comunicación de las estrategias de marketing para el posicionamiento de mercado.

El Neuromarketing, según Braidot (2009) se define como “una disciplina de avanzada, que investiga y estudia los procesos cerebrales que explican la conducta y la toma de decisiones de las personas en los campos de acción del marketing tradicional: inteligencia de mercado, diseño de productos y servicios, comunicaciones, precios, branding, posicionamiento, mercado objetivo, canales y ventas”.

La principal diferencia entre la investigación de mercado tradicional y los métodos del neuromarketing se centra en que las personas no son analizadas mediante su opinión, sino más bien por medio del registro de actividades cerebrales de los participantes a través de herramientas neurocientíficas. La investigación de neuromarketing permite la identificación de reacciones ante estímulos del subconsciente de los individuos. El desarrollo con la neurociencia nos acercaría a una mayor comprensión sobre el comportamiento inconsciente del consumidor que permitan potenciar los productos y marcas desde una nueva perspectiva y con originalidad.

Considerando que la mayoría de las grandes empresas utilizan el neuromarketing como herramienta complementaria, y sumado a ello la carencia de estudios respecto de la aplicación del neuromarketing en el proceso de compra, es que surge la siguiente pregunta: ¿la aplicación del neuromarketing influye en las decisiones de compra de los consumidores del sector retail en una determinada ciudad de Chile?

El artículo se estructura como sigue, en la siguiente sección se presenta el concepto de neuromarketing, en la sección 3 se revisan algunos trabajos previos, la sección 4 describe la metodología de trabajo, la sección 5 muestra los resultados obtenidos y la sección 6 presenta las conclusiones del estudio.

## **Background**

El surgimiento del neuromarketing fue descrito por Álvarez (2011) donde afirma que “el neuromarketing fue explorado por primera vez en el año 1999 por Gerry Zaltman en la Universidad de Harvard, sus hallazgos permanecieron en opacidad hasta que en el año 2001 realizó estudios para marcas como Coca-Cola, Home Depot y Delta Airlines. Usando las más avanzadas técnicas científicas como la imagen por resonancia magnética funcional (fMRI) y electroencefalogramas (EEG)”, mediante estos avances tecnológicos podían mediar las reacciones cerebrales ante estímulos para que las marcas conocieran las preferencias de sus clientes.

Según Castro (2013) “el neuromarketing es una técnica del marketing que contribuye a la comprensión de los procesos cerebrales que determinan el comportamiento de las personas para la toma de decisiones de compra”.

Randall (2016), establece que el neuromarketing consiste en la aplicación de las técnicas de investigación de las neurociencias a la investigación de marketing tradicional. Sin embargo, las técnicas utilizadas en neuromarketing son muy diferentes a las técnicas tradicionales de marketing, ya que estas se apoyan de herramientas científicas de diagnóstico cerebral. Algunas de las más utilizadas se encuentran: la resonancia funcional por imagen (fMRI), la resonancia magnética (RM) y electroencefalografía (EEG).

De acuerdo a lo señalado por del Blanco (2011), el neuromarketing se define como “La utilización de métodos neurocientíficos para analizar y comprender el comportamiento humano y sus emociones en relación con el mercado y sus intercambios”. El consumidor, la neurociencia y el mercado son elementos esenciales para entender el neuromarketing.

Según Fisher (2010), el neuromarketing se define como: “una estrategia de publicidad que es considerada por muchos como la manipulación del cerebro humano para alcanzar metas económicas”. Un estudio del 2009 realizado por Mindcode expuesto por Klaric (2012), experto en neuromarketing, relata que, de cada diez campañas publicitarias, solo cuatro cumplen las expectativas que buscan los clientes. De cada diez campañas solo cinco cumplen las metas y cada diez lanzamientos de productos que son realizados en Estados Unidos, solamente dos cumplen los planes establecidos para el logro de las metas.

Existen claras diferencias entre el marketing tradicional y la nueva disciplina de investigación de mercado, el neuromarketing producto de la incorporación de las tecnologías neurocientíficas, ha alcanzado un gran interés por quienes estudian mercadotecnia, pero más allá del alcance comparativo, el neuromarketing es un complemento para los métodos tradicionales de recaudación de información sobre los mercados objetivos, que permitirán básicamente comprender con una concepción más amplia las conductas de decisión de compra por medio de la información de las zonas del cerebro que se estimulen ante la publicidad y permita conocer las motivaciones y preferencias de los individuos.

### **Trabajos Relacionados**

En la literatura existen diversos estudios relacionados con el neuromarketing, pero estos se relacionan con la actividad cerebral, es decir, la respuesta del cerebro humano ante los estímulos de las diversas técnicas del neuromarketing. Algunos de estos estudios se presentan a continuación.

McClure et al (2004) realizaron un experimento en donde, utilizando un escáner cerebral, compararon la reacción de un grupo de 76 personas sobre sus preferencias para 2 bebidas azucaradas similares, Coca-Cola y Pepsi. Los resultados del experimento indicaron que mientras las personas no conocieran la marca de la bebida que estaban probando, las preferencias por una u otra se distribuían equitativamente. Sin embargo, cuando las personas conocían la marca, se mostró mayoritariamente una preferencia por probar Coca-Cola.

En otro sentido Venkathan et al (2011), utilizando una gestión de marca como ejemplo, proponen que la neurociencia proporciona una nueva forma de establecer asignaciones entre los procesos cognitivos y los datos de comercialización tradicionales, es decir que, una mejor comprensión de los mecanismos neuronales de la toma de decisiones mejorará la capacidad de los profesionales de marketing para comercializar de manera efectiva sus productos.

Falk et al (2012), realizó un experimento con fumadores que presentaban una fuerte decisión a dejar el hábito. La prueba consistió en una medición de la actividad cerebral, mediante FMRI, mientras estos veían campañas publicitarias en televisión que llamaban a dejar la práctica. Además, los fumadores proporcionaron predicciones auto-reportadas sobre la efectividad de las campañas. Los resultados indicaron que la actividad neuronal en la región prefrontal de interés, previamente asociada con el cambio de comportamiento individual, predijo la respuesta de la población, mientras que los juicios auto-reportados no.

En un experimento realizado por Khushaba et al (2013), registraron la actividad cerebral, mediante EEG, de un grupo de participantes que tomaba decisiones con respecto a sus galletas favoritas ante estímulos como forma, sabor y cubierta. Los resultados mostraron que en el EEG existe un cambio claro y significativo en la actividad cerebral en las zonas frontal, temporal y occipital cuando los participantes indican sus preferencias sobre sus galletas favoritas.

Asimismo, Berčík et al (2016) estudiaron el efecto de la música y la mercancía sobre las percepciones y emociones de los consumidores, mediante un EEG y métodos biométricos (seguimiento de ojos). El experimento consistió en evaluar las reacciones de 11 participantes, de distinto sexo, edad, nivel educacional, frente a videos promocionales de vino, en los cuales en algunos casos tenían música (música a ritmo y rápido) y en otro caso no. Los resultados mostraron que se registró una alta percepción de sensibilidad de los participantes en los casos en que los videos tenían música. En el



caso de la música con ritmo rápido, se mostró una rápida decisión de compra; en el caso de la música con ritmo lento, se mostró una decisión más pausada.

Sin embargo, estos estudios no toman en cuenta la percepción de los consumidores respecto de la influencia del neuromarketing. Por otro lado, existe un estudio de percepción de Castro (2013) sobre el análisis de neuromarketing en el sector retail. El estudio consistió en identificar las prácticas visuales de neuromarketing de 124 establecimientos comerciales de un centro comercial. Los resultados arrojaron que en la mayoría de los establecimientos comerciales se realizan algunas prácticas relacionadas con el neuromarketing en donde utilizan principalmente los colores y las imágenes. No obstante, este estudio se realiza en Cúcuta, Colombia.

## Metodología De Investigación

En base a lo presentado anteriormente, respecto al uso de las técnicas de neurociencia aplicadas al marketing, y sumado a ello la carencia de estudios que permitan conocer la percepción de los consumidores sobre el neuromarketing y sus decisiones de compra, es que surge la siguiente pregunta de investigación: ¿La aplicación del neuromarketing influye en las decisiones de compra de los consumidores del sector retail?.

- Hipótesis: El neuromarketing influye en la decisión de compra de los consumidores de una ciudad.

Para afirmar o refutar la hipótesis, y responder a la pregunta de investigación, se realizará un estudio a través de encuestas a las personas mayores de edad en una ciudad chilena, con el fin de determinar la influencia del neuromarketing en la decisión de compra de los consumidores del sector retail. La investigación se basa en los siguientes enfoques: Cualitativo: Utiliza la recolección de datos sin medición numérica para profundizar preguntas de investigación, describir, comprender e interpretar los fenómenos a través de las percepciones y conductas de los encuestados. Cuantitativo: Debido a que se utilizó la recolección de datos para probar la hipótesis, con base en la medición numérica y el análisis estadístico, con el fin de establecer patrones de comportamiento.

Para llevar a cabo este estudio, se utilizaron dos tipos de investigaciones: exploratorio y descriptiva, ya que en primera instancia se examinó el concepto de neuromarketing, el cual es un tema muy poco estudiado y abordado, y a su vez, se recogió información donde se especifican características y rasgos importantes de la población analizada con el fin de cumplir el objetivo general de este estudio.

La metodología de investigación utilizada para este estudio se presenta a continuación:

- Determinación del tamaño de la muestra: Se obtuvieron los datos demográficos de la población mayor de 18 años de la ciudad. De acuerdo con esto, se obtuvo un tamaño para la muestra de  $n= 473$  personas. En este sentido, para los encuestados, se consideraron aspectos tales como Género: Femenino y masculino. Edad: Mayores de 18 años, debido a que cuentan con poder adquisitivo para realizar una compra y además pueden adquirir todo tipo de productos dado que cumplen el requisito de mayoría de edad (alcohol, cigarrillos, entre otros).
- Diseño de la encuesta: Se establecen las secciones de la encuesta y se define el tipo de preguntas incluidas en la misma, las cuales son: 1 pregunta cerrada, tipo ranking; 1 pregunta cerrada, de elección única, de tipo dicotómica; 1 pregunta abierta; 13 preguntas cerradas, escala, de tipo nominal y 2 preguntas mixtas.
- Aplicación de las encuestas: Las encuestas se realizaron de manera presencial en distintos sectores y supermercados de la ciudad. También, se realizaron encuestas online a universitarios, dueñas de casa, trabajadores, entre otros. Los sectores mencionados anteriormente fueron seleccionados debido a que comercializan marcas que utilizan neuromarketing y se encuentran distribuidos en distintos sectores de la ciudad, por otro lado,

se realizaron encuestas en una universidad pública ya que concentra gran cantidad de personas.

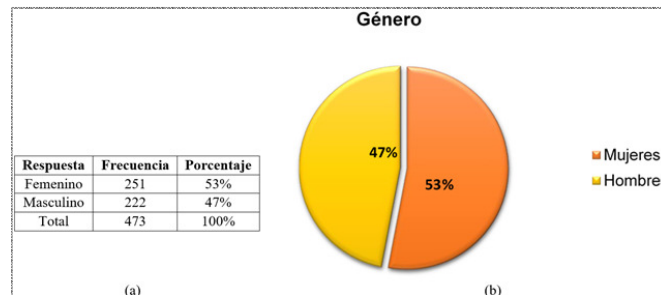
- **Resultados:** Una vez obtenidos los datos de las encuestas, se tabularán y analizarán los resultados, con los cuales determinar si el neuromarketing influye en el comportamiento de compra de las personas que viven en la ciudad.

## Resultados

Los datos obtenidos de las encuestas fueron procesados utilizando una planilla de cálculo, en donde se tabularon los resultados de las encuestas para ser representados a través de gráficos y tablas de frecuencias. Los principales resultados se muestran a continuación.

### *Género del encuestado.*

Del total de los encuestados en la ciudad de Copiapó, el 53% corresponden a mujeres y el 47% a hombres (Ver Figura 1).



**Fig. 1: (a) Tabla de frecuencia de respuestas por género. (b) Gráfico de distribución porcentual por género.**

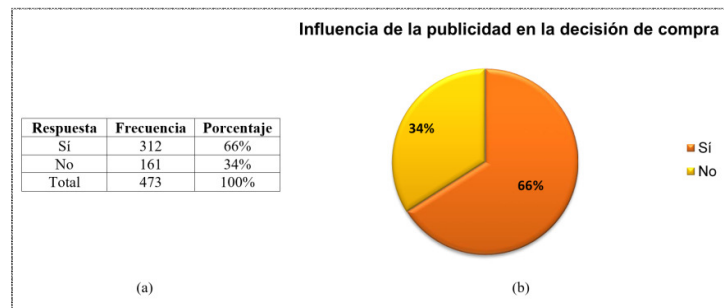
### *A. Influencia de la publicidad en la decisión de compra de los consumidores.*

El 66% (Ver Figura 2) de los encuestados asegura que, si influye la publicidad en su decisión de compra, estos también fundamentaron sus respuestas, a continuación, se detallan las más frecuentes:

- “Sí, para conocer el producto (precio, colores, calidad)”.
- “Sí, para saber las ofertas”.
- “Sí, para saber los beneficios que entrega el producto”.
- “Sí, porque si tiene una buena publicidad hace que el producto sea más llamativo”.

Por otro lado, el 34% de los encuestados respondieron que no influye la publicidad en su decisión de compra, fundamentando lo siguiente:

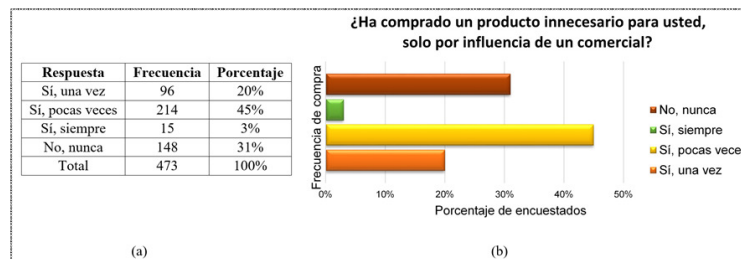
- “No, compro solo lo que necesito”.
- “No, no me interesa la publicidad”.
- “No, solo me fijo en el precio”.
- “No, compro solo por gusto”.



**Fig. 2: (a) Tabla de frecuencia sobre Influencia de la publicidad en la decisión de compra (b) Gráfico de distribución porcentual.**

### B. Frecuencia de compras influenciadas por un comercial

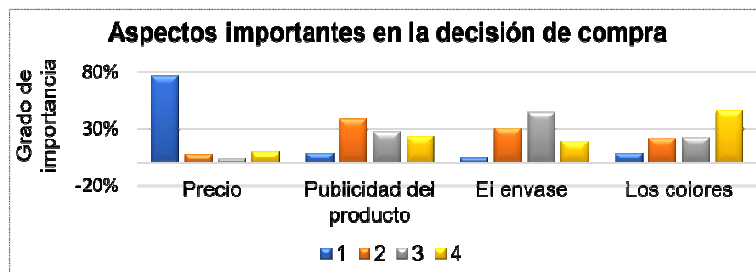
Del total de encuestados, 325 personas afirman que, si han realizado compras influenciadas por un comercial, desglosándose de la siguiente manera: “Sí, una vez” un 20%, “Sí, pocas veces” un 45% y “Sí, siempre” un 3%. El restante de los encuestados, es decir, un 31% respondieron que nunca han realizado una compra influenciada por un comercial (Ver Figura 3).



**Fig. 3: (a) Tabla de frecuencia de compras influenciadas por un comercial (b) Gráfico de distribución porcentual.**

### C. Aspectos relevantes en la decisión de compra.

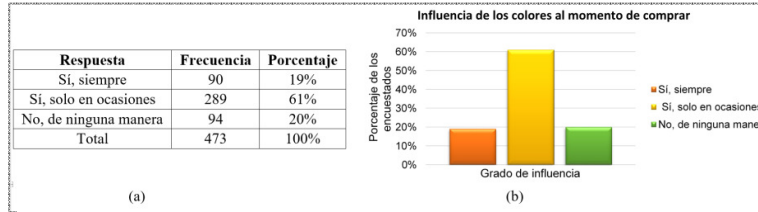
De los aspectos que se determinaron para esta pregunta (precio, publicidad, envase y colores), el que es considerado más importante al momento de tomar la decisión de compra es el precio, en segundo lugar, la publicidad, en tercer lugar, el envase y por último los colores (Ver Figura 4).



**Fig. 4: Aspectos importantes en la decisión de compra de los encuestados.**

### D. Influencia de los colores.

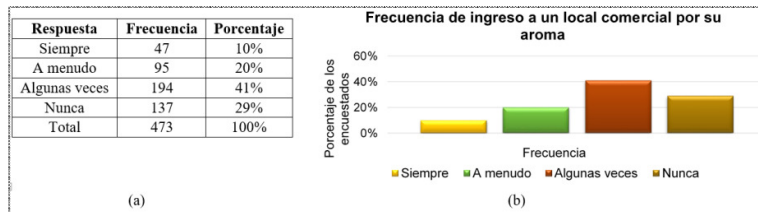
El 80% de los encuestados respondieron que los colores si influyen en su decisión de compra, siendo la frecuencia de esto la siguiente: “Sí, siempre” un 19% y “Sí, solo en ocasiones” un 61%. El restante, es decir, un 20% de los encuestados respondieron que “No, de ninguna manera” los colores influyen en su decisión de compra (Ver Figura 5).



**Fig. 5: (a) Tabla de frecuencia sobre influencia de los colores en la decisión de compra (b) Gráfico de distribución porcentual.**

**E. Frecuencia de ingreso a un local comercial por su aroma.**

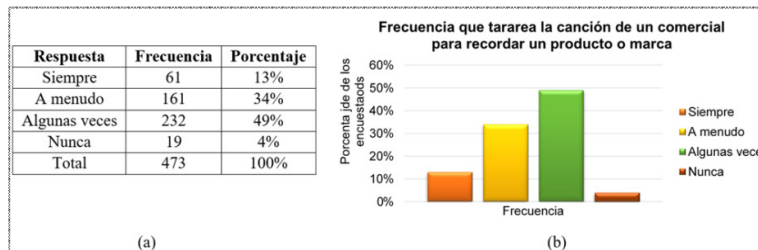
Un 71% de los encuestados respondieron que el aroma si influye en su decisión de ingresar a un local comercial, siendo la frecuencia de esto la siguiente: “Siempre” un 10%, “A menudo” un 20% y “Algunas veces” un 41%. Por otro lado, un 29% respondió que “Nunca” han ingresado a un local comercial por su aroma (Ver Figura 6).



**Fig. 6: (a) Tabla de frecuencia con que ingresan a un local comercial solo por su aroma (b) Gráfico de distribución porcentual.**

**F. Frecuencia en el que se utiliza la canción de un comercial para recordar un producto**

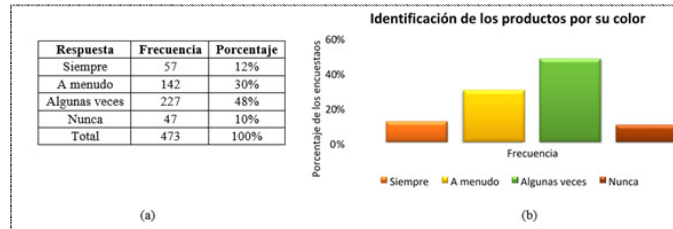
Del total de encuestados, 454 respondieron que utilizan la canción de un comercial para recordar un producto, siendo la frecuencia de esto la siguiente: “Siempre” un 13%, “A menudo” un 34% y “Algunas veces” un 49%. Solamente un 4% de los encuestados respondieron que nunca utilizan la canción de un comercial para recordar un producto (Ver Figura 7).



**Fig. 7: (a) Tabla de frecuencia en que los encuestados tararean la canción de un comercial para recordar un producto (b) Gráfico de distribución porcentual.**

**G. Identificación de un producto por su color.**

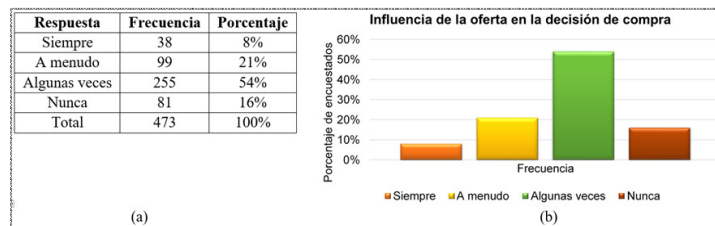
De los encuestados, 426 identifican un producto por su color, siendo la frecuencia de esta respuesta la siguiente: “Siempre” un 12%, “A menudo” un 30% y “Algunas veces” un 48%. El restante de los encuestados (10%) nunca identifica un producto por su color (Ver Figura 8).



**Fig. 8: (a) Frecuencia en el que los encuestados identifican un producto por su color (b) Distribución porcentual.**

**H. Influencia de la oferta en la decisión de compra**

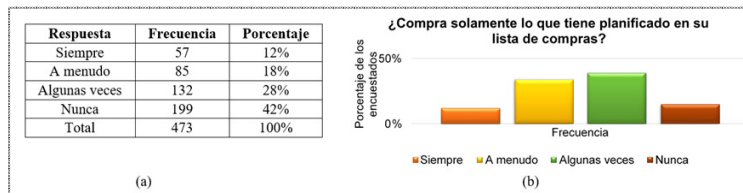
Un 83% de los encuestados respondieron que la oferta si influye en su decisión de compra, siendo la frecuencia de esta respuesta la siguiente: “Siempre” un 8%, “A menudo” un 21% y “Algunas veces” un 54%. Solamente un 16% de los encuestados afirman que la oferta no influye en su decisión de compra (Ver Figura 9).



**Fig. 9: (a) Tabla de frecuencia Influencia de la oferta en la decisión de compra de los encuestados (b) Distribución porcentual.**

**I. Frecuencia de compras planificadas.**

Un 85% de los encuestados compran solamente lo que tienen planificado, siendo la frecuencia de esto lo siguiente: “Siempre” un 12%, “A menudo” un 34% y “Algunas veces” un 39%. Sólo 71 encuestados, es decir, un 15% afirma que nunca compran solamente lo que tenían planificado (Ver Figura 10).

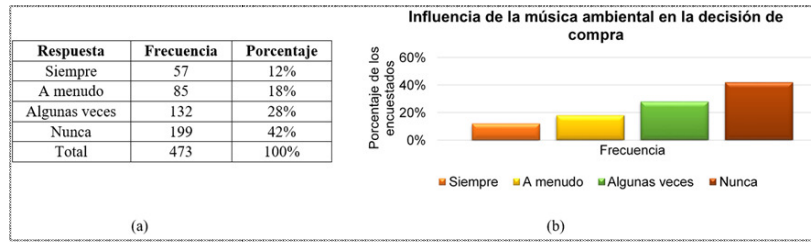


**Fig. 10: (a) Tabla de frecuencia en que los encuestados, compran solo lo planificado en su lista (b) Distribución porcentual.**

**J. Influencia de la música ambiental en la decisión de compra**

De los encuestados, un 58% respondieron que la música ambiental influye en su decisión de compra, por otro lado, un 42% responde lo contrario. Debido a que no existe gran diferencia entre los

porcentajes obtenidos, se infiere que la música ambiental no es un aspecto tan relevante para los consumidores a la hora de tomar una decisión de compra (Ver Figura 11).



**Fig. 11: Influencia de la música ambiental en la decisión de compra de los encuestados.**

## Analisis De Resultados

A partir de los resultados obtenidos, mostrados en la sección anterior, se realizan comparaciones de los mismos con el fin de conseguir algunas interpretaciones y poder concluir sobre los mismos.

Si se comparan las compras innecesarias influenciadas por un comercial en tomando en cuenta el género de los encuestados, se tiene que 325 personas afirman que, si han realizado compras innecesarias solo por la influencia de un comercial, de las cuales el 65% son de género femenino, por lo que se infiere que los comerciales influyen más en mujeres que en hombres.

En el caso de los aspectos más importantes en el proceso de compra en base al género, se tiene que al momento de ordenar de mayor a menor importancia distintos aspectos (precio, publicidad, envase y colores), las mujeres y los hombres coincidieron al evaluar el precio como el aspecto con mayor importancia al momento de realizar una compra. No obstante, para las mujeres el aspecto menos importante es el envase, y para los hombres son los colores.

La influencia de los colores en base al género, se obtuvo que 379 encuestados afirman que los colores influyen en su decisión de compra, de estos, el 73% son mujeres, esto permite determinar que el Neuromarketing Visual tiene mayor influencia en el género femenino.

Considerando la influencia del aroma de un local comercial en base al género, se tiene que del total de encuestados, 336 de ellos indican que el aroma si influye al momento de ingresar a un local comercial, siendo el 68% de estas respuestas entregadas por el género femenino, por lo que se determina que el Neuromarketing Kinestésico influye más en mujeres que en hombres.

Por último, tomando en cuenta las compras no planificadas, se tiene que de los encuestados que afirman comprar solo lo planificado, un 85% son hombres, lo cual se infiere que el género masculino cuando se acerca a un local comercial a realizar una compra planificada (lista de compra) se dirige directo a los productos que necesita, sin ser influenciado por las diversas técnicas del neuromarketing (ofertas, olor u otros), a diferencia de las mujeres, las cuales generalmente compran más de lo que necesitan.

## Conclusiones

Los clientes del sector retail compran de manera inconsciente, lo cual quedó demostrado en sus respuestas las cuales indicaban en su mayoría que realizaban compras innecesarias o no planificadas solo por la influencia de alguna técnica del neuromarketing (ofertas, color, comerciales u otros).

En este estudio, se detectó que los factores que más influyen en la decisión de compra son: color, oferta, envase y comerciales, los cuales pertenecen al Neuromarketing Visual, siendo este tipo de Neuromarketing el que más influye en los consumidores al momento de realizar una compra. La música ambiental, perteneciente al Neuromarketing Kinestésico, es el factor que menos influye en las personas a la hora de elegir un producto y/o servicio.

Con los resultados obtenidos en las encuestas, se puede afirmar que el neuromarketing influye en la decisión de compra de los consumidores del sector retail, siendo esta investigación el primer acercamiento para entender el proceso de compra desde la perspectiva de los consumidores de la ciudad, y servir de punto de partida para nuevos estudios.

Respecto a las diversas técnicas que utiliza el neuromarketing, estas no influyen de la misma manera en mujeres y hombres, dado que los resultados obtenidos nos permiten afirmar que las compras que realiza el género femenino son más influenciadas por los métodos del neuromarketing, siendo más emocionales para elegir un producto, al contrario de los hombres, los cuales son más racionales en el proceso de compra, ya que se obtuvo como resultado que estos compran solo lo que tenían planificado.

Las herramientas como el marketing y la investigación de mercado son muy importantes para el éxito de una organización, pero mezcladas con otras disciplinas como la neurociencia, se convierten en instrumentos que proporcionan a las empresas un sin fin de datos y posibilidades, como los proveídos por la disciplina llamada neuromarketing, que ayudan hacen más efectivas las técnicas del marketing.

Como alcance del estudio se puede mencionar que la investigación fue realizada en la ciudad de Copiapó, tomando una muestra en base a la población de dicha ciudad.

## Referencias

American Marketing Association (2013) 'Definition of Marketing', Recuperado 25, Octubre, 2018 de <https://www.ama.org/AboutAMA/Pages/Definition-of-Marketing.aspx>.

Beiras, A. (1998) 'Estado actual de las neurociencias', *L. Doval y MA Santos R. (Eds.), Educación y Neurociencia*, 21 (31).

Berčík, J., Horská, E., Wang, W. Y. and Chen, Y. C. (2015) 'How can food retailing benefit from neuromarketing research: a case of various parameters of store illumination and consumer response', In 143rd Joint EAAE/AAEA Seminar, March 25-27, 2015, Naples, Italy (No. 202714), European Association of Agricultural Economists.

Braidot, N. (2000) '¿Por qué tus clientes se acuestan con otro si dicen que les gustas tú?', *Gestión* 2009, Barcelona.

Castro, W. R. A. (2013) 'Un caso práctico para el análisis del neuromarketing visual en el Centro Comercial Ventura Plaza (Cúcuta, Colombia)', *Cuadernos de Administración*, 29 (9), 17-27.

Del Blanco, R. Á. (2011) 'Neuromarketing, fusión perfecta: seducir al cerebro con inteligencia para ganar en tiempos exigentes', Pearson Educación, Madrid.

Falk, E. B., Berkman, E. T. and Lieberman, M. D. (2012) 'From neural responses to population behavior: Neural focus group predicts population-level media effects', *Psychological science*, 23 (5), 439-445.

Fisher, C. E., Chin, L. and Klitzman, R. (2010) 'Defining neuromarketing: Practices and professional challenges', *Harvard Review of Psychiatry*, 18 (4), 230-237.

Howard, J. A. (1993) 'El comportamiento del consumidor en la estrategia de marketing', Ediciones Díaz de Santos, Madrid.

Kandel, E. R. (2007) 'In search of memory: The emergence of a new science of mind', WW Norton & Company, New York.

- Khushaba, R. N., Wise, C., Kodagoda, S., Louviere, J., Kahn, B. E. and Townsend, C. (2013) 'Consumer neuroscience: Assessing the brain response to marketing stimuli using electroencephalogram (EEG) and eye tracking', *Expert Systems with Applications*, 40 (9), 3803-3812.
- Klaric, J. (2012) 'Estamos ciegos. Pruebas crudas de los fracasos billonarios de los mercadólogos', Editorial Planeta, Lima.
- Kotler, P. (2005) 'Las preguntas más frecuentes sobre marketing', Editorial Norma, Bogotá.
- McClure, S. M., Li, J., Tomlin, D., Cypert, K. S., Montague, L. M. and Montague, P. R. (2004) 'Neural correlates of behavioral preference for culturally familiar drinks', *Neuron*, 44 (2), 379-387.
- Randall, Kevin (2016) 'Neuromarketing for branding', USA: Fast Company & Inc Mansueto Ventures.
- Stanton, W. J., Etzel, M. J. and Walker, B. J. (1992) 'Fundamentos de marketing'. McGraw-Hill. México.
- Venkatraman, V., Clithero, J. A., Fitzsimons, G. J. and Huettel, S. A. (2012) 'New scanner data for brand marketers: how neuroscience can help better understand differences in brand preferences', *Journal of consumer psychology*, 22 (1), 143-153.



## **Inculcating Heart Intelligence in English Communication Workshop for Day-care Educators**

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### **Abstract**

Teaching is a noble job that not everyone aspires to do. Many join the teaching force as a last resort. For early childhood education, this can be detrimental as literature shows that early learning requires special attention because it lays the foundations for lifelong learning. Heart Intelligence is a module which introduces Spiritual, Emotional and Social Intelligence, enhanced by the notion of 'Man as Caliph (i.e. leader)' and his role to harmonise and protect the world. This Heart Intelligence module enhances the beliefs and understanding of spiritual, emotional and social skills of the educators. The purpose of this study is to examine how this module gives impact to the educators and how it helps the educators to have more control on their job engagement. A qualitative research design was employed to collect data through an open-ended questionnaire from 26 educators who voluntarily participated in this study. Participants were required to apply the elements of Islamic teaching during English Communication Module and apply them to their students when they get back to their workplace. They provided positive feedback especially after they have implemented the Heart Intelligence Module (Anita, 2016). From the responses, there were positive changes in the educators especially when dealing with their students at school. The module helps them to decrease stress at workplace, work better with the students and feel satisfied with their job. They also suggested some new ideas for the module throughout the teaching and learning session as to introduce the concept of human and 'caliph'.

**Keywords:** Heart Intelligence, Emotional Intelligence, Motivation, English Educators, English Communication Module, Job Engagement.

## **Introduction**

Teaching is a noble job. Yet, not everyone aspires to become a teacher. Some who join the teaching force did so due to the lack of options. However, in early childhood education, this can be detrimental as literature shows that early learning requires special attention because it lays the foundations for lifelong learning. In the English Language Education Reform in Malaysia: The Roadmap 2015-2025 published by the English Language Standards and Quality Council, the Ministry of Education (2015: 23), it was reported that “special attention has to be paid to early learning because this is when the foundations are laid for lifelong learning.”

A high-performing education system is highly dependent on a high-calibre teaching workforce. McKinsey & Company who studied how countries created high-performing education systems reported in September 2007 that three major success factors mattered the most. They are:

1. Getting the right people to become teachers
2. Developing them into effective instructors
3. Ensuring that the system is able to deliver the best possible instruction for every child.

(Source: the Roadmap 2015: 28)

According to the Roadmap (2015: 28-29), ideally, the right people for teaching are recruited from the top third of each cohort graduating from the school system, and “are characterized by high academic achievement, good motivation skills and high motivation for teaching”. Without high-caliber teachers, the implications may be severe, particularly during the earlier years of schooling, and what more, the foundational years. “Shaky foundations in English will make it difficult for the child to ever develop a high level of competence in English later on; while on the other hand firm foundations provide the child with the means to achieve excellence” (The Roadmap 2015: 23).

The reality of the matter is that many day-care educators fall into the profession as a stepping stone before embarking onto other careers. Furthermore, due to the perception that childcare providers were only child minding while parents are at work, “rather than providing a stimulating environment for children to grow intellectually, socially, and emotionally” (Chiam 2008: 8), traditionally, day-care providers were not required to be highly educated. Therefore, the education background of day-care providers was not of essential importance. That is why it is not surprising that “the vast majority of the child care providers had little or no education and they were not trained as child care providers. Only 1% had university or professional qualifications but not in the area of early child care and education. Expectedly, the great majority of them, especially those in the estates, were child-minding.” (Chiam 2008: 32)

However, nowadays, the job of a day-care provider is not limited to providing care anymore. They are now considered early educators as children who spend time at day-care centres are also exposed to early childhood education. The participants of this study, who were members of Pahang State Caretakers Association (PPNP), is now known as the Pahang State Early Childhood Educators Association (PPAKK). The early childhood education that is being used is the PERMATA Negara curriculum.

## ***PERMATA Negara Curriculum***

PERMATA Negara is an education programme specifically designed for the physical and intellectual development of children below 4 years old. Neuroscience studies as reported by (Kuhl, 2011) have shown that the success of a child’s future depends on the exposures he or she receives during the formation

years. Formation years refer to the stage before the children reach 4 years of age. It is found that synapses or interconnection of brain cells or neurons at this age are formed when they are stimulated. The more they are used, the more permanently connected they will be (PERMATA website).

In view of this, the PERMATA Negara programme aims to provide exposure in terms of learning and social interaction opportunities to enable more synapses to be formed and become permanent before they are ready to begin formal schooling. The programme underscores the National Education Philosophy and focuses on five primary aspects namely (a) active interaction and communication (b) mind stimulation and literacy (c) child empowerment (d) independent learning (e) monitoring of a child's abilities and potential, and (f) learning through play (PERMATA website).

### ***Background of Study***

As the PERMATA Negara programme considers educators to play "a central role in shaping the personality of a child particularly when he is just learning to know himself, his emotion and his capacity for social interaction" (PERMATA website), day-care providers who opt to implement the PERMATA Negara programme at their centres are required to attend the PERMATA course for the duration of six weeks.

Although the day-care educators under PPNP had undergone the PERMATA training, and were not limited to using Malay, many providers were not using English at their centres. Most of the providers' academic qualifications were at SPM level. It was not surprising that they lacked confidence to use English with the children under their care. Furthermore, the PERMATA training they received was conducted in *Bahasa Malaysia* and they were taught to interact with the children also in *Bahasa Malaysia*.

Another problem highlighted by PPNP was that many educators had low motivation level. This was a problem as the lack of job engagement would manifest itself in the interaction with the children. The questions that arose were, "How can we rehabilitate or reform teachers whose first choice was not teaching, whose grasp of English is basic or whose confidence level to use English is low? How can we elevate their status to become the 'right' people and to develop them as effective instructors?"

This is where the KTP KINDY programme steps in. Based on the needs of PPNP, KTP Kindy is a two-year knowledge transfer programme designed to transfer not only English Communication Skills and effective storytelling techniques in English for day-care educators but also Heart Intelligence awareness. Heart Intelligence (HI) is a module which introduces Spiritual Intelligence (SI) and Emotional Intelligence (EI), enhanced by the notion of 'Man as Caliph (i.e. leader)' and his role to harmonise the world. This HI module enhances the beliefs and understanding of spiritual, emotional and social skills of the educators.

The KTP Kindy programme which consists of numerous added values is a holistic module that does not only embrace communication skills and storytelling techniques but also attends to the motivation and spiritual intelligence of the early childhood educators who have signed up for the knowledge transfer programme. In this paper, the focus is the HI Module which has two main elements. This first element of the HI module is the aim to enhance the beliefs and understanding of spiritual and emotional of the educators. The second is to increase the educators' motivation not only towards their job but also in realigning their perceptions towards the nobility of their profession and perceptions towards the children they are caring for. This HI Module is delivered at all three levels of both modules.

The purpose of this study is to examine how the module gives an impact to the educators involved and how it helps the educators to have more control on their job engagement. In order to achieve this, a

qualitative research design was employed to collect data through an open-ended questionnaire from 26 educators who voluntarily participated in this study.

## Literature Review

HI in this context of study is a combination of SI and EI only. Vaughan (2002) defines SI as “being concerned with the inner life of mind and spirit and its relationship to being in the world”, at the same time inferring that SI has the ability to create meaning based on deep understanding of existential questions, and awareness of and the ability to use multiple levels of consciousness in problem solving. It also induces a person’s attitude (Weber, 1958) and moulds a person’s capability and behaviour (Kripner & Welch, 1992) which contributes to performance (Zohar and Marshall, 2004).

Research shows that there is a relationship between SI and wellbeing; that people with higher level of spirituality have healthier, happier and more productive lives at work (Tischler, Biberman & Mckeage, 2002). Others examined the significant relationship between SI and personality (Hill & Pargement, 2003), psychological wellbeing (Anita, Haslinda, Fatimah, Imaduddin & Aini, 2017) and also work performance (Alexander, 1993). Susan, Anantharaman and David (2011) extended their SI study with EI and how it relates to employee workforce. The findings show that SI persons are motivated on what they do.

According to Powers, Cramer and Grubka (2007), employees with SI displayed positive attitude and experienced less negative effects in workplace. Piedment (2001) in his research showed that ratings of well-being, life satisfaction and health are significantly related to spirituality. SI also enhances worker effectiveness (George, 2006) and work performance (Anita, Imaduddin & Mohd Rashid, 2013). Furthermore, it promotes the capacity to care, tolerate and adapt; to develop a clear and stable sense of individual identity within shifting workplace relationships; to determine the meaning of work and events; to identify and align personal values with a sense of purpose; to live one’s personal values; and to understand how ego can sabotage one’s values and purpose (Christ-Lakin, 2010).

On the other hand, EI persons can understand emotions, are able to regulate them and express feelings accurately and are able to regulate emotions to promote emotional and intellectual growth (Mayer & Salovey, 1997). Many studies have positively related the ability EI in daily life, including mental and physical health, social functioning, academic and workplace performance (Cabello, Sorrel, Fernandez-Pinto, Extremera & Fernandez-Berrocal, 2016).

## ***Heart Intelligence Module***

Heart Intelligence in this context of study is a combination of SI and EI which is used to enhance the beliefs and understanding of spiritual, emotional and social skills of the educators. HI is when people are able to manage their emotions and experience calmness in daily functioning and well-being using their spiritual, emotional and social awareness. In Islam, the heart is a place to control one’s behavior. The Prophet Muhammad SAW said “Beware, in the body there is a flesh, if it is sound, the whole body is sound, and if it is corrupt, the whole body is corrupt and behold”. (Shahih Muslim).

The aim of this module is to highlight the importance of a sound heart. In Islam, it is also emphasised that a sound heart can enter *Jannah* (heaven). It is stated in the holy Al-Quran, “(To the righteous it will be said:) *“O peaceful and fully satisfied soul, return to your Lord. You are well-pleased (with your good end) and well-pleasing (in the sight of your Lord). Join My (righteous) servants and enter My Paradise”* (89: 27-30).

It is important to have a session where participants are able to learn how to have a sound heart as it can help them to stay calm and make good decisions in whatever they do. This includes the ability to choose the correct way of thinking and expressing oneself. This calmness and sound thinking will also help

participants to be more patient in their interactions with the children and the children's parents. The participants were taught a do'a from selected verses from the Quran and told to apply it in their daily life and they were required to take note of the changes they experienced.

The second part in HI module is the Motivation module. The module is designed for the participants to make them feel happy and cheerful throughout the workshop. The objectives of these topics are to allow the participants to unleash their potential in the workshop. When the participants are motivated, and the confidence level is increased, they will be less shy to communicate in English with the children. During the programme, the participants were shown videos and introduced to words of wisdom in order for them to feel good about themselves, their physical appearance and their ability in using English. Participants were encouraged to learn from their own mistakes, improve them and become better at communicating each time they attended the workshops. They were also given the chance to ask questions, share feelings and their aims in developing their confidence in using English Language in their daily life in particular at their workplace. Participants' positive responses were reflected in their laughter and willingness to engage in the activities conducted with them. They were excellent participants, and were very co-operative during the entire programme.

The module itself which has been validated by experts in Islamic studies, was developed in 2016. Based on the Quran and the teachings of Prophet Muhammad SAW, the HI module highlighted the meaning of life to the participants through lecture and discussions. This module also emphasised the purification of heart using selected verses in Al-Quran and how to be a better Muslim.

## **Methodology**

In order to examine the impact of HI module on the participants and how the module has helped them to have more control on their job engagement, a qualitative method was selected during the research inquiry procedures. A qualitative research method is best employed to understand the human experience (Richardson & King 1991). For data collection, a purposive sampling was adopted for this study. The sample of the study were the participants of KTP Kindy programme which was a collaboration between Universiti Malaysia Pahang and PPNP.

However, as one of the participants was a non-Muslim and three of the participants did not respond to the qualitative questionnaire distributed, only 26 of 29 educators voluntarily participated in this study. The educators' academic qualifications are varied. From the total of 26 educators, only three of them are Bachelor's Degree holders while seven of them are Diploma holders. Half of the participants' highest qualification is the Malaysian Certificate of Education (SPM) and one is a Malaysian Lower Certificate of Education (SRP) holder. Only one has other academic qualification. These group of educators came from various districts in Pahang. Of the 26 educators, 14 of them are based in Kuantan. 8 educators are from Temerloh and 2 from Rompin. For Muadzam Shah, Kuala Lipis, Jengka, Bera and Cameron Highland, only 1 educator represents each of these districts mentioned. The participants are represented by R1 to R26 in the next section.

The programme required the participants to undergo six different workshops. Each workshop began with the HI module and followed by the motivation part of the module. In the sixth workshop, an open-ended questionnaire which aimed to gauge the impact of the HI module on participants' were distributed to 29 participants, excluding the non-Muslim participant. Even though she participated in the HI workshops, she did it for additional knowledge as all of her students were Muslims. The questionnaire was divided into three parts; emotional aspect, relationship with God (Allah The Almighty) and relationship with others.

## Results and Discussion

Some participants answered in Malay and some in a mixture of both Malay and English. For this paper, the answers were translated and reconstructed for ease of understanding and checked for accuracy. All answers with similar trend were coded and the results were categorised into three categories as shown in Table 1.

**Table 1: The Impact of HI Module on Educators**

Theme	Respondent	Percent (%)
<b>A. Changes in Emotional Aspects</b>		
Anger Management	26	100
Happiness	3	11.5
<b>B. Changes in Relationship with Others</b>		
Colleagues	21	80.7
Surrounding People	8	30.7
<b>C. Changes in Relationship with God (Allah The Almighty)</b>		
Acceptance ( <i>Redha</i> )	3	11.5
Worship ( <i>Ibadah</i> )	24	92.3
Gratitude ( <i>Syukur</i> )	2	7.7

### *Changes in Emotional Aspects*

All the respondents answered that they have learned how to manage and control their anger. They expressed they were calmer and more patient in their daily life. This result is similar with Tichler's et al. (2002) and Anita's et al. (2017) studies which showed that a person with high spiritual intelligence has a good psychological well-being and he or she would be emotionally balanced. In this study, participants expressed their feelings as follows:

R01: *I feel calm most of the time and I am able to minimize my anger.*

R10: *I feel calmer, my emotions feel better and comfortable, I am less angry.*

R12: *My emotions are in control, I don't get angry easily, my soul feels calmer.*

R19: *My emotions are more controlled, my soul is calmer, I can better control emotions and anger.*

R24: *I feel calm even though having problems. Soul affected with the calmness as if problems do not exist before this.*

Three of the respondents (11.5%) admitted that they were happier, friendlier and had more confidence at their workplace as expressed by the respondents below.

R03: *I feel happy a new day arrives.*

R19: *My mood is happy and calmer to start the day.*

This shows that the practice prescribed by this module has helped the respondents to have stability in their emotions. As mentioned by Cabello et.al (2016), persons with high EI can help them to be better in mental and physical health, social functioning and workplace performance. They are more motivated in their work as they are happier and confident.

### ***Changes in Relationship with Others***

This study shows 80.7% of the respondents revealed that their relationship with their colleagues has improved. The educators sensed that the reason why their relationships were better was because they were now happier at the workplace. This helped to create a better working environment with their colleagues, as stated by Piedmont (2001). They have also adopted a positive perspective towards criticisms and have become more open-minded at the workplace. They cared more about their co-workers and their relationship with them has become better as expressed by the following respondents:

R5: *My relationship with my friends is getting better.*

R8: *I feel happy looking at other people's happiness and I think I have many friends now compared to before.*

R13: *I feel more happy, friendly and loved among friends.*

R15: *My relationship with friends is getting better.*

R21: *I want to help friends without reward from them and Allah.*

Apart from colleagues, relationships with their spouses, parents and neighbours have also improved. Eight of the participants (30.7%) said that they felt thankful for the people surrounding them. They talked less about condemning others and appreciated life better as expressed by the respondents below.

R9: *I feel confident in front of others.*

R11: *I feel more love towards the children under my guidance.*

R14: *My relationship with others feels closer and I receive advice often with a calmer soul.*

The results explain that all respondents have upgraded their relationship with others due to this module. It has been highlighted by many research that people with SI show positive attitude and display less negative effects at the workplace (Powers, Cramer and Grubka, 2007). Specifically, they are more caring, tolerant and adaptable with others (Christ-Lakin, 2010). Furthermore, it can also be concluded that a person with high level of SI also possesses good EI and SI.

### ***Changes in Relationship with God (Allah The Almighty)***

In terms of changes in their relationship with God, 11.5% of the respondents reported that they were now more engaged in their prayers which resulted in a closer relationship with Allah. They felt more ashamed of themselves with Allah, and they remembered Allah more often and had a higher level of faith in Allah.

R08: *I feel more diligent to pray early and feel bad if I miss my extra prayer.*

R12: *I no longer feel that prayer is a chore.*

R13: *I want to feel closer to Allah, that Allah is nearer.*

R19: *I want to do more additional voluntary prayers.*

R20: *I feel happy in praying.*

R25: *I feel closer to Allah. I want to complete all my compulsory prayers and start reciting the Quran every day.*

Three respondents (11.5%) felt more accepting of their fate (*taqdeer*) in life that is destined by Allah. This is reflected in the statements below.

R01: *I feel closer to Allah and always feel grateful and contented with Allah's decision.*

R19: *I feel more at peace with my fate.*

R25: *I know Allah is the best planner.*

This is supported by 6.89% respondents who realized they are now more grateful and contented in their interconnection with Allah. This demonstrates that this module had helped the respondents to improve their relationship with Allah. As also mentioned in the holy Al-Quran, “Only in remembrance of Allah will your heart find peace.” (Surah 13; Verse 28). Majority of the educators (92.3%) also revealed that the module has help strengthened their relationship with Allah. This is seen based on their increased willingness to perform prayers five times a day, and not postponing their prayers as can be seen by the statements below.

R08: *I am no longer lazy to do worship, not like before.*

R12: *I have no problem to pray at the beginning of prayer time.*

R17: *I am happy I have the strength to perform night prayers.*

Findings also show that the respondents also become more grateful for their lot in life. Two respondents (7.7%) expressed their feelings as shown below:

R05: *I am thankful now that I am an educator.*

R23: *I feel grateful that I like my job.*

The importance of this module is to have a closer relationship with God. In Islam this is the level of SI that they should reach. The results shows that the module has helped the participants to be better Muslims. Vaughan (2002) had mentioned SI persons are concerned with the inner life of mind and spirit and its relationship to being in the world. In this context, Muslims are able to create meaning based on deep understanding of their existence in the world. As a result, they are aware of their responsibilities as Muslims, employees and as part of the community and will try hard to fulfill their multiple duties.

## **Conclusion**

This present study has some limitations in terms of the research instrument used and the number of participants recruited. First, the data collected was from open-ended questions only. Second, the sample size was rather small as it involved only the KTP Kindy participants. Third, there was no interviews conducted with the participants. For future research, interviews can be conducted with participants to collect richer data and more early childhood educators should be involved in the study. To further validate the enhancements claimed by the educators, interviewing their immediate superiors may also give better insights.

From the study, it can be concluded that the Heart Intelligence Module (Anita, 2016) has given an impactful influence on the well-being of the early childhood educators particularly on their job engagement at their respective preschools. It has been claimed that the module has successfully enhanced the educators’ beliefs and understanding of their spiritual needs, emotional well-being and social skills. The educators were reported to be able to decrease their stress level experienced at their workplaces. In addition, interactions with the children at their preschools have improved in which they felt more responsible, more motivated and more positive in their attitudes towards the children under their care. These positive changes eventually increased the educators’ job satisfaction levels and hence, these educators began to design better and quality teaching and learning activities and create conducive environment at their preschools.

As early childhood educators, their roles in the children’s upbringing are essential. Being the role models for the children, these educators’ ways of behaving, controlling emotions and having a good relationship with God (Allah the Almighty) are being closely observed by the children at their preschools. Therefore, the Heart Intelligence Module which aims to shape educators to be good leaders or ‘caliphs’ through possessing and exhibiting positive values will significantly help mould our children’s characters and personal development.



## Acknowledgment

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## References

- Anita, A. R., Imaduddin, A. & Mohd Rashid, A. H. (2013) 'The Impact of Spiritual Intelligence on Work Performance: Case studies in Government Hospitals of East Coast of Malaysia,' *The Macrotheme Review*, 2 (3), Spring.
- Anita, A.R. (2016) 'Heart Intelligence Module for Early Childhood Educators.' Universiti Malaysia Pahang. In Press.
- Anita, A.R., Haslinda, H., Fatimah, A., Imaduddin, A. & Aini, A. (2017) 'Inculcating Spiritual Intelligence to Enhance Students' Psychological Wellbeing,' International Conference on Education Psychology (ICEEPSY), eISSN:2357-1330, 11-14 October 2017, Porto, Portugal.
- Cabello, R., Sorrel, M.A., Fernandez-Pinto, I., Extremera, N. & Fernandez-Berrocal, P. (2016) 'Age and Gender Differences in Ability Emotional Intelligence in Adults: A Cross-Sectional Study,' *Developmental Psychology*, Vol 52(9), 1486-1492.
- Chiam, H.K. (2008) 'Child Care in Malaysia: Then and Now,' *International Journal of Child Care and Education Policy*, 2(2), 31-41.
- Christ-Lakin, H. (2010) 'A Correlation Analysis of Transformational Leadership and Spiritual Intelligence,' PhD Thesis, University of Phoenix.
- George, M. (2006). 'Practical Applications of Spiritual intelligence in The Workplace,' *Human Resource Management International Digest*, Vol. 14 (5).
- Hill, P. & Pargament, K. (2003) 'Advances in the Conceptualization and Measurement of Religion and Spirituality,' *American Psychologist*, 58, 64-74
- Hosseini, M., Elias, H., Krauss, S.T. & Siti Aishah (2010) 'A Review Study on Spiritual Intelligence, Adolescence and Spiritual Intelligence, Factors that May Contribute to Individual Differences in Spiritual Intelligence, and the Related Theories,' *International Journal of Psychological Studies*, Vol.2( 2), 179-188.
- Kripner, S. & Welch, P. (1992) *Spiritual Dimensions of Healing: From Native Shamanism to Contemporary Health Care*, Irvington Publishers.
- Kuhl, P.K., (2011) 'Early language learning and literacy: neuroscience implications for education,' *Mind, Brain, and Education*, 5(3), 128-142.
- Mayer, J. D., & Salovey, P. (1997) What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Implications for educators*, New York: Basic Books.
- Michelle M. Morehouse. (2007) 'An Exploration of Emotional Intelligence Across Career Arenas,' *Leadership & Organization Development Journal*, 28(4), 296-307.

- PERMATA (2018). *PERMATA Negara: The Birth of an idea*. [Online]. Jabatan Perdana Menteri. [Retrieved July 20, 2018], <http://www.programpermata.my/en/negara/about>
- Piedmont, R.L. (2001) 'Spiritual Transcendence and the Scientific Study of Spirituality,' *Journal of Rehabilitation*, 67, 4-15.
- Powers, D.V., Cramer, R.J., & Grubka, J.M. (2007) 'Spirituality, Life Stress and Affective Well-being,' *Journal of Psychology and Theology*, 35, 235-243.
- Richardson, J.T. & King, E. (1991) 'Gender Differences in the Experience of Higher Education: Quantitative and Qualitative Approaches,' *Educational Psychology*, 11 (3/4), 363-383.
- Susan, T.S.C., Anantharaman, R.N. & David, Y.K.T (2011) 'The Roles of Emotional Intelligence and Spiritual Intelligence at the Workplace,' *Journal of Human Resources Management Research*, 2011, 1-9.
- Tipping, C.C. (2004) *Spiritual Intelligence at Work: A Radical approach to Increasing Productivity, Raising Morale and Preventing Conflict in The Workplace*, Marietta, GA: Global 13 Publications.
- Tischler, L., Biberman, J., & Mckeage, R. (2002) 'Linking Emotional Intelligence, Spirituality and Workplace Performance,' *Journal of Managerial Psychology*, 42(2), 16-33.
- Vaughan, F. (2002) 'What is spiritual intelligence?' *Journal of Humanistic Psychology*, 42(2), 16-33.
- Weber, M. (1958) *The Protestant Ethic and the Spirit of Capitalism*, New York: Scribner.
- Zohar, D. & Marshall, I.N. (2004) *Spiritual capital: Wealth we can live by*, San Francisco: Berret-Koehler Publishers.

## **Risks of Climate Change on the Geographic Space of Romania**

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### **Abstract**

The increasingly visible effects of the last 3-4 decades of climate change at the national level have greatly expanded the area of use in the daily lives of people not only in the restricted circle of scientists, or even the great known scientists. Many other countries around the world and Romania are becoming increasingly aware of the need to take certain measures by adopting national agreements on the protection of the geographic space, and resources are totally destroyed. The approach to this theme is represented by the importance of adapting the current economic environment to climate change, mainly in certain areas of activity such as agriculture, forestry, or even education and health activities. Given the situation in recent years, it has come to the conclusion that accelerating climate change could cause many people to leave their homes by the year 2050 due to the extreme climatic events that will take place.

**Keywords:** climate, geographic space, population, risks, natural resources.

### **Introduction**

This paper includes theoretical approaches to the importance of adapting the environment to climate change in Romania, which is being increasingly publicized and represents a growing interest among the people who are researching this phenomenon. Climate change and its impact on geographic space support the need to implement certain mitigation and adaptation measures, as well as completing or updating them repeatedly. This approach becomes more and more imperative as the effects of climate change are becoming more and more present in Romania, especially by intensifying periods of drought or accentuating extreme phenomena at ever shorter intervals. At the same time, the regional approach to climate change issues and their various effects has become of the utmost importance. Droughts of recent years and violent storms have led, among other things, to a significant drop in the entire water supply (at 31% of an average year), or to the other side of catastrophic flooding leading to significant damage and many deaths (Busuioc, et al., 2010).

We believe that the present paper is of great importance because we want to be a study that analyzes at national level the entire potential and the commitments they make to reach a level close to the European one and on the other hand they try to the basis of some analyzes as well as a set of proposals from the major specialists to highlight a strategy based on the promotion of sustainable development principles transposed to climate change issues.

At the end of a decade and a half of the present century, we can see that analysts who were discovering a global trend by potentiating a major climate change crisis were right. Experts in the

field have predicted that mankind may be confronted by some cyberwar or nuclear wars with the imminent climate change until the middle of the century. If we are talking globally, an increasing number of people will have to adapt to other living and working conditions in order to survive the change of microclimate. At the same time, the thermal expansion of the water as well as the melting of the glaciers can cause quite significant floods that will lead to the decrease of the crops, or even lack of food for about 20-22 million people in African, Asian or South American countries (Hansen, Sato & Ruedy, 2012). With the rise in temperatures, contagious diseases will multiply, and they will be transported all over the world to different insects that will cause serious illness and death.

### **Climate Change - A Major Challenge Of The 21st Century**

Climate is generally defined as an average profile of weather conditions in a certain area and is determined over a longer period of time. Climate conditions generally depend on changes in the energy or ecosystem balance. Climate change is mainly due to the anthropogenic factors that involuntarily or not, through greenhouse gas emissions. Climate warming is a phenomenon that, unfortunately, is accepted by the international scientific community being kept under analysis from data accumulated over a longer period of time. From the simulations made with the climatic effects, the main factors that determined this phenomenon are both natural (variations of solar radiation) and anthropogens (certain changes that took place in the composition of the atmosphere through human activities). The cumulative effect of the two factors can be seen in the changes in the national average air temperature as well as the increase in the sea level. As far as our country is concerned, the climate has warmed almost 1 grade Celsius in the last century with a faster trend than the global average. When we have a warmer atmosphere, we encounter more water vapor, but the rainfall regimes vary greatly from one region to another. It is also noticed that during the last recording periods the rainfall and snow have increased where they did not, the phenomenon becoming more and more often and all this is a direct consequence of human climate change. Many of the natural systems in Romania are affected by regional climate change (Hallegatte, 2009). All changes occurring in the biological and physical systems are consistent with the manifestation of the heating phenomenon, therefore, due to the above average increase of the anthropogenic carbon dioxide content, the acidity of the lakes and the Black Sea surface has increased. If we look at the 2007 IPCC report, other consequences of climate warming can be listed, such as: increased mortality due to global warming, productivity downsizing, floods, etc. The position of Romania is replicated in an overall position with the European Union. The community sector has assumed the role of being a global leader in climate change prevention, with an unilateral commitment to reduce greenhouse gas emissions by 20% less than in 1990 by 2020.

The EU also committed to lowering gas emissions by 30% less if the other countries commit themselves to reducing emissions in a comparable way, and if more economically advanced developing countries engage in significant the effort to limit even global emissions of gas emissions according to their capabilities and responsibilities. From Romania's perspective, this agreement, which was concluded in Paris, sends a clear signal to investors to decision-makers and business around the entire global transition to a low-carbon economy and will guide certain actions on the trajectories that will lead you to increase global average temperature below 2 degrees Celsius (Busuioc, et al., 2010).

According to meteorologists, the increase in extreme phenomena is quite obvious, because we are talking about a higher load of energy in the system, which as soon as it drops in a higher amount of water vapor forms an intensification of these phenomena. Whether we are talking about summer heat or episodes of heavy rainfall, they can generate rapid or blizzard rains in the southern and southern East of the country on short gust time. All this information is also presented by NMA representatives when they issue certain warnings.

### **Climate Change Issues At National Level**

The National Meteorological Administration has conducted several studies and researches in our country's climate for long periods of time, and their results have revealed clear and meaningful changes. The main results achieved for the period 1961-2017 showed changes in parameters such as

winds, temperature and precipitation in most of the country where the temperature in most areas increased by 2 degrees Celsius. At the same time, there is a slight cooling tendency throughout the country during autumn, but it is not statistically significant.

Trends in climate change observed by specialists bring some risks in Romania, and they lead to sensitive changes as it will increase the national average monthly temperature in all calendar months and the highest is expected to be around 1.32 degrees Celsius in July, but as a paradox all this month, rainfall will be cut by almost 7% by 2030.

The change in monthly average rainfall rates for the 2010-2030 period is different over a seasonal cycle, so there is an increase in spring months of about 4.5%. In the autumn and summer months, the averages shown show a decrease but not a significant one. Climatic variability is often determined by extreme weather phenomena. Such a meteorological phenomenon is extremely characterized when it is determined the passage of the system taken to the analysis on a very different state from the climatic norm for a certain period of time. Romania is affected throughout this year by such events, being the more eric, the higher the ther-barric contrast.

The main extreme phenomena that have been or will be recorded in Romania are (Sandu, Pescaru & Poiana, 2008):

The cold and the heat waves in the context of extreme temperatures identify a very low temperature drop and an increase in very high temperatures. In Romania it is defined by regulations introducing measures to combat the effects on the population with at least 2 days of temperatures higher than 37 degrees Celsius, these temperatures are increasing more often in most areas even at the hill.

Floods - another phenomenon encountered especially in recent years and appears as an effect of climate conditions generating large amounts of precipitation or melting snow. The most difficult to predict and very dangerous are rapid floods that cause damage soon on stretched surfaces.

Drought, even if it is not a phenomenon that occurs suddenly, because of persistence it causes socio-economic effects with devastating effect, therefore they are included in the category of extreme phenomena. Drought can be installed after 10 days in which there are no precipitations and here we refer to the warm season. From the agricultural point of view, the drought can be defined by parameters that affect crop production and development.

Hail: This occurs in the form of ice particles that are precipitated by severe consecutive storms and are most often encountered during the hot summer season. In urban areas hailstones can affect the structure of buildings or car body damage, and agricultural crops are most often affected in rural areas.

Tornadoes: these phenomena cannot be said that they are very common in Romania but since the 19th century there have been such episodes, and as a number we can mention that there were about 200 tornadoes that occurred in 118 different days. This phenomenon usually occurs between May and July as a result of a large heat differential between two masses of tropical air and polar cold air intersecting across the country.

Land landslides: this phenomenon can be caused either by changing the groundwater level or human activity through certain investment works near certain slopes. These phenomena act on the cohesion that occurs between the particles, which is diminished and cannot be opposed to the weights of a certain slope or of other vertical loads leading to the collapse of the slope. When it comes to seismic motion, it generates, besides the above, a phenomenon called liquefaction of saturated sands. It produces landslides even in horizontal lands when soil layers that have a certain cohesion are placed on types of soft rocks that lose much of their resistance during earthquake. The landslides generated by human activity are caused by the loading of the land that is required for the construction of certain

constructions, and by the work done on the land changes the momentum balance of the slope. These landslides also occur during desertification or vegetation cuts, as they increase the moisture of the slope, and then collapse by shrinking cohesion forces.

Nowadays, in more restricted areas of the country, but also globally, there is an increasing frequency where extreme weather climates occur. They cause natural disasters that often result in human casualties, but also cause material damage, especially in the environment (Bălan, 2014). By linking to other areas such as health, energy, water resources, many researchers claim that because of global warming, by increasing the greenhouse effect of the atmosphere, we participate in the development of the climate crisis.

### **Scenarios on Climate Change**

Changes to the climate regime in Romania are framed in a global context that takes into account certain regional conditions, such as temperature increase that will be much more significant in summer, while in the northwest of Europe the most pronounced growth predicts in winter. According to estimations made by specialists, in Romania it is expected that the annual average temperature will be much higher than the current period, namely between 0.5 ° C and 1.5 ° C for the period 2020-2029, and about 2.1 ° C and 5.1 ° C period 2090-2099 (Dumitrescu, Bojariu, Birsan, Marin and Manea, 2015).

In order to analyze the best measures to adapt to climate change in Romania, it is necessary to know as precisely as possible the possible effects of the changes in the field of social and economic sectors. Taking into account the fact that so far in Romania information on climate change has been predicted with a low degree of accuracy and did not cover the entire social and economic sectors, a continuation of the research activities was imposed where the following priorities should be considered:

- ❖ Identification of areas where extreme events occur and elements within human and natural systems;
- ❖ Identifying climate change in Romania according to observations made over specific periods of time to the most comprehensive possible resolution, including some extreme event indices;
- ❖ Running and designing numerical experiments with climatic models on statistical computing systems to predict climate scenarios on a fine scale in Romania;
- ❖ Estimation studies on the impact of climate change on certain social and economic systems should be developed along with the assessment of the uncertainties associated with them.

The impact of climate change on the geographic space in Romania involves the analysis of all existing ecosystems Romania, and this overlaps with the pressures already exerted on the pollution of environmental factors. Activities such as pasture overexploitation and deforestation can lead to exaggerating the effects of climate change (Hallegatte, 2009). In countries with a low livelihood, people will be forced to live in marginalized regions, such as slopes exposed to torrents, arid, semi-arid regions, mainly exposed to the effects of climate change. Along with climate change, their effects may lead to the disappearance of certain species that are only one population or, in some cases, very few populations, and which occupy fragmented ecological segments on the one hand but very vulnerable to these effects.

### **Analysis of Climate Change on the Geographical Space of Romania**

Threats:

- ❖ Changing the behavior of different species as a result of stress on their adaptability;
- ❖ Changing the composition of habitats and distribution as a result of changing the species component;
- ❖ An increased number of exotic species among current natural habitats, replacing existing species;

- ❖ Extinction of wetlands specific ecosystems by changing their distribution;
- ❖ Aquatic freshwater and marine aquatic ecosystems will suffer changes caused by water heating, as well as increased sea levels;
- ❖ The disappearance of certain species of flora and fauna due to the reduction of adaptation and survival capacities.

Opportunities:

- ❖ At the time of the effects of climate change, most species will be affected and also tested for their adaptation skills in finding genetic resources by generating new species (Eakin, Lemos and Nelson, 2014). This is the moment when global scale is expected to appear new species that will have a very strong adaptive capacity and will cope with thermal variations, arid conditions or limited precipitation.

Recommendations and adaptation measures:

- ❖ Establishment of a monitoring system at national level on threatened species achieved with private and public financial support through different national programs and by the participation of the society in certain research activities;
- ❖ The monitoring system needs to be evaluated to determine their effectiveness in line with the evolution of climate change and finding some opportunities to change it;
- ❖ Diversifying the use of data obtained from the monitoring process using certain mathematical models;
- ❖ Raising forested areas by repairing degraded ones and replacing others in favorable areas (Sandu & Mateescu, 2014).

## Conclusions

The study found that in order to reduce the vulnerability of the country to the impact of climate change, it is necessary for the whole society to train in order to be able to carry out the efforts to ensure the negative effects that the global warming phenomenon will generate in the future by using all the resources in implementing the measures foreseen throughout this work.

In order to prevent certain risks to climate change, it is necessary to create an annual research program that adapts to the effects of climate change in line with the proposals received from the ministries involved, and to develop approaches to improve the value of the risks (Füssel & Klein, 2006).

Humanity is aware of the importance of reducing greenhouse gas emissions, so habits and behaviors need to be changed to consume less energy. Looking at the whole, the warming of the planet should not exceed 2 °C in order not to generate disruptions that cannot be stopped. In order not to exceed this threshold, some large-scale actions will have to be taken and industrialized countries will have to reduce their greenhouse gas emissions from 13% to 30% by 2020 and from 60% to 81% in 2050 (OECD, 2018).

Developing technologies in a bio-environment will definitely participate in reducing these emissions. To reach these results, countries like China or India will need to get involved because they have already reached a significant threshold for development and pollution (Hansen, Sato & Ruedy, 2012).

We all know that negative climate change will not disappear immediately, but the sooner we react and we take the necessary measures, the more we will enjoy the beauty and diversity of our plant that we pass on to future generations.

## References

Bălan, E. (2014) 'Impactul temperaturilor extreme asupra principalelor sectoare economice europene', *Revista de Economie Mondială*, Vol 6, No 3.

Busuioc, A., Caian, M., Cheval, S., Bojariu, R., Boroneanț, C. (2010) 'Variabilitatea și schimbarea climei în România', Pro Universitaria Publishing, Bucharest.

Dumitrescu, A., Bojariu, R., Birsan, M.V., Marin, L., Manea, A. (2015), 'Recent climatic changes in Romania from observational data', *Theoretically and Applied Climatology*, 122: 111–119.

Eakin, H. C., Lemos, M. C., Nelson, D. R. (2014), 'Differentiating capacities as a means to sustainable climate change adaptation', *Global Environmental Change*, 27(1), 1-8.

Füssel, H.M., Klein, R. J. T. (2006), 'Vulnerability and Adaptation Assessments to Climate Change: An Evolution of Conceptual Thinking', in UNDP Expert Group Meeting *Integrating Disaster Reduction and Adaptation to Climate Change*, Havana, Cuba.

Hallegatte, S. (2009) 'Strategies to adapt to an uncertain climate change', *Global Environmental Change*, 19 (2): 240-247.

Hansen, J., Sato, M., Ruedy, R. (2012), 'Perception of climate change', *Proceeding of the National Academy of United State of America*, 109(37).

Organisation for Economic Co-operation and Development, <http://www.oecd.org> .

Sandu, I., Mateescu, E. (2014) *Schimbări climatice actuale și previzibile în România*, Academiei Române Publishing, Bucharest.

Sandu, I., Pescaru, V.I., Poiana, I. (2008) *Clima României*, Academiei Române Publishing, Bucharest.



## **Free Movement of labour in the European Space and Impact on the Labour Market in Romania**

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### **Abstract**

The purpose of the study is to provide an ample and objective analysis of the dynamics of the labor force and employment of the population in the European space as well as the implications for the Romanian labor market. This paper tries to present the positive effects induced by the relaxation of the pressures generated by the persistence of the high level of unemployment in turn, are counteracted by the negative impact on the size of the workforce, especially the highly skilled. The unemployment situation in the European Union as well as in Romania is presented and supported by the official data provided by Eurostat and the National Agency for Employment. The result of official data reveals that Eurozone unemployment has reached a record high at the end of last year. The implications for the Romanian economy of labor migration are multiple. One of these is the remittances sent by Romanians working in the European area, which in the past 10 years were in the amount of 50 billion euros, a little less than the total revenue earned by the state in 2016.

**Keywords:** migration, jobs, salary, labor market

### **Introduction**

Employment policies are a set of measures developed by the state to intervene in the labor market to stimulate new job creation, improve the adaptation of labor resources to the needs of the economy, ensure fluidity and efficient labor market flexibility, diminishing -the imbalances and malfunctions.

The objectives of the study are to present the employment strategies adopted by the EU to increase employment, to present the employment situation in 2009-2016. The main objective is the study of some indicators specific to labor migration, as well as the comparison of Romania's indicators with those of other EU member states.

The work has been concluded through an overview and the most relevant conclusion of the whole work is that the European Union's objective of building a free economic space, a common market where both free movement citizens and free movement labor and services, without setting a barrier or creating major discrepancies amongst the citizens of the member countries, is not yet an objective. The courage to be more relaxed with regard to suggestions for better management of existing problems is due to the lack of data on international labor migration at global and European Union level in particular (*Ionescu R, Pavel A., 2016, pag.36*).

At the same time, the research made it possible to identify new opportunities and future research directions by expanding the analysis of the determinants and modeling factors of the labor force emigration and assessing the economic consequences of this process both for the countries of origin and destination of the migrants.

### Free Movement of Labor

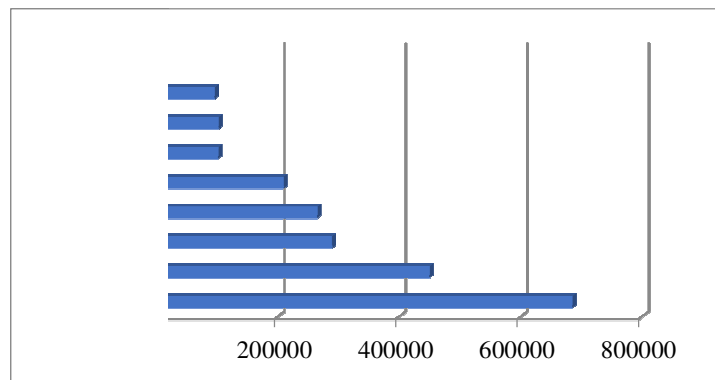
The free movement of persons is the elimination of all traffic barriers that were placed between the Member States of the European Union. This notion of free movement of people has been interpreted since its debut. The main provision on the subject concerned exclusively the free movement of private persons who were considered to be economic agents, suppliers or service providers.

The concept of "European Citizenship" was addressed for the first time by the Maastricht Treaty (1993), which adopted the free movement but also the free residence within the Union of all citizens belonging to the European Union (*Zodian S., 2017, pag.488*).

Free movement within the European Union may entail the carrying out of an activity of economic value, any national of a Member State, irrespective of his place of residence, has the right to take up paid employment.

In the case of services rendered in religious or spiritual communities, the work done may be an economic activity "in so far as it tends to guarantee an economic independence of the community". In 2016, some 5.1 million people have immigrated to one of their Member States and at least 3.5 million people emigrated from one EU Member State.

Figure 1 shows the evolution of the number of immigrants by country of destination, the reference year being 2016. It should be noted that the figures presented are strictly for immigrants from other EU Member States and not those coming from outside the community. Germany reported the largest number of emigrants, namely 685.670, followed by the United Kingdom with 449.910 and Italy with 289.521. The last place is Estonia with 2.135 immigrants from another Member State (*Paunescu L., 2016, pag.110*).



**Fig. 1: Number of immigrants by country of destination in 2016**

Source: Eurostat Data, 2016

## **The Impact of the Migratory Phenomenon on the European Labour Market**

Two major phenomena on the labor market generate an increase in migration in order to find a job abroad, namely: many people find no job or find a satisfactory job so that they can maintain the family in the country of origin (in the case of emigrants), and the second phenomenon is the immigration in which there is a lack of labor force in different fields.

Other factors, with lower intensity, relate to demographic change, economic and political crises, and insufficient living standards.

Among the consequences that migration has on the European labor market is the demographic level through considerable population losses and the rise in the demographic aging rate, as most of the emigrants are the young labor force (*Zodian S., 2017, pag.488*).

From the economic point of view, the direct impact of international migration can be measured by analyzing investments made from money earned outside the country through the unemployment rate, the loss of "brains" (emigration of skilled labor force), wage distortions and labor segmentation, by using immigrants to unsatisfactory jobs for locals, but also by enhancing "black work". The emigration of qualified and highly qualified staff is a loss for the country of origin because it can no longer benefit from its productive results, and the departure of specialists has the effect of diminishing technological, economic and slowing progress.

### ***The Dimension of Migration in Romania and the Effects of Migration in Romania***

The effects of short-term migration are easy to quantify and are generally positive and relate to economic and social issues. The emigrants have vacated jobs in Romania, thus lowering the unemployment rate, the living conditions of migrant families have improved due to the 3-4 billion euros a year in the country from the ones left, exploded housing construction and equipment sales and goods intended to equip them, the number of cars and was stimulated consumption.

Looking at the long-term economy, we can correlate the massive migration of young people, especially those with higher education, with a low economy, unable to generate sufficient work and pay. Young people with the greatest potential in the development of the economy, which could contribute to the creation of new jobs through business development, could make significant contributions in all areas of public interest (health, education, engineering, commerce, public administration) to emigrate, thus losing all the benefits that could affect the country from their work. And losses are not just economic, but also intellectual and scientific, given the contributions that they may have in research, innovation, and increasing civic engagement and accountability (*Moraru C., 2016, pag.29*).

A study by the Romanian Institute for Evaluation and Strategies earlier this year reveals that 51.6% of the 18- to 35-year-olds want to work abroad. The same answer was given by 75% of respondents with higher education in all age groups, which underlines the fact that most of those who want to emigrate are young people and citizens with higher education.

Approximately 2.3 million Romanians, over 100,000 a year, chose to go abroad after 1989. Thus, the country's resident population dropped at the beginning of last year to the level recorded in 1969 by about 20 million inhabitants. The most significant "wave" of emigration was registered in 2007, with Romania joining the European Union, the main destination being Spain at that time. At present, most Romanians who have left the country for at least one year have chosen Italy.

The year 2016 marked a balancing of the number of immigrants and emigrants in Romania, the difference between them being only 3,000, given that in 2007, it was considered the peak of departures abroad, it was 458,000 persons.

Figure 2 shows the countries of destination of the Romanians who chose to emigrate in the reference year 2014. If in 2008 most of the Romanians headed to Spain, six years later, the most sought-after destination among the The Romanians who chose to leave the country were Italy (46% of the total).



**Fig. 2: Distribution of emigrants to destination countries 2008 and 2016**

Source: INSSE

### ***The Advantages and Disadvantages of Labor Force Migration in Romania***

For the country of origin, the emigration of part of the total labor force has major implications (positive and negative), because the number and structure of the workforce influence the consumption and investments in the source economy, as well as the behavior of the household members on the labor market. The results highlight the negative impact of emigration on the labor force in the countries of origin analyzed in the panel but attenuated by the relaxation of pressures generated by the persistence of the high level of unemployment. The intensification of the labor migration process determines the reduction of the unemployment rate for people with primary and secondary education in the countries considered. This may be due to additional investment in education made by the remaining people to improve employment prospects and the loss of part of this labor force through emigration, willing to accept jobs refused by natives of host countries due to wage differentials (Moraru C., 2016, pag.29).

Among the positive aspects of migration are the better living standards of the citizens, but also the money transfers by the emigrant to the country of origin, helping to the family and local economic growth. Thus, each state must ensure that its citizens have at least the minimum living conditions so that they can no longer leave the country and there is some sort of balance between immigrant immigrants at country level. An important role ties up with the government, which will have to manage migratory flows with care during the crisis, the history and the different preoccupation of states will also lead to a different outcome.

Thus, emigrants who earn higher income abroad are an incentive for those staying in the country to raise their professional training to become more competitive. In addition, emigrants send money to their family or friends in the home area, which contributes to raising their living standards and reducing poverty. Even though most of these money transfers are spent on the consumption of goods and services by the remaining family, the multiplier effect of this consumption on stimulating supply must not be avoided, nor the effects of these transfers on reducing the current account deficit.

The growing importance of mobility in the economic and social landscape of the EU has increased with enlargement to the east, with the free movement of persons and labor being a

component of the formation of the EU internal market alongside and in correlation with the free movement of capital, and services.

The risks and possible negative effects of remittances consist in increasing inequalities in the community, lowering the intention to engage in productive activities on the national market, remittance dependence, at the same time as the risk of addiction culture that diminishes individual initiative, the emergence of inflationary pressure as excessive demand for land and houses leads to the artificial increase of their prices and, last but not least, the existence of the phenomenon of brain drain and the migration of skilled workers.

### **The Implications of the Migratory Phenomenon on the Romanian Economy**

After January 1, 2002, the Romanians' migration has reached a mass. Separated from the Western continent first by the Iron Curtain, then by the restrictive policies of the Western European states, January 1, 2002 was a "bottom-up" Europeanization: Romanian citizens drifted freely to Western Europe. For several years, the Romanians' migration has been celebrated as an important source of income for the population as a valve that partly solved the problem of unregistered unemployment in Romania and "solved" the balance of payments of the Romanian state. The coming of the economic crisis in the countries of the European Union began to break this post-December myth. Media and authorities have begun to understand that migrants' remittances are sharply declining, that Romanians once left do not necessarily return to Romania, finally that mass migration has lasting consequences in Romanian society (*Paunescu L., 2016, pag.110*).

The migration of about two and a half million people has not left the Romanian society unaltered. However, studies on the effects of migration are few. In addition, analyzes of Romanian migration have generally focused on the migration process and less on its consequences for the Romanian society. It is well known that in the 1990s Romania experienced a very dramatic socio-economic process, in which about 40% of the jobs have disappeared from the economy.

The Romanian migration began to develop irregularly to Western Europe after 1990, but it intensified especially after 1997, when large industrial restructuring and closures took place. Dissenting from the Romanian primitive neo-liberalism, Romanian migrants managed to take advantage of Western European neo-liberalism: in the context of the lack of regulation of migration in countries like Italy and Spain, they had access to the opportunities offered by Western labor markets (*Moraru C., 2016, pag.29*).

Until 2002, irregular migration has evolved selectively through the use of kinship and friendship networks. After that time, Romanian migration has developed unhindered. Social networks have played a smaller role in the migration process, but have remained key to economic integration. A population depopulated for two decades of deprivation has finally been able to migrate to countries where work has been rewarded to meet expectations.

### ***The wage situation in Europe and Romania***

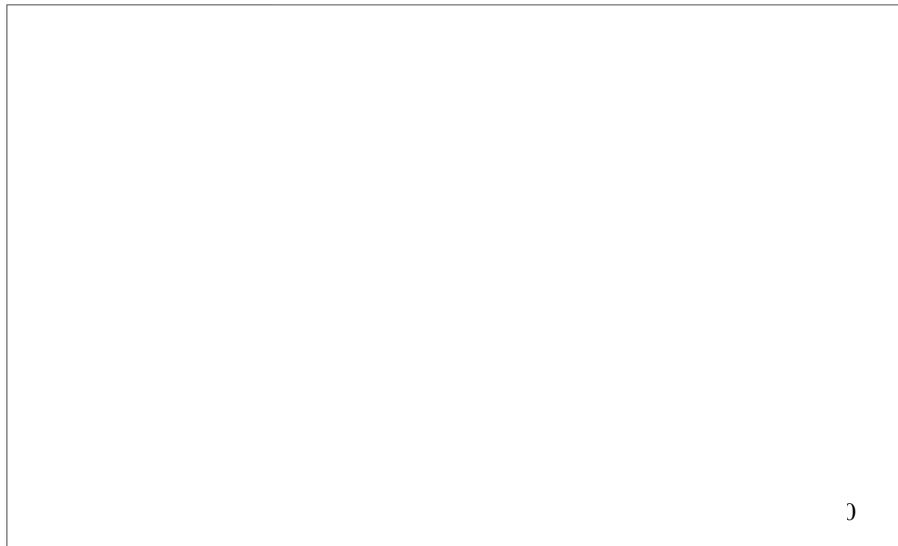
At a brief analysis of the wages in Romania compared to those in the European Union, we find out from the Eurostat data that the minimum wage set in Romania (310 euros) is on the penultimate place in the EU, being subclassified only by the minimum wage in Bulgaria. Countries such as Italy, Germany, Spain or the UK have minimum wages of up to 6-7 times higher than those in the country, reaching more than 1400 euros in France, Ireland, Luxembourg or Belgium (*Ionescu R, Pavel A., 2016, pag.36*).

On January 1, 2015, 22 of the 28 EU Member States had national minimum wages, ranging from EUR 184 per month in Bulgaria and EUR 218 per month in Romania to EUR 1,923 in Luxembourg, according to data published by the European Statistics Office. As shown in figure 3 in January 2016, some EU Member States had minimum wages below 500 euros per month: Bulgaria (184 euro), Romania (265,4 euro), Lithuania (300 euro), Czech Republic (332 euro), Hungary (EUR 334), Latvia (EUR 360), Slovakia (EUR 380), Estonia (EUR 390), Croatia (EUR

396) and Poland (EUR 410). Compared to 2010, the minimum wages in 2015, expressed in euro, increased in all EU Member States with national minimum wages set, with the exception of Greece, where they dropped by 14%, and Ireland, where they remained stable.

In 2010-2015, the highest growth rates were registered in Romania (75%), Bulgaria (64%), Slovakia (58%) and Latvia (57%). For Germany 2015 was the first year when it set a minimum wage (1473 euros)

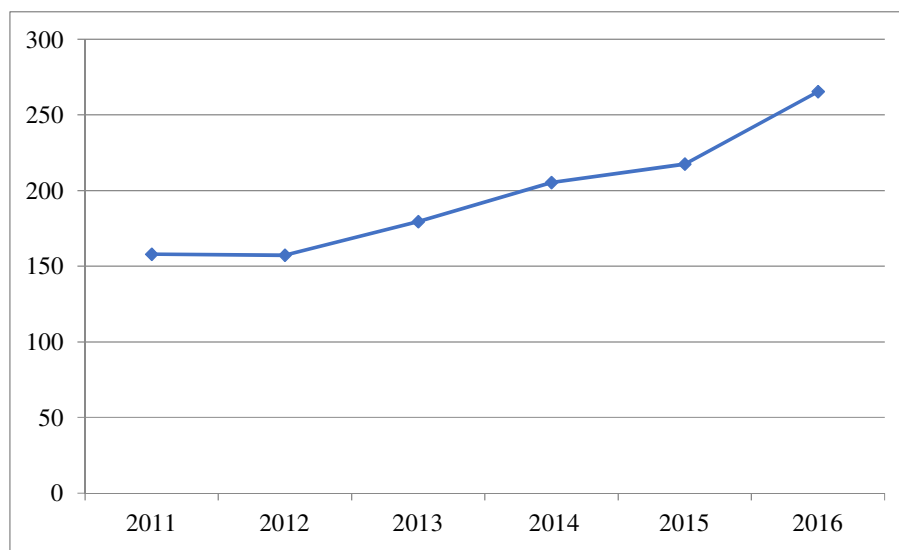
Figure 3 shows the minimum wage recorded in the first month of 2016 in the EU Member States. In some Member States, minimum wages are between 500 and 1,000 euros per month: Greece (684 euro), Spain (757 euro) and Slovenia (791 euro). In seven Member States, minimum wages exceed € 1,000 per month: Britain (€ 1,379), France (€ 1,458), Ireland (€ 1,462), Germany (€ 1,473), Belgium and the Netherlands (both with € 1,502) and Luxembourg (1,923 euros).



**Fig. 3: Minimum monthly salary in 2016, expressed in euro**

*Source: Eurostat Data, 2016*

Figure 4 shows the evolution of the minimum wage in Romania for 2010-2015. On 1 January 2016, the minimum wage in Romania to € 265, increasing by € 112 on the same date in 2011.



**Fig.4: Evolution of the minimum wage in Romania for 2011-2016, expressed in €**  
Source: INSSE

### ***Remittances sent to the country***

Over the last ten years, Romanians abroad have sent around 45 billion euros in the country, according to data from the National Bank of Romania.

After the outbreak of the financial crisis, the transferred amounts began to fall substantially, as shown in Table 3. Thus, in 2009, they decreased by 34.8%, to 4.3 billion euros, compared to 6, 6 billion a year earlier. Money sent home continued to decline until 2012, when there was a slight recovery, but the negative trend resumed in 2013.

**Table 1: Remittances sent to the country (2006-2016)**

<b>Year</b>	<b>Remittances (Billion Euro)</b>
2006	<b>3,9</b>
2007	<b>5,3</b>
2008	<b>6,2</b>
2009	<b>6,6</b>
2010	<b>4,3</b>
2011	<b>4</b>
2012	<b>3,7</b>
2013	<b>3,9</b>
2014	<b>3,6</b>
2015	<b>3,5</b>
2016	<b>4</b>
<b>Total</b>	<b>49</b>

Source:

*National Bank of Romania*

Romanians abroad have sent over 48 billion euros in the country in the last 10 years, slightly below the total revenue earned by the state in 2013 (Ionescu R, Pavel A., 2016,

pag.36).Remittances are to a lesser extent to balancing the balance of payments and to a greater extent to help with consumption.

Much of these remittances are spent by families who receive money from abroad. It is basically a subsistence aid in many cases.

Current transfers abroad, with the exception of those of public administration, are largely the money sent by Romanians working legally or "on the black" abroad.

If in 2008, these transfers reached a historic maximum of 6.6 billion euros, last year, remittances fell to 3.5 billion euros. These transfers, alongside foreign direct investment, are among the most important balance-of-payments balancing sources. The importance of remittances is not to be neglected, as the volume of money sent by Romanians abroad has come to be comparable to that of foreign direct investment.

Remittances are also important because they are among the few inflows of significant foreign capital. Even if they have fallen from previous years and will only reach 3 billion euros this year, foreign direct investment will not reach even 2 billion euros.

## **Conclusion**

In conclusion, for Romania, the emigration of a part of the total labour force has major (positive and negative) implications, because it changes the number and structure of labour force, it influences the consumption and investments in the source economy, as well as the behaviour of the household members on the labour market.

Instead of a medium-term development, Romania has a long-term migration. Irrespective of age, gender, level of education, occupation, emigrant abroad or returning migrants, regardless of household income or personal income, Romanians go to work abroad for money.

Both massive labour migration and the aging of the population are currently affecting the supply of labour.

The communities of origin flourish as a result of the migration of a large part of the population, thus migration becomes a means of ensuring not only the survival and improvement of the migrant's life but also of the community, providing opportunities for local long-term development, job creation and even economic opportunities and investment from migrants.

Of course, there are many other consequences of international migration on Romania's economy, but it is certain that migration can determine, on the one hand, economic growth, especially through money and goods transfers, which stimulate domestic consumption and raise living standards, on the other hand, labour migration, especially of specialists, can also have negative effects on the economy, especially by lowering productivity and foreign investment. Migration of health professionals is a phenomenon that cannot be stopped and has grown in recent years in our country.

## **References**

Clipa C., (2005), *Globalizarea și migrația forței de muncă din România*, Științe Economice Publishing, Iași.

Canton J., (2010), *Provocările viitorului*, Polirom Publishing, Iași.

Echkenazi J., (2008), *Ghidul Uniunii Europene* Niculescu Publishing, Bucharest.

Gilles Ferréol, (2001), *Dicționarul Uniunii Europene*, Polirom Publishing, Iași.



McGrow H., (2004), *Transformări globale*, Polirom Publishing, Iași.

Ignat I., (2002), *Uniunea Europeană de la piața comună la moneda unică*, Economică Publishing, Bucharest.

Ionescu R, Pavel A., (2016), 'The evolution of EU funds financial indicators,' Supplement of *Quality-Access to Success*, Vol. 17, S3, 36.

Moraru C., (2016), 'Empirical analysis of economic growth in Romania', Supplement of *Quality-Access to Success*, Vol. 17, S3, 29.

Paunescu L., (2016), 'Results of education and training in the labour market employment quality indicators', Supplement of *Quality-Access to Success*, Vol. 17, S2, 110.

Prisăcaru Gh., (2011), *Politici comune ale Uniunii Europene* Universitară Publishing, Bucharest.

Raboaca Gh., (2003), *Piața muncii și dezvoltarea durabilă*, Tribuna Economică Publishing, Bucharest.

Rusu V., (2003), *Migrația forței de muncă în Europa*, Arvin Press Publishing, Bucharest.

Zodian S., (2017), 'Viewpoints of environmental migration', Supplement of *Quality-Access to Success*, Vol. 18, S2, 488.

## **Analysis of Tourist Activity at International Level: Case Study - Correlation of Tourist Flows between the European Union and Romania**

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### **Abstract**

In generic terms, we are talking about tourism activity as an invisible business activity, because it can generate income, jobs, additional income, and thus a more sustained contribution to the realization of the Gross Domestic Product. Romania has special conditions because it has seaside, it has tourist resorts in the mountains and also has an agro-tourism development process. A relationship of interdependence between domestic and European tourism can be highlighted as there is a rise in tourism flows across all indicators. In the study, comparisons were made between a number of aspects, such as: the increase over the previous years, also taking into account the seasonality of some tourist activities, especially the coastal ones. In general terms, these results are satisfactory and reveal an increase in tourism activity.

**Keywords:** tourism, competitiveness, commerce, arrivals, departures

### **Introduction**

Tourism is an important activity for a country's economy, and even more so for Romania, which naturally has a very attractive tourist structure. Tourism is also a key sector of the European economy, contributing to the EU's objectives of sustainable development, growth, employment and regional cohesion. Europe is the world's favorite tourist destination.

“Tourism plays an essential role in the development of many European regions, especially the less developed regions, due to its considerable potential for contagion and job creation, especially among young people. It also showed significant resilience, steadily increasing during the recent crisis” (*Partal C., Margina O, Cosma R.M., 2018, pag.363*).

In the study, the touristic potential offered by Romania, but also the European space, has been started, and a number of elements that have taken place during the 2010-2016 period have been analyzed on the basis of tourism-specific indicators.

At the same time, in the field of tourist activity, any entry into Romania is included, even if it is done by the staff of companies that come in business interest, but which contributes through hotel and restaurant activity to the increase of the receipts in the tourism field. The study is completed with series of data and graphs analyzed for the purpose proposed by the author.

## **International Tourism - A Component Part of International Trade in Services**

### ***The Importance of Tourism as a Commercial Element***

The international tourism industry is characterized by multiplier effects and positive driving effects, superior to those in most other economic sectors.

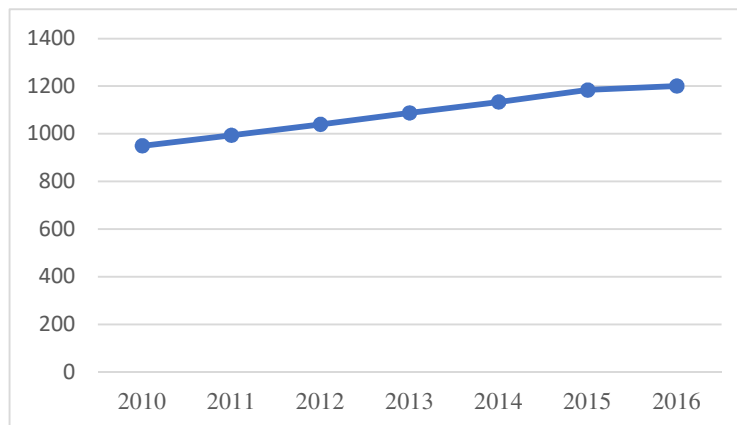
International tourism has become a fundamental component of the international specialization process, along with other services and commodity production. "For many countries, tourism even represented the chance of activating the national economy, up to that development threshold that propelled them into the developed country category, with an economic potential in full expansion" (*Partal C., Margina O, Cosma R.M., 2018, pag.363*).

For other countries, the oversizing of tourism has been generating economic and social disturbances, it has drained the values created by national work to the outside, altered the culture, the customs, the environment. Between the two extremes of tourism, the induced acts are places on top for most of the countries of the world. "The proper inclusion of tourism among the activities that generate foreign exchange earnings, affects positively both the balance of payments and the overall economic growth process". (*Giurea R, Moise I., Ragazzi M., Cioca L., 2017, pag.115*). After decades of development, tourism is and will continue to be one of the most important industries. Growth was significant in 2000 and has been enormously beneficial.

### ***Evolution of international tourist flows***

Between 1950-2000, the growth rate of international tourism averaged 7.1% per annum in terms of arrivals and 12.5% in volume value (current price collections). In the period after the global economic crisis, there was a continuous increase in all tourism indicators both at international level and in Romania.

#### *International Tourist Arrivals by region*



**Fig. 1: International Tourist Arrivals in million (2010-2016)**

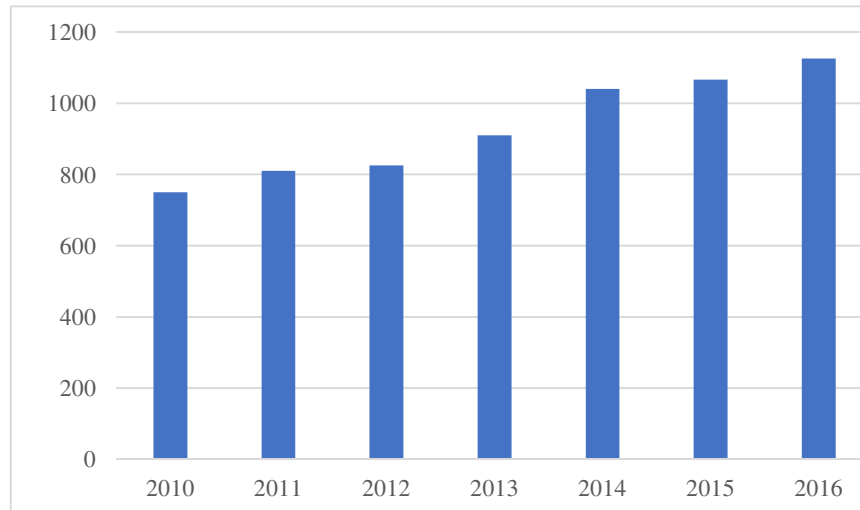
Source: UNWTO- Annual Report 2016

Europe (+5%) led growth in absolute and relative terms, supported by a weaker euro vis-à-vis, the US dollar and other main currencies. Arrivals reached 609 million, or 29 million more than in 2016. Central and Eastern Europe (+6%) rebounded from last year's decrease in arrivals.

Northern Europe (+7%) and Southern Mediterranean Europe (+5%) also recorded sound results while Western Europe (+3%) was below average. Asia and the Pacific (+5%) recorded 14 million more international tourist arrivals last year to reach 278 million, with uneven results across destinations. Oceania (+7%) and South-East Asia (+6%) led growth, while South Asia and North-East Asia recorded an increase of 4%. International tourist arrivals in the Americas (+5%) grew 10 million to reach 192 million, consolidating the strong results of 2016.

International tourist arrivals in the Middle East grew by an estimated 3% to a total of 54 million, which consolidated the recovery initiated in 2014. Limited available data for Africa points to a 3% decrease in international arrivals, reaching a total of 53 million. Arrivals declined in North Africa by 8% while Sub-Saharan Africa saw zero growth, though the latter returned to positive growth in the second half of the year.

### ***Tourism receipts***



**Fig. 2: Tourism receipts (2010-2016)**

*Source: UNWTO, Annual Report 2016*

International tourism revenue has risen from \$ 2.1 billion in 1950 to \$ 264 billion in 1990 to \$ 478 billion in 2000 and \$ 750 billion in 2010. At the level of 2016, a revenue growth rate of 10% has been reported since 2014.

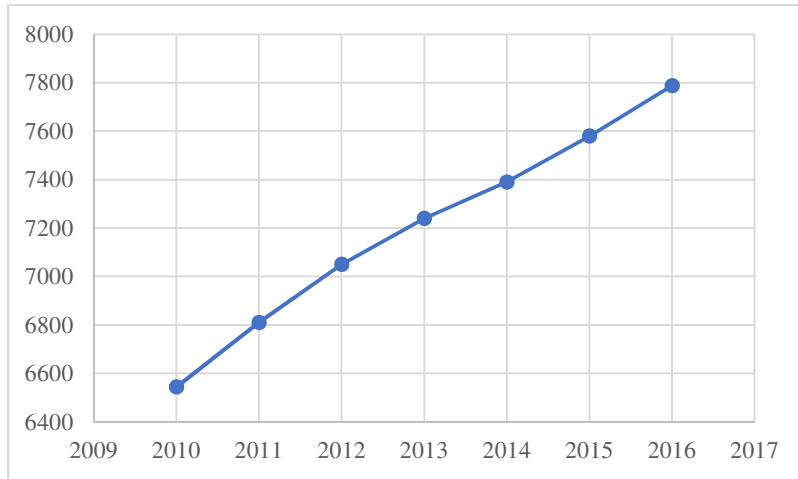
### **The Evolution of Tourism in Romania**

What characterizes the tourism in our country after 1989 refers to the lack of clarity regarding the appropriate ways of capitalizing on the tourism potential, in the new conditions of the transition from the state of dictatorship and the planned economy, which is excessively centralized, to the rule of law, with democratic character and market economy.

This feature also refers to the governments that have succeeded in leading the development of our society, as well as those to whom the leadership of the Ministry of Tourism has taken over. As a result,

the former socialist countries in our neighborhood, who lack the tourism potential of Romania, managed to achieve outstanding results in this area, placing them in advanced positions in international tourism. On the other hand, Romania descended in this hierarchy to the point where, from a balance factor, our tourism has become an element of imbalance at the scale of the national economy. “This explains why, compared to other countries, Romania has the lowest foreign exchange earnings per inhabitant” (Iovitu M, Buzoianu O., Rătezanu I.V, 2015, pag.694)

*Arrivals of foreign visitors in Romania*

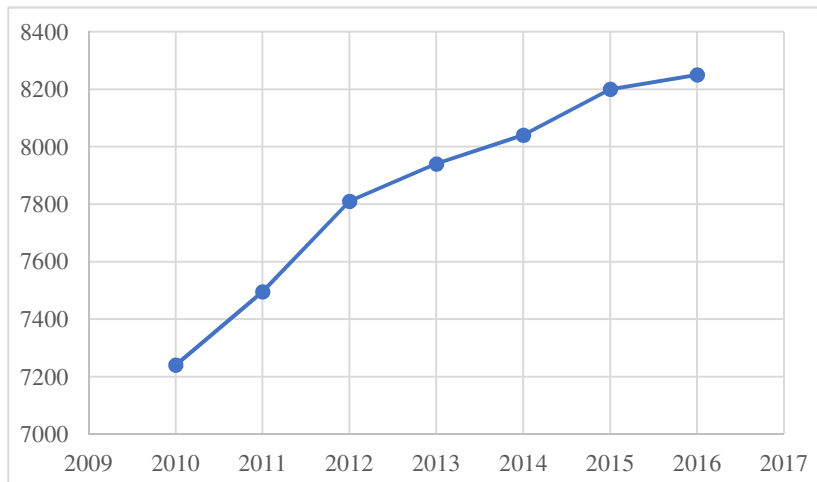


**Fig. 3: Arrivals of foreign visitors (2010-2016)**

Source: INNSE, 2016

As can be seen in the figure, the arrivals in Romania register a continuous increase in the period 2010-2016. The main visitors arrive from Europe, where in 2016 Moldova ranks first, followed by Hungary, the European Union is quite important at a distance. From Asia arrive in 2016, 226 thousand tourists, from America, 125 thousand tourists, from Africa 50 thousand tourists.

***Departures of Foreign Visitors***



**Fig. 4: Departures of foreign visitors (2010-2016)**

Source: INNSE, 2016

As can be seen from the graph, there is a continuous increase in the rate of departure of foreign visits; starting with 1995 (when suddenly declining), the rate rises by over 8-10% to date.

### **The gravitational model and estimation of Romania's tourism flows with the EU countries**

Over the past two decades, the gravitational model has become a standard tool for shaping and analyzing international trade. MG allows the assessment of the volume and nature of bilateral flows between countries. Meanwhile, patterns can be used to measure the creation and detrimental effects of trade associated with the formation of customs unions.

In analyzing bilateral trade links between different countries, gravity models have been intuitively deduced. Thanks to them, bilateral trade is considered a linear function of factors such as the relative properties of trading partners, distance or geographical proximity, including the existence of a common border, bilateral exchange rates, or membership of a regional economic union.

### ***The Econometric Model for Simulation of Tourist Flows between Romania and the European Union***

The gravitational model is used to analyze the relationship between the volume and direction of international flows and the economies of the Union countries, the model being complemented by a series of variables to test their relevance in explaining flows.

Using the gravitational model, the determinants of tourist flows between Romania and 11 countries in the European Union are analyzed: Netherlands, Germany, Italy, France, Austria, Great Britain, Greece, Sweden, Spain, Belgium, Ireland. A sample of 11 countries in the European Union is considered for the construction of the models over a period of 5 years (2011-2015).

To simulate the tourist flows of Romania with the European Union, we used the following gravitational equation:

$$\ln SOS_{RJ} = \alpha + \beta_1 DIST_{RJ} + \beta_2 \ln X_J + \beta_3 \ln X_R + \beta_4 Z_J + \beta_5 Z_R + u_{RJ}$$

where:

- Ln SOS is the dependent variable whose determinants are analyzed;
- are the independent variables with logarithm values for countries of origin: VNBL, GNI, POP;
- are the independent variables with logarithmic values for Romania: VNBLR
- are independent variables with non-logarithmic values for countries of origin: IM, EG, LAT;
- are independent variables with non-aggregated values for Romania: FSR, INFR, PLMR, FISCR.

Determination coefficient R2 the percentage of initial information contained within the model frame, being the ratio of the explained dispersion to the total dispersion. The R2 value indicates to what extent the variables used in the model influence the geographical distribution of international tourist flows, taking values between 0 and 1. Values close to 1 of the determination coefficient indicate that a significant part of the variance of the dependent variable is explained by regression.

**Table 1: Modeling of international tourism flows Romania – EU (2010-2016)**

Independent variables	Model 1	Model 2	Model 3	Model 4
Constanta ( $\alpha$ )		-391.3618 (-72.17732)	-1101.077 (-1.462822)*	
Ln POP <sub>j</sub>		0.774066 (150.3295)	0.613890 (6.190535)	0.796244 (13.06470)
Ln PS <sub>j</sub>	0.387391 (4.011903)			
DIST <sub>Rj</sub>	-0.000544 (-27.47208)	-0.001299 (-782.8646)	-0.001395 (-10.20982)	-0.001289 (-278.3646)
Ln PS <sub>R</sub>	-0,358604 (-48,22010)			
Ln VNB <sub>R</sub>				0.030969 (3.080980)
IM <sub>j</sub>			-0.308974 (-2.523122)	-0.224739 (-12.38354)
Ln POP <sub>R</sub>		1.347423 (70.80742)	0.989510 (2.499150)	
Ln SV <sub>j</sub>			0.562126 (1.077735)*	
Ln VNBL <sub>j</sub>	0.990279 (48.77389)			
Ln INFR <sub>R</sub>				0.453731 (5.845630)
Ln PLM <sub>R</sub>	0.950215 (21.44201)			
Ln VNB <sub>j</sub>		0.038267 (104.4601)	0.044863 (3.220697)	0.019502 (17.48606)
Ln FS <sub>R</sub>		6.439813 (84.43335)		
Lat <sub>j</sub>				-0.788961 (-9.080665)

R <sup>2</sup>	0,818699	0,809445	0,823246	0,929725
Test F	26388,27	1371407	30,69329	264297,7
Prob(-Fstatistic)	0,000000	0,000000	0,000000	0,000000

Source: Author based on OMT data

$$LnSOS_{RJ} = -0.0000544DIST_{RJ} + 0.387391LnPS_J - 0.358604LnPS_R + 0.990279LnVNBL_J + 0.95021LnPLM_J$$

This model tracks the influence of prices and wages in the country generating tourists as an independent variable that concentrates the tourism price of the country of origin. The coefficient of 0,387391 shows the exertion of a positive influence of this variable on the arrivals of tourists in Romania, the higher the prices and the salaries in the country of origin, the higher will be the flow of tourists oriented towards the analyzed destination. The model also captures the influence of prices and wages in Romania, which in fact reflects the tourism price of our country. The influence of this variable is in the opposite direction, a rise in prices and wages in Romania generating a decrease in tourist flows.

The geographical distance is an impediment to the flows of tourists, focusing on transport costs that increase Romania's tourist price as an alternative destination. The negative sign of the coefficient of this variable indicates that tourists prefer, generally close destinations.

The gross national income variable per capita concentrates the influence of the national gross income and of the population in the country of origin, the positive coefficient of this variable indicating a translated effect in the increase of the tourist flows received by our country once due to the increase of the foreign tourist's capacity as a subject of tourist demand, to import tourist services

The effect of Romania's monetary policy focuses on inflationary effects (the average inflation rate) in the distribution of international tourism flows. An increase in inflation always means a fall in the purchasing power of the national currency.

The depreciation of the national currency against a foreign currency, so appreciation of that currency, is a process that stimulates international tourist flows by increasing the purchasing power of the foreign currency.

## Conclusion

In this study it can be said that tourism is present in human life and means, through its content and role, a distinct field of activity, a very important component of economic and social life for an increasing number of countries in the world. Within Romania, tourism is a growing branch. However, after 1989, due to the diminishing of the living standards of the citizens of this country, there was a reformation of their priorities. Tourism was one of the first branches to suffer. Consequently, the possibilities of reviving it have been sought through the development of effective marketing strategies and policies. "For the European Union, tourism is a very important strategic economic activity. As far as our country is concerned, Romania is irreversibly committed to European integration by signing the Association Agreement with the EU". (Radu D., Vasile E., 2016, pag.107).

Therefore, adhesion should contribute to the promotion of national interests and the development of Romania's economic and cultural heritage, having as main objective the development of living standards and the improvement of the quality of life for the entire population. At the same time, the EU has offered



Romania the opportunity to revive the tourism industry by implementing programs that could contribute to its development

## References

Blake A., (2000), *Modelling Tourism and Travel using Tourism Satellite Accounts and Tourism Policy and Forecasting Models*, Nottingham.

Cosmescu I., (1998), *Turismul - Fenomen complex contemporan*, Economica Publishing, Bucharest.

Puz E., Pârjol F., (1996), *Economia turismului*, Mirton Publishing, Timișoara.

Glăvan V., (2000), *Turismul în România*, Economică Publishing, Bucharest.

Giurea R, Moise I, Ragazzi M., Cioca L., (2017), 'Focusing agro-tourism structures for environmental optimization', *Quality-Access to Success*, 18 (S1), 115.

Howard J., (1999), *Using the Gravitz Model to Estimate the Costs of Protection*, Federal Reserve Bank of St. Louis.

Ionescu I., (2000), *Turismul - fenomen social - economic și cultural*, Oscar Print Publishing.

Ioniță R.M, (2015), 'Methods and Strategies to increase quality of services in tourism', Supplement of *Quality- Access to Success*, Vol. 16, S3, 129.

Iovitu M, Buzoianu O., Ratezanu I.V, (2015), 'Analysis of Romanian tourism in the context of globalization', *Supplement of Quality-Access to Success*, Vol. 16, S1, March 2015, 694.

Morariu D., (1999), *Concepte și politici de turism internațional*, Alfabet Publishing, Deva.

Morariu D., (1999), *Funcțiile serviciilor în economia mondială*, Mirton Publishing, Timișoara.

Partal C., Margina O, Cosma R.M., (2018), 'The importance of Romanian tourism as an element for increasing the competitiveness of the national economy', Supplement of *Quality-Access to Success*, Vol. 19, S1, 363.

Popa I., (1997), *Tranzacții comerciale internaționale*, Economică Publishing, Bucharest.

Radu D., Vasile E., (2016), 'European Union competences in tourism promotion in member states', 107, supplement of *Quality -access to succes journal* vol. 17, s3, 107.

Yair Eilat, Liran Einav, (2003), *The Determinants of International Tourism*, Horvard University.

\*\*\*, WTO – *Year Book of Internațional Economics*, 2015-2016.

## **The Influence of Globalization on Productivity**

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### **Abstract**

Explaining why life standards vary so much throughout the world is, in a sense, very easy. The answer can be summed up in one word, this being productivity, but in another sense, the international variation in living standards is deeply subjective. To explain why revenues are much higher in some countries than in others, we need to look at the many factors that determine the productivity of a nation. We went from this idea towards the conceptual framework that helps us to underline the works of globalization, how it influences productivity and how Research – Development – Innovation helps achieve breakthrough at all levels.

**Keywords:** globalization, productivity, economic growth, development

### **Introduction**

This work is built around the concept of productivity and economic growth by developing a simple model, at first being similar to the concepts found in Daniel Defoe's famous novel, Robinson Crusoe, the subject being a sailor shipwrecked on a deserted island. Because Crusoe lives alone, they catch their own fish, grow their vegetables and make their own clothes. We can think of Crusoe's activities - the production and consumption of fish, vegetables and clothing created - as a simple economy. Examining Crusoe's economy, we can learn some lessons that apply to more complex and realistic savings.

What determines Crusoe's standard of living? In a nutshell, the productivity, the quantity of goods and services produced by each unit of labor. If Crusoe is good at catching fish, cultivating vegetables and making clothes, he lives well. If it is bad to do these things, he would live badly. Because Crusoe gets to consume only what it produces, its standard of living is related to its productivity.

In the case of Crusoe's economy, it is easy to see that productivity is a determinant of living standards and that productivity growth is the key to raising living standards. The more Crusoe fish can catch in the hour, the more they ate at dinner. If Crusoe finds or makes a fishing net, then he gets more skillful in catching fish and his productivity rises. This increase in productivity makes life better for Crusoe: he can eat extra fish or spend less time fishing and devote more time to doing other goods he can use to make his life more efficient.

The key role of productivity in establishing living standards is equally true for nations, as is the case for sailors stuck on the ship or shipwrecked on a deserted island. Let us remember that the GDP of an economy measures two things at the same time: the total income achieved by everyone in the economy and total expenditure on the production of the goods and services economy. GDP can measure these two things simultaneously because, for the economy as a whole, they have to be equal.

Like Crusoe, a nation can only enjoy a high standard of living if it can produce a great deal of goods and services. Americans live better than Nigerians, because American workers are more productive than Nigerian workers. The Japanese enjoyed a faster rise in living standards than the Argentinians, as Japanese workers have seen a rapid increase in productivity. Indeed, one of the ten principles of the economy shows that a country's standard of living depends on its ability to produce goods and services.

Therefore, in order to understand the great differences in the living standards that we see in countries or in time, we need to focus on the production of goods and services. But noting the link between standard of living and productivity is just the first step. This naturally leads to the following question: Why are some economies much better to produce goods and services than others?

### **A Global and Academic Approach for Productivity**

Although productivity is important in determining Robinson Crusoe's standard of living, many factors determine Crusoe's productivity. Crusoe could catch more fish, for example, if he had more fishing nets, if he had been trained in the best fishing techniques, if his island had a large amount of fish or if he invented a better bait fishing. Each of these determinants of Crusoe's productivity can be grouped into physical capital, human capital, natural resources and technological knowledge, now having a functional counterpart with more complex and realistic savings. Consider each factor in turn in the following rows.

#### ***Physical Capital per Worker***

Workers are more productive if they have tools to work with. The inventory of equipment and structures used to produce goods and services is called physical capital, or simply capital. For example, when workers produce furniture, the tools they use are saws, lathes and drilling presses. Several tools allow workers to produce their production more quickly and more precisely: a hand-held or base worker can make less furniture each week than a worker with sophisticated and woodworking equipment.

As you recall, inputs used to produce goods and services with the help of labor are called production factors. An important feature of capital is that it is a producer-producing factor. This is an entry into the process of using capital by the fact that in the past it has been an exit from the production process. The wood worker uses a lathe to make the foot of a table. Previously, the lathe itself was the result of a company producing lathes. The lathe maker in turn used other equipment to make his product. Thus, capital is a production factor used to produce all types of goods and services, including more capital.

#### ***Human Capital per Worker***

A second determinant of productivity is human capital. Human capital is the economic term for the knowledge and skills that workers acquire through education, training and experience. The human worker has the skills accumulated in early education programs, secondary school, high school, college, and in-work training as adults included in the workforce.

Education, training and experience are less tangible than lathes, bulldozers and buildings, but human capital is like physical capital segmented in many ways. Like physical capital, human capital raises the ability of a nation to produce goods and services. Just like physical capital, human capital is a production factor created. The production of human capital requires contributions in the form of teachers, libraries

and time allocated to students. Indeed, students can be viewed as "workers" who have the task of producing future human capital that will be used in future production.

### ***Natural Capital per Worker***

A third determinant of productivity is natural resources. Natural resources are inputs of production that are provided by nature, such as land, rivers, and mineral deposits. Natural resources have two forms: renewable and non-renewable. A forest is an example of a renewable resource. When a tree is cut, a seedling can be planted in its place to be harvested in the future. Oil is an example of an irreversible resource. Since oil is produced by nature in several million years, there is only a limited offer. Once the amount of oil is exhausted, it is impossible to create more.

Differences in natural resources are responsible for some differences in living standards around the world. The historical success of the United States has been driven, in part, by the large supply of lands well suited to agriculture. Today, some countries in the Middle East, such as Kuwait and Saudi Arabia, are simply rich because they are located above the world's largest oil fields.

Although natural resources may be important, they are not necessary for an economy to be highly productive in the production of goods and services. Japan, for example, is one of the richest countries in the world, despite the fact that it has little natural resources. International trade makes Japan's success possible. Japan imports many of the natural resources it needs, such as oil, and exports its manufactured products into resource-rich economies.

### ***Technological Know How***

A fourth determinant of productivity is technological understanding or technological knowledge - the city itself is a result of evolution in producing goods and services. A hundred years ago, most people worked on farms because farm technology required a high labor force contribution, especially when it was intended to feed the entire population. Today, due to advances in agricultural technology, a small proportion of the population can produce enough food to feed a whole country and export much of the production. This technological change has made the workforce available to produce other goods and services.

Technological knowledge has many forms. A feature of technological knowledge is that after a period of accommodation and standardization becomes common knowledge, after one person uses it, everyone becomes aware of it. For example, once Henry Ford has successfully introduced an automated assembly line with a well-defined production site, car manufacturers have followed this trend quite quickly, although Benz and Otto invented the internal combustion engine, Ford made it accessible to the masses. Another technology is the one that offers the patent, namely intellectual property, and is known only by the company that discovers it and for a long time only they can use it (although intellectual theft is nowadays a method of advancing see the Chinese technology companies, but also the hardware war between Apple and Samsung). Only Coca-Cola Company, for example, knows the secret recipe to make its famous soft drink. However, another technology is held for a short period of time. When a pharmaceutical company discovers a new drug, the patent system gives it a temporary right to be its exclusive manufacturer. When the patent expires, however, other companies are allowed to do the drug, but the discoverer is on average protected for 17 years. All these forms of technological knowledge are important for the production of goods and services in the economy.

It is useful to distinguish between technological knowledge and human capital. Although closely linked, there is an important difference. Technological knowledge refers to the understanding of society about how the world works. Human capital refers to the resources spent by transmitting this understanding of the workforce. To use a relevant metaphor, technological knowledge is the quality of the textbooks of

society, while human capital is the period in which the population has dedicated itself to reading. Productivity of workers depends on both.

## Understanding Productivity

Due to the massive infusion of detailed data on production activity in the economic study over the last three decades, researchers in many areas have learned a lot about how companies are turning their input into results. Productivity, the efficiency with which this conversion occurs, has been a subject of particular interest. The details of these studies varied according to the specific interests of the researchers, but there is a common thread. They virtually documented, without exception, enormous and persistent productivity gaps between producers, even within small-scale industries.

The sizes involved are striking. Chad Syverson (2004b) notes that in the US manufacturing industries the average difference in total logged factor productivity (TFP) between 90% of industry and 10% of the most productive industry is 0.651. This corresponds to a productivity distribution ratio nearly twice as output as the same inputs measured as the top 10%. Note that this is the average range between 90% - 10%. The industry standard deviation is 0.173, so many industries see far greater productivity differences between their manufacturers. US production is not exceptional in terms of productivity dispersion. Indeed, it is small compared to the productivity variation observed in other countries. Chang-Tai Hsieh and Peter Klenow (2009), for example, find even higher productivity differences in China and India with an average ratio of 90% -10% of TFP above 5:1.

Also, these productivity differences between producers do not meet. The regression of a TFP manufacturer's current TFP with a one-year gap has an autoregressive coefficient in the order of 0.6 to 0.8 (see, for example, Foster, Haltiwanger, Syverson, 2008). In a simplified way, some manufacturers seem to be taking care of their business, while others are completely deprived of the protection of the factors of production. Productivity is literally a matter of survival for businesses.

### *How Microeconomic Analysis Influences Productivity*

The discovery of ubiquitous, large and persistent productivity gaps has led to the shaping of research agendas in a number of areas. Here are some examples of these situations.

Macroeconomists are inclined towards dismantling the economic aggregate based on productivity growth, and everything is yielded per employee (microeconomic) or per capita (macroeconomic), hence aggregating can also push for sustained economic growth. Foster, Haltiwanger and Krizan (2006), for example, provide an overview of the important role of reallocations of factors that increase economic activities with higher productivity valencies. Hsieh and Klenow (2009) wondered as much as the Chinese and Indian economies if they get the same efficiency in allocating inputs to production units as the United States. Models employing economic fluctuations are driven by productivity shocks and are representative of providing increased productivity to factories through aggregation of production (Campbell, Fisher 2004, Bartelsman, Haltiwanger, Scarpetta, 2009, and Veracierto 2008). Productivity leads to the emergence of long-term growth problems, revenue convergence and technology externality. They provide a level of resolution that cannot be achieved with dependent aggregated data.

Within the industrial organization, research is linked to productivity levels by a number of features of technology, demand and market structure. Examples include the effect on competitors (Syverson, 2004), and non-recoverable costs, as well as interaction and market rivalry between ineffective products and technologies (Bloom, et al., 2007).

Economists focused on labor productivity have explored the importance of the human capital of workers in explaining productivity differences, the effects of stimulus productivity, talent, and practices (Bloom, Van Reenen, 2007), organizational form and social connections among colleagues. There has also been a

focus on the role of reallocation based on dynamic labor market productivity by creating jobs and canceling those who are not adaptable to the future (Haltiwanger, et al., 2008).

Given the important role that productive differences play, there are obvious and crucial questions. Why do firms (factories, shops, office buildings, or even individual production lines, elements for which productivity matters) differ so much in their ability to turn entry inputs? Is it luck or something more, maybe even more systematically combined? Can manufacturers control factors that affect productivity or are external results of the operating environment? What creates such large productivity differences in balance?

### **Selection of Relevant Productivity Indicators**

Researchers have long proposed that managers should lead to productivity gaps, which are the key factor in achieving accelerated productivity. Whether these increases are achieved through managers' talent or the quality of their practices, this is an attractive argument to justify certain sustained productivity gains. Managers are conducting an orchestra based on input components. They coordinate the application of labor, capital, and intermediate inputs. A weak conductor can lead to a cacophony, rather than a symphony, can be through a faulty management of discordant production operations.

Sometimes there may be a distinction made between blue and white collars or production and non-production workers. Identity, much less the characteristics, practices, or time allocation by individual managers is rarely known. Moreover, managerial entries (such as know-how and working procedures) can be very abstract. It's not just about time allocation that matters, but what the manager does with their time, such as how they stimulate workers or how they relate to suppliers.

Bloom and Van Reenen (2007) offer one of the most complete studies on management practices and their correlation with productivity. They have researched over 700 medium and large firms in the United States, the United Kingdom, France and Germany. They have conducted factory plant surveys so that measured practices revolve around day-to-day and close-up production, rather than focusing on strategic options taken at executive level.

Importantly, therefore, Bloom and Van Reenen's research on superior quality management practices (and higher productivity outcomes) are linked to more productivity and company performance measures, including labor productivity, TFP, return on capital, QTobin factor, sales growth and probability of survival in the economic turmoil.

Bloom and Van Reenen show that if we have more intense competition on the business market, it is positively correlated with best management practices. In addition, management practice scores are lower when the company is owned by a family and one of the children becomes the current CEO, being the daughter or son of the founder of the firm. These two factors are responsible for explaining most of the difference between the mediocre management scores at country level estimated in the sample used by Bloom and Van Reenen. The variation in these averages is higher in the United Kingdom and France with poorly managed mechanisms. Both countries have traditionally favored the concept of succession to the position of CEO through tradition and legislation based on inheritance tax exemptions.

The outline of these correlations is based on causality, and only management consultancy bases its recommendations on the practices observed in successful firms, but some factors are excluded, taking into account only leadership through management practices and performance. The estimated effect of management practices on TFP remains significant, suggesting that unobservable third parties have a modest role and that Bloom and Van Reenen have devised a mechanism based on practical management scores that reflects the perseverance of sustainable management.

### ***Better Quality of Capital and Work Flow***

Management is a purely qualitative input that can hardly be measured in most production functions and is therefore incorporated into productivity measurement. Similarly, the productive effects of inputs, such as managerial manpower and capital inflows, can also produce an accelerated productivity if there are quality differences between inputs as standard input, not capture and release of performance. The notion that market salaries reflect changes in the contributions of workers in production; companies with more production workers will have a higher salary outlined through draft laws outlined to the employee. There are, of course, problems with this approach: wage variation may reflect the realities of local labor markets or the causal link could be in a different direction if more productive producers gain the surplus that is shared or captured by employees. Therefore, more direct measures for assessing the quality of work are needed to definitively contribute to the productivity of work towards its quality.

There is, of course, a broad-based literature on human capital, far too large to cover all aspects that have been assessed on these pages and which have linked several factors of quality of work, including education, training, general experience, and mandate recruitment of human resources. Much of this work in the economy of the labor-based mechanism focused on wages as the result of the employee's direct interest.

Financial capital may vary in the evolution of some businesses and in comparison with standard measures. If the specific advantages offered by the capital differ from one company to another, depending on how much technological progress embodies part of the business evolution. Several studies have attempted to measure the rate of technological breakthrough found in capital by measures that outline the careful build-up of return on investment and the evolution of RMS (marginal rate of substitution). Plutarchos Sakellaris and Daniel Wilson (2004) do exactly this using the annual data of investments on the evolution of the capital of the analysis on the US manufacturing industry and the typology of the specific measures addressed. They have estimated a production function that is standard in all respects except that, rather than measuring capital inflows by overestimating the stock volume, they use a weighted sum of previous production investments. Combined weights on cumulative depreciation over investments of a certain age and a multiplier of technological progress that can be estimated. They assume that capital efficiency grows at a year-to-year constant rate, which is estimated to be between 8 and 17% per year, depending on production specifications.

### **Conclusion or the Focus on the Research – Innovation – Development Trident**

While the research described above indicates the existence of heterogeneity entry problems, the productivity effects of a certain type of IT-driven capital have been the subject of intense study since 2000. This is right; many authors have hypothesized that this impetus created by information technology is behind the return of the US, the increase in global productivity since the mid-1990s, after twenty years of slow performance, which has more influenced the patterns of many industries. Given the absolute amount of GDP per capita variation that can be driven by even a modest change in productivity growth trend stemming from the unsustainable period.

The impact of IT capital accelerates productivity by stimulating niche performance that is also highly profitable, found in Jorgenson, Ho, Stiroh (2005, 2008). These IT performance performances make productivity gains and increases above average an over-the-middle mechanism that can provide the necessary public resource to enter the optimum or peak performance.

At the same time, van Ark, OMahony and Timmer (2008) show that at EU level, productivity gains are slow during the same period can largely be explained by the subsequent occurrence and smaller size of IT investments at company level, but also at critical infrastructure level. The US relies more on naturalized citizens operating in the European Union than vice versa, thus making a direct advance towards them. From this perspective, there is a complementarity between capital and human resources outlined by IT

practices, thus explaining why the USA has an advantage in the productivity of multinationals in the European Union.

These ample models outline specific microeconomic mechanisms and promote the relationship between IT aggregates and productivity growth. Several studies have explored this problem with the detailed production data of industrial branches in developed countries. Thomas Hubbard (2003) shows how onboard computers and dynamic and active traffic assistance raise the average of the age of use of trucks and vans and adding load status, allowing them to better fit in the ability to innovate. Adoption of any technology, IT, AI or technical-sensory technology has its own costs. A new net productivity growth technology depends on the difference between the increase in production through the new technology and the cost of purchasing it. However, marginal producers have benefited from positive productivity gains, although the maximum is reached at the inflection point. Therefore, increased aggregate productivity as any technology will also provide a new perspective on the competitiveness of the technology sector. A lower mark and the price of technology is correlated with both the number of marginal adopters and the surplus productivity that each experience offers.

Better customization of IT productivity features can lift firms through a low average. Productivity measures developed in favor of obtaining a calculation in output physical units, therefore, can not fully capture the surplus earned. This is a case where the limit of most sets of data is at the producer level through revenue-based exit measures that are not a measurement problem, as this type of increase in productivity is reflected in revenue, but not physical quantities.

Erik Brynjolfsson and co-workers (2008) and Bartelsman, Gautier, Wind (2010) approached the concept in related but distinct ways, demonstrating that there is a direct link between IT and increased productivity. Brynjolfsson et al. Have documented through case studies that the speed at which firms can replicate through practices that increase business productivity in line with business throughout the organization. This ability to build a winning productivity mechanism by innovative means successfully and would outline a mechanism based on the marginal substitution rate that would attract customers at a higher rate.

Bartelsman, Gautier and Wind (2010) further develops the idea that not only the average of the distribution of results, but also its variation, changes. Because poor results are truncated by the option to go back into the language of the above model, manufacturing firms build a lower productivity level but with a greater variation on loss, which raises the appetite to make risky innovations. Bartelsman, Gautier, and Wind, however, believe that exit costs will be directly correlated with the RMS of innovation as they make it difficult to reject unsuccessful results. It is argued that legislation on the protection of employees or about how optimally created employment outlines higher exit costs and therefore reduces the actual desire to adopt new techniques or technologies. This is illustrated by the situation in the intensive IT sectors that are lower in countries with higher legal restrictions on the marginal substitution skills to close down unsuccessful production lines.

There is a literature linking Research and Productivity Development, as well as recent additions that have focused on exploring micro-links. As in many case studies based on inputs with productivity differences, they are in correlation with causality separation.

Certainly, Research-Development-Innovation programs are simply one of the more observable components of global innovation efforts with emphasis on the marginal substitution rate. RMS engages both as an innovation process and a built product without officially reporting R & D expenditure. This limits the ability of literature to give a comprehensive overview of the relationship between productivity and innovation. However, it is a very useful start, and R & D mechanisms are more important in the literature and are likely to overlap with the immeasurable effects of spending on innovation.



## References

- Bartelsman, E., Gautier, P., Wind, J. (2010). 'Employment Protection, Technology Choice, and Worker Allocation'. *Tinbergen Institute Discussion Paper* 2010-042/3.
- Bartelsman, E., Haltiwanger, J., Scarpetta, S. (2009). 'Cross-Country Differences in Productivity: The Role of Allocation and Selection'. *National Bureau of Economic Research Working Paper* 15490.
- Bloom, N., Van Reenen, J. (2007). 'Measuring and Explaining Management Practices across Firms and Countries'. *Quarterly Journal of Economics*, nr. 122(4), 1351–1408.
- Bodislav, D.A. (2016). 'Business Intelligence for Decision Making in Economics', in Dunis, C., Middleton, P., Karathanasopolous, A., Theofilatos, K., *Artificial Intelligence in Financial Markets*, London: Palgrave Macmillan, 125-158.
- Brynjolfsson, E., McAfee, A., Sorell, M., Zhu, F. (2008). 'Scale without Mass: Business Process Replication and Industry Dynamics'. *Harvard Business School Working Paper* 07-016.
- Foster, L., Haltiwanger, J., Krizan, C.J. (2006). 'Market Selection, Reallocation, and Restructuring in the U.S. Retail Trade Sector in the 1990s.' *Review of Economics and Statistics*, no. 88(4), 748–758.
- Foster, L., Haltiwanger, J., Syverson, C. (2008). 'Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability?' *American Economic Review*, no. 98(1), 394–425.
- Hsieh, C.T., Klenow, P. (2009). 'Misallocation and Manufacturing TFP in China and India'. *Quarterly Journal of Economics*, no. 124(4), 1403–1448.
- Hubbard, T. (2003). 'Information, Decisions, and Productivity: On-Board Computers and Capacity Utilization in Trucking'. *American Economic Review*, no. 93(4), 1328–1353.
- Jorgenson, D., Ho, M., Stiroh, K. (2008). 'A Retrospective Look at the U.S. Productivity Growth Resurgence'. *Journal of Economic Perspectives*, no. 22(1), 3–24.
- Syverson, C. (2004). 'Market Structure and Productivity: A Concrete Example'. *Journal of Political Economy*, no. 112(6), 1181–1222.
- van Ark, B., O'Mahony, M., Timmer, M. (2008). 'The Productivity Gap between Europe and the United States: Trends and Causes'. *Journal of Economic Perspectives*, no. 22(1), 25–44.

## **The Impact of Economic and Geopolitical Shocks of 2014 – 2017 on the Modern Banking System of Russia**

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### **Abstract**

The authors analyze the retrospective and latest dynamics in the development of the banking system of Russia in the context of crisis theory in respect to the contemporary history of the Russian economy, with Russian banks considered as subjects of the investment process. Given the considered structure of economic cycles and crisis phenomena, the authors formulate the contents of latest economic and geopolitical shocks and their impact on the state of the modern banking system in Russia.

**Keywords:** Banking system, economic cycle, crisis, investments, risks.

### **Introduction**

Modern foreign and national scientific literature pays a lot of attention to the issues concerning the operations of commercial banks as the most important subjects of investment processes, in particular, the role they play on the stock market. On the one hand, the importance of the position and role of credit institutions in this segment does not cause doubt, because a considerable investment capacity is accumulated in banking organizations. On the other hand, many theoretical and methodological aspects have not been elaborated enough, especially in terms of integral approach to choosing investment strategy and forming an investment portfolio by commercial banks.

Investments play a very important role in the state economy and perform some functions without which no further progressive development of the country as a whole and its sectors and subjects in particular is possible. The Long-Term Forecast of Socioeconomic Development of the Russian Federation for a Period until 2030, developed by the Ministry of Economic Development of the Russian Federation, defines the courses and ways to ensure sustainable growth of the national economy, improve the well-being of the country's citizens, create conditions for national security and consolidate the positions of the state on the international arena. One of the main courses is transition of the Russian economy from the export of raw materials to innovative way of development. To achieve this, some reforms are needed, such as: improvement of the conditions for entrepreneurship and creation of favorable investment climate; creation of conditions for innovative activity of business; formation of financial infrastructure, oriented on long-term investing; transformation of private savings into investments in the national economy.

The policy of the state regulators must be aimed at improving the investment climate in the country, which serves as an indicator showing how favorable the current situation is for investing in a sector, region, subject or country.

- ***Russian commercial banks as subjects of investment process***

Speaking of the investment operations of Russian commercial banks, it should be noted that in terms of the size of the total investment portfolio, they are one of the largest groups of investors on the Russian investment market.

According to the report of the development of the banking sector and banking supervision in 2017 as of 01.01.2018 the total amount of assets of the banking sector was 85.2 trillion rubles. (the annual increment was 9%, for comparison in 2016 the increment was 3.4%). In the structure of assets, the total volume of credits to the economy, including the non-financial sector and population in 2017 grew by 6.2% up to 42.4 trillion rubles, distributing in the following way – 30.2 trillion rubles was accounted for loans to the non-financial sector and 12.2 trillion rubles to the population. However, despite positive dynamics in comparison to 2016, when the total lending portfolio to the non-financial sector fell down by 0.8%, some structural changes took place in the assets of the banking sector. The share of loans in the economy reduced from 51.1% down to 50.8%. At the same time the security portfolio of credit institutions in 2017 grew by 9.7% (in comparison to 2016 increment was 4.4%) up to 12.3 trillion rubles, and its share in the assets of the banking sector amounted to 14,5%. Thus, a trend can be observed when banks reduce investment in the real sector of the economy with a conditionally stable level of lending to population and choose to reorient investments into securities.

Over the past five years, the security portfolio of the banking sector have almost doubled, growing from 6.5 trillion rubles to 12.3 trillion rubles. The main specific weight (81%) in the portfolio is composed of investments into debt securities, whose volume increased up to 9.9 trillion rubles. The increase of this indicator is caused not by the fact of the portfolio revaluation because of the MOEX Russia Index reduction, but because of the real growth of investments in this tool.

The share of investments into debt securities of the Russian Federation increased a lot – up to 3.6 trillion rubles.

Now the main holders of debt securities are banks with state ownership and medium-sized private banks with capital from 1 billion rubles.

The portfolio of banks participating in subsidiaries and dependent joint stocks companies grew up to 1.7 trillion rubles by 13%, with the specific weight of this indicator in the total investments into securities having risen up to 14.2%.

The volume of investments in equity securities (stocks, shares) grew by 41.8% up to 480 billion rubles in 2017. The specific weight in the securities portfolio amounted to 3.9%.

The data, regularly published by the Bank of Russia allow us to have an exact understanding of the total volume of investments commercial banks make in securities. Taking into account the current development level of the Russian securities market, it is logical to assume that the most essential proportion in the investments of commercial banks into debt securities is taken up by bonds, while stocks prevail in the structure of investments into equity securities.

Thus, it can be stated that at the modern stage of development of the Russian securities market, the role of commercial banks acting as emitters, investors and intermediaries is incredibly big. Moreover, according to the statistics, many commercial banks, especially the largest ones in terms of the size of assets, play several roles at the same time on the national securities market.

It should be noted that a bigger priority is given to safety of investments, rather than their rate of return and growth in the total volume. The best combination of safety and returns is achieved through a correct investment strategy and a balanced investment portfolio of the bank. Owing to this, every credit institution, specializing in investment operations, must pay a lot of attention to the development and pursuit of investment policy given rapidly changing externalities and internalities.

- **Cyclic phenomena in economy and symptoms of crisis situations**

The economy does not develop along a straight line, determining economic growth, but it always goes away from the trend, showing slumps and recoveries, i.e. it develops cyclically. Business cycles are periodical recoveries and recessions in the economy and fluctuations in business activity. A cycle has two extreme points:

- A peak point, which corresponds to the maximum of business activity.
- A trough point, corresponding to the minimum of business activity, i.e. maximum recession.

As a rule, economic cycles are divided into two phases. The first phase is called a slump or recession phase and it lasts from the peak to the trough. In case of a long and deep recession, depression occurs. The second phase is called a recovery phase and it lasts from the trough to the peak.

Apart from this, there is another approach, which divides economic cycles into four phases. However, extreme points are not highlighted here, because it is believed that when the economy achieves the maximum or minimum of business activity, it stays in this condition for quite a while.

- I phase - boom - is characterized by maximum activity in the economy. It is a period of over-employment and inflation. In this condition, the economy is called "overheated".
- II phase - recession or slump - is characterized by a gradual return of the economy to the level of the trend, reduced level of business activity, approximation of the real GDP to its potential level and its fall below the trend, which brings the economy to the third phase.
- III phase is a crisis or stagnation. A recessionary gap is observed in the state of the economy, with the real GDP being lower the potential one. This period is characterized by underused economic resources, i.e. the level of unemployment is high.
- IV phase is recovery, when the economy gradually leaves the crisis state and the real GDP grows to the potential level, then overcomes it tending to maximum, which returns the situation to the first phase.

The rate of growth ( $g$ ) is the main indicator of phases in a cycle and is determined as a percentage change of the real GDP in every next year in comparison to the previous one. It is calculated by the following formula:

$$g = \frac{Y_t - Y_{t1}}{Y_{t1}} \times 100\% \quad (1)$$

where:  $Y_t$  is the real GDP of the current year,  
 $Y_{t1}$  is the real GDP of the previous year.

If this magnitude is positive, the economic cycles are in the recovery phase, in the opposite case they are in the recession phase. This indicator is calculated yearly and the value is used to characterize the rates of economic growth.

Apart from this, economic cycles in different phases are characterized by various indicators, which depend on the behavior of economic magnitudes (Sokolitsyn, Ivanov, Sokolitsyna (2016)). Among them are:

- Pro-cyclic indicators, which grow in the recovery phase and fall in the recession phase (volume of sales, size of total earnings, real GDP, company profits, import volume, volume of transfer payments, size of tax revenues).
- Counter-cyclic indicators, which grow in the recession phase and fall in the recovery phases (size of company reserves, unemployment level).
- Acyclic indicators, whose magnitude is not dependent on the cycle phases, as they do not have a cyclic nature (export volume, depreciation rate, tax rate).

In the modern Russian conditions, the topicality of the problem related to the cyclic development of the economy is important, especially investigation of the crisis phase, because after a crisis, the composition of enterprises changes, only strong and efficient companies survive, weak players leave the market, and new technological and economic opportunities emerge (Nikolova, Rodionov, Litvinenko (2017)). However, a crisis is a big social shock because jobs reduce, public earnings fall

and the living standard lowers. So, preventing or mitigating crises is one of the most important tasks of the state.

During or after a crisis, the state economic policy must be aimed at sustaining the functioning and development of the object sector of the economy, which ensures production of benefits and simultaneous reproduction of conditions and resources for economic activity. In particular, operating enterprises must be supported so that jobs could be preserved. When designing the development strategy during a crisis, special attention must be paid to the project sector, as a driving force aimed at handling the crisis stage, and the object sector as the "cement" of the economy, creating a stable foundation. The main tool on the way of overcoming the effects of a crisis is the state policy helping to improve the investment climate in the country.

- **Main stages of crisis phenomena in the economy of Russia (1991-2017)**

Over the last 27 years the Russian Federation has survived four large-scale economic crises. The so-called "transformation" crisis of 1990-1992, caused by the dysfunction of the political system of the state, divestiture of state enterprises and creation of a large number of small forms of ownership, which did not have enough experience and material basis for long-term development. The result of this crisis was the fall of gross domestic product (GDP) in 1992 by 14.5%. Then was the crisis connected with the default of public debt obligations in 1998, weakening of the financial sector, and reduction of the purchasing power of the Russian ruble, which caused a fall of the annual GDP by 5.5%. The crisis of 2008-2009 in Russia was the consequence of the world financial crisis, which resulted in a reduction of the annual GDP in 2009 by 7.8%. Finally, the latest crisis in 2014-2015, caused by geopolitical reasons, ended up in the GDP reduction in 2015 by 2.8%.

Despite the fact that the oscillation amplitude reduces, the consequences of the crises break the natural evolutionary course of economic processes and push the national economy several steps back in terms of technological progress. Since the Russian economy, the same as any other, cannot rely on a crisis-free development path, the concept of economic development must take into consideration more or less regular emergence of crises.

Some authors in their scientific papers divide the trajectory of economic development into four periods - pre-crisis, crisis, post-crisis and inter-crisis.

It is hard to say exactly which year refers to one or another period, but, on the whole, transition from the crisis phase to the post-crisis one is characterized by a stop in the fall of annual GDP. In the inter-crisis period GDP rises within the limits of 2-4%, while the pre-crisis phase is characterized by a fast growth of the economy and GDP rises by 5-10%. Correspondingly, a crisis period is characterized by negative dynamics in the GDP growth and the impact of oppositely directed driving forces in the economy.

Since 2014, Russia has overcome the acute crisis stage, which was characterized by a fall in GDP by 2.8% in 2015. In 2016, the speed of fall slowed down and the country is now in the post-crisis stage with a slight growth by 1.5% demonstrated in 2017. Despite this, the geopolitical background is still negative. Over 400 Russian companies and banks are subject to the USA sanctions. As of the end of 2017, the total consolidated revenues of the Russian companies and banks affected by the sanctions were 30 trillion rubles and their contribution to GDP is estimated at 20–21%. The limitations mostly affected large state banks (54% of the banking sector in terms of the volume of assets), oil and gas companies (their share of revenues amounts to 95% of the total revenues of the oil and gas industry) and almost all enterprises of the defense industry.

According to the analysts of the Analytical Credit Rating Agency (ACRA), the sanctions introduced in 2014 did not make the Russian financial system fail. However, the investment climate in the country worsened, which, together with a reduction in oil prices, caused a recession in the economy. In the period after 2014, there has been no sharp growth in financial instability in the country. The

April sanctions in 2018 have become a sort of challenge for the Russian economy and financial systems, because after they were introduced, considerable amounts of funds were reclaimed by foreign investors from the financial tools of the companies that were and were not subject to the new sanctions alike. Together with an increase in the Fed rate, introduced by the USA on March 3, 2018, it made the exchange rate of ruble go down, even despite a growth in oil prices. The latest sanctions caused more instability in comparison to those imposed in 2014. ACRA uses in its estimations the **ACRA FSI index**. The index evaluates the proximity of the Russian financial system to the condition of crisis. The limit of system transfer to a crisis state is 2.5 points. The ACRA FSI methodology is based on assessing the external signs of stress (an indirect method).

Thus, since April 6, 2018 the ACRA FSI grew in one week by almost 1 percentage point, which became the most considerable weekly increment of the index after the sanctions were introduced. As of April 14, 2018, the ACRA FSI reached a peak over the period since mid-May 2017 and amounted to 1.41 percentage point. This is probably due to the fact that it was the first time when blocking, rather than sectoral sanctions were imposed on such large Russian companies.

- **The impact of pressing economic and geopolitical shocks of 2014 – 2016 on the modern banking system of Russia**

Most theoretical researchers in economics believe that global processes in the world economy, including those in the finance and credit sphere, are the main external economic factor affecting the state of the banking system. At the national level, it is reasonable to refer to the most important economic factors such indicators as: GDP increment rates, development of credit relations, inflation of the national currency, and the magnitude of the key rate of the Central Bank.

Despite positive dynamics in some indicators of the banking system in Russia as of 2017, its root problems are only getting worse now.

The Bank of Russia presented the data on the development of the banking sector for 2017. It is true that according to many indicators there was a growth in 2017, as noted above, especially in comparison to the failing year 2016. The consolidated assets of the banking sector added 9% and reached the amount of 85.2 trillion rubles. The total volume of credits to the economy grew as well - by 3.5 % after a fall of 3.1 % in the previous year.

However, the negative trends in the banking system of Russia cannot be neglected.

### **A) monopolization of the banking system grows**

The gap between the largest state banks included in the top five by the size of assets and other banks is growing considerably. In particular, it is especially noticeable if the indicators of this group of banks are compared to the banks taking 21-50 positions by the size of assets. Thus, the ratio of assets of these two groups of banks as of early 2009 was 3.5 times (i.e. the total assets of the first 5 banks amounted to 350% of the total assets of the banks from number 21 to 50). By the end of 2013, this ratio was already 4.7, and by the end of 2017 it reached 5.2 times (the value as of December 1, 2017).

The situation is even more negative in terms of profits of the banking system. By the end of 2017, the consolidated profits of the banking system were 790 billion rubles. It is 15% lower than in 2016 and the main part of profits falls within the state banks from the TOP-5. Thus, by late November 2017, the total profits of the first five banks exceeded even the total profits of the entire banking system (984.8 billion rubles against 870.3 billion rubles). At the same time the profits of the largest five banks exceeded the profits of the banks in 21-50 positions by the size of assets by almost 5.8 times. In such conditions large banks are becoming larger and the share of medium-sized banks (let alone small ones) is reducing, because it is very problematic for them to increase capital.

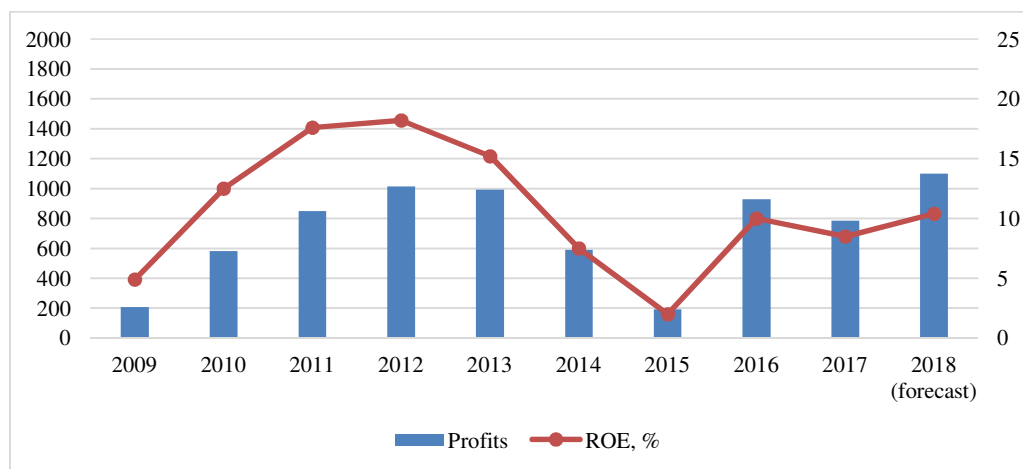
**B) the degree of state participation in the capital of the banking system is increasing.**

All 5 banks included in the TOP-5 by the size of assets are in some way or another controlled by the state. After three more large banks faced the sanitation procedure in 2017, the state already controls as many as 8 banks from the TOP-10.

As a result, if by the late 2000s, the share of assets of banks controlled by the state, according to various estimations, amounted to 40-50% of the assets of the banking system, by the end of 2016, the value of this indicator grew up to 58.8%, and by the end of 2017 it may be estimated at about 65%. Privatization of the sanitized banks in future is possible, of course, but no precedents have been there so far.

**C) the attractiveness of banking as a type of business is going down**

The growth in monopolization and state participation results in a change of the competitive conditions and, consequently, as noted above, private and especially small banks find it very hard to make profits. The profitability of capital in the banking system is rather stable only for the first five banks. It is characterized by a significant volatility set against lower values for other groups. For example, the banks taking 21-50 positions in 2017 managed to ensure positive profitability of capital, by and large. However, for the three preceding years it was stably negative.



**Figure 2: Profitability of the banking sector.**

But it is not just the matter of profit. The current events in the banking system only increase the risks of running business. In effect, over the recent years the regulator has been actively giving two signals: the regulation requirements will be getting tougher and, if violated, harsh measures will be taken.

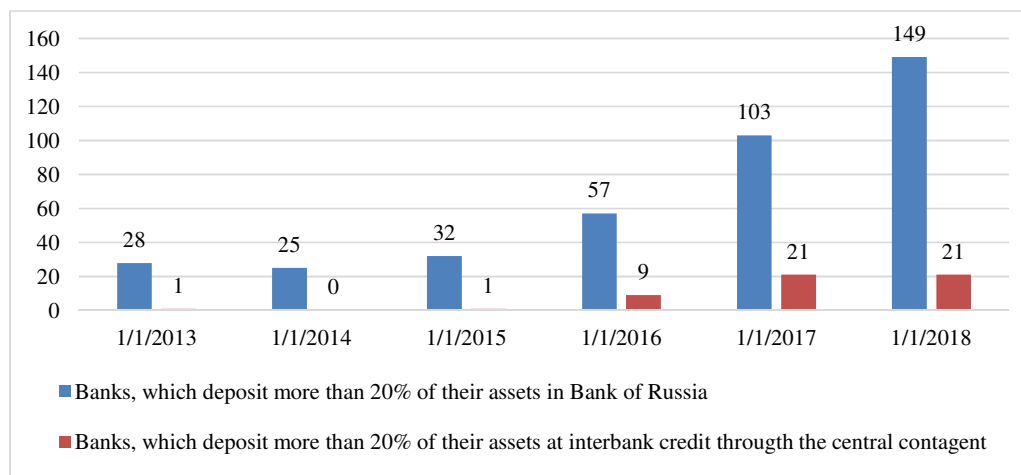
At the same time, the fraudulent operations, which became the grounds for losing licenses and beginning of the sanitation procedure, were not always provoked only by the owners' greed for gain. It is not a secret that they were attempted by the banks to hide or reduce losses caused by dramatic changes in the conditions of running business after the crisis. It is true that many banks took very big risks to ensure an acceptable level of profitability. But, since the regulator did not prevent banks from taking these risks, it bears part of the responsibility for the situation.

So, on the whole, the trust of business to the state in this sector goes down. Some owners may find it easier and cheaper to reject a license rather than invest more in saving their banking business. A way

out could be a more active sanitation of the banking system at the expense of helping private sanitizing banks, as well as additional capitalization of some private banks without transfer of control to the state (including through joint investments in capital on the part of owners and the regulator). This measure would be extremely necessary for medium-sized and regional banks. However, today the situation is developing in the opposite direction.

**On this background the banking system is less and less involved in the development of the economy.** A good illustration of the banking system role in the economic development is a ratio between funds that non-financial organizations hold in banks as deposits and funds they are lent. In in the late 2000s and early 2010s, this ratio was 3644%, then from 2013 it began to grow quickly and by the second half of 2017 reached 60% (as of the end of September 2017 it was 60.2%). By the end of the year it was 59.3%. Moreover, if other funds of non-financial organizations on bank accounts are considered additionally, the ratio grows up to 82.2%. In fact, the volume of funds business gets from banks is only slightly bigger than the volume of funds it keeps in banks.

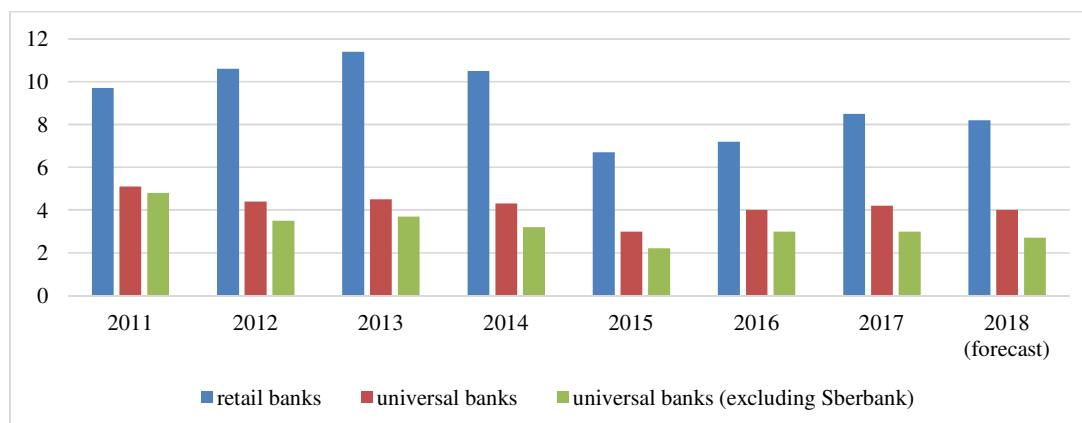
In the authors' opinion, the main negative trend in the banking sector is the deficit of high quality borrowers and a low level of capital to cover growing risks. These factors lead to **an excess of low-yielding liquid assets**, which increase pressure on the profitability of many banks. Thus, the share of loss-making credit institutions with an ineffective business-model has reached 25%, which proves that the process of sanitation of the banking sector is not complete. Medium-sized banks more and more often face the crisis of their business model, which then results in the reduction of their presence on the market. The capacity of banks to increase their profits through lending is limited by a weak economic growth and the lack of **capital to cover growing credit risks** (Demidenko, Gorovoy, Malevskaya-Malevich (2017)). Since 2014, the share of problematic and bad loans in the consolidated credit portfolio continues to grow stably (from 6 to 10%). **The excessive liquidity, caused by the lack of high quality borrowers, increases pressure on the profitability of banking business** (Sergeev, Marikhina, Velichenkova (2017)). Due to the limitations of the high quality borrower base, more and more banks have to allocate expensive funds of their clients in highly reliable but low-yielding assets. Since early 2016, the number of banks who, detriment of profitability, have to allocate funds on the interbank market and deposits in the Bank of Russia has almost tripled. It amounts to about one third of their total number, which is clearly illustrated by Figure 3.



**Figure 3: The number of Russian banks experiencing deficit in high quality borrowers**

The profitability demonstrated by such banks is considerably low than the average by the sector (3.7 against 8.3% by the end of 2017). According to analysts in 2018 it is expected that the net interest margin will reduce **by 0.2–0.3 percentage points** (see Figure 4) as a result of interest rate dumping, provoked by competition for high quality borrowers and reduction of the spread between the key rate and the inflation rate.





**Figure 4: The level of net interest margin of Russian banks**

## Discussion and conclusions

Banks that could not adapt to the new paradigm of risk-oriented supervision [19] and move to a less risky credit policy and adequate level of reserving are the ones who prove to be most susceptible to modern risks in the banking sector. The most unstable ones will be captive banks with weak corporate management as well as credit institutions highly dependent on one source of income, narrow group of clients or the economic situation in a specific region or sector. The growing crisis of the business model can lead to reduction in the group of medium-sized banks, and, subsequently, final redistribution of the market between large players. In these conditions the survivors will be the structures who have a **diversified model**, conservative risk-management and stable positions in the key regions of presence.

This situation is the result of several factors acting at the same time. This is the consequence of the monetary policy which makes non-financial organization find it more profitable to allocate money in deposits rather than invest it. This is also the effect of the banking system regulating policy, which forces banks to be very tough with borrowers in the conditions of economic stagnation. It is obvious that the low level of competition in the banking system is of importance too. As a result, the cost of credits, maturity and loan security requirements on the part of banks do not meet the investment needs of the economy. At the same time, banks themselves have to revise their investment strategies and shift from traditional bank lending to other financial tools, in particular, to the stock market.

Summarizing the above, it can be noted that the banking system affects economic growth due to unique micro-economic functions: that of calculation and the function of accumulating savings and transforming them into investments. It also plays the role of a key subject in financing the national economy.

The investment activity of commercial banks, both as investors and intermediaries, increases the investment capacity of the state. However, the negative economic situation in Russia makes it important to revise business models used by commercial banks, to develop risk-oriented approaches to investment strategies, in particular, to the structuring of the investment portfolio of securities, which must be used in the period of instability on financial markets to maintain the sustainability of the banking system as a whole.

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## References

Bank of Russia. The report of the development of the banking sector and banking supervision in 2017 [URL: [http://www.cbr.ru/publ/bsr/bsr\\_2017.pdf](http://www.cbr.ru/publ/bsr/bsr_2017.pdf)]

Federal law "On investment operations in the Russian Federations executed in a form of capital investments" of 25.02.1999 N 39-FZ (as amended on 26.07.17)

Hicks J. R. Value and capital: Translation from Eng./; edited by R. M. Entov. - Moscow : Univers, 1993.

Kapitanenko, V.V. Investments and hedging. Moscow, INFRA-M, 2007.

Kolesov, P. F. Modern view of investment banking // The problems and prospects of economy and management: materials of II international scientific conference. (St. Petersburg, June 2013). — SPb.: Renome, 2013. — Pp. 48-53. — URL: <https://moluch.ru/conf/econ/archive/77/3936/>

Kolesov, P.F. The role of investment operations in increasing competitive advantages of a bank // Humanitarian scientific research. 2012. No. 11 [Electronic resource]. URL: <http://human.snauka.ru/2012/11/1859> ]

Sergeev, D.A., Marikhina, V.V., Velichenkova, D.S. (2017). Innovative financial tools used for hedging Russian banks' investment risks under the conditions of unstable economy. Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth, IBIMA 2017, p. 2133-2143.

Sokolitsyn, A. S., Ivanov, M. V., Sokolitsyna, N. A. (2016) Investment policy: Determining short-term credit under circulating capital. Proceedings of the 28th International Business Information Management Association Conference - Vision 2020: Innovation Management, Development Sustainability, and Competitive Economic Growth, p. 2130-2144

The Ministry of Economic Development of the Russian Federation. The forecast of long-term socioeconomic development of the Russian Federation for a period until 2030 [[http://www.consultant.ru/document/cons\\_doc\\_LAW\\_144190/](http://www.consultant.ru/document/cons_doc_LAW_144190/)]

Vagizova, V.I. The innovativeness of the Russian banking sector as HYPERLINK "<http://elibrary.ru/item.asp?id=19424363>" a "driver" in modernizing the economy HYPERLINK "<http://elibrary.ru/item.asp?id=19424363>" / V.I. Vagizova, L.Z. Aliakberova // The bulletin of economics, law and sociology HYPERLINK "<http://elibrary.ru/contents.asp?issueid=1130010>". - 2013. - No. HYPERLINK "<http://elibrary.ru/contents.asp?issueid=1130010&selid=19424363>" 2. - Pp. 28-31.

Yemelyanov, A.B. Investment operations of commercial banks: the concept, types and significance // Young scientist. — 2017. — No.52. — Pp. 84-88.

## Treasury of Professionalization

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### Abstract

The purpose of this article is to review the literature on professions, the definition of the profession, the process of professionalization, and professionalism. The authors have reviewed the literature of the past decade, the results of which confirm authors' opinion that the topic of definition is not a priority interest of today's researchers. On the contrary, current research explores the issues related to the model development in the context of professionally managed companies (PMC) and mutations of professions in original professional bureaucracies. The authors claim that the state of today's knowledge would make it possible to develop a definition. Structurally, the phenomenon of the profession is very well defined, as well as the focus of professional work, the work carried out within the given profession, is described to a high degree of detail. The solution might be a Social Network Analysis.

**Keywords:** profession, process of professionalization, professionalism, solution.

### Introduction

The popular generalization is that the profession becomes professionalized. The label is applied freely to an increase of specialization and transfer of skills, the dissemination of objective working standards, the dissemination of licensing agreements, licensing or certification, and the growth of the job profession. Willensky (1964) argues that these free criteria are less important to understanding a professional organization than a traditional model of professionalism that emphasizes autonomous expertise and ideal service (ideal-commitment to client interests more than personal or commercial gain should be the basis for decision making). By exploring the history of eighteen professions, Willensky (1964) reveals a typical process that created well-established professions. Among the newer and more peripheral professions, deviations from the process can be explained by power struggles and status quests that are common to all professions (Willensky, 1964).

The concept of the professionalization process provided by Larson (1977) differs, at least, by putting the individual professions into a real historical context - the aristocratic, democratic and bourgeois society - in which their development is taking place. Each of these contexts influences the process of profession development in a specific way. The central subject is a practicing elite (Larson, 1977). Larson (1977) epochally explains the transfer of professions from England to America, highlighting the differences in the environment, the admission of the profession, and the diversity of the destination - corporate capitalism - and the return of the profession to the environment.

Freidson (1989) aims to trace the ideal type of professionalism, a model that displays distinctions from two dominant principles - the free market and rational-legal bureaucracy. Freidson (1989) sets

professionalism against market logic and bureaucratic managerial approach as the third organizational principle of division of labor. Freidson (1989) sees professionalism as an ideal tool for accepting, cultivating, and using special knowledge that is highly esoteric in nature because it is specialized and requires time and effort to gain. Freidson (1989) hinders the third logic against the ideology of free market and consumerism that builds their ideal typical merits and emphasizes both ethics of practice and the so-called institutional ethics. He comes with the logic of professionalism whose construction can not exist in itself, but must be rooted in a set of interlocking institutions providing economic support and a social organization that keeps labor control work.

Similarly to Willensky (1964), Freidson (2001), Larson (1977), Burrage (1990) identified four key actors. It is possible to generalize that, regardless of the significant theoretical divergence, the perspectives of all the above-mentioned authors have the same aspect: the professions are conceived mainly at the institutional level. This means that the interest in the profession is focused on the influence of other structures (knowledge, the state, clients or other professions) much more than on conceptualizing the behavior of experts. Burrage's four actors are as follows:

1. Participants who, through their professional association, seek to identify, allocate and protect the area of exclusive competence to maximize financial and statutory rewards.
2. Professional service users who, through their demands and expectations, shape the way in which professions are practiced and organized.
3. States that either grant autonomy and self-regulation to experts and their associations (Anglo-American context) or actively grant permission and regulate them as a "quasi-state" (continental European context).
4. Universities that create a knowledge base for professions and provide credentials (approved grades) that support closing arrangements.

Abbott (1988) defines approaches to professionalisation with respect to four approaches - functional, structural, monopolistic and cultural. The functional approach allows him to delimit himself from the usual concept (Carr-Saunders & Wilson 1933), where the emphasis is placed on the functional level of employment by the identification and separation of the lay persons. The classical structural approach, which is a counterpart to the functional approach in the sense that the profession is understood (cf. Willensky, 1964) only as a form of control of the employee, upgrading the content of the professional work and the expert relationship between the profession and the client. This category usually works with the historical forces shaping the structures in which the given profession exists. The monopolistic approach differs from the structural one by the fact that professionalism does not consider the natural growth of employment development but sees it as the main motive for the development of the job in the desire for dominance or authority. Within the framework of this approach, there is the structural succession of the association, the school is slightly restrained in comparison with its functional approach. The cultural approach emphasizes the cultural authority of professions. Culturally, the professions are empowered to control by their own profession thanks to the combination of their expertise with the values of general cultural legitimacy, which subsequently collapses by demonstrating accumulated evidence against the underlying assumptions of the concept itself. This one-sidedness was attacked by both sociologists, authors of the concepts of deprofessionalization and proletarianism, as well as by historians.

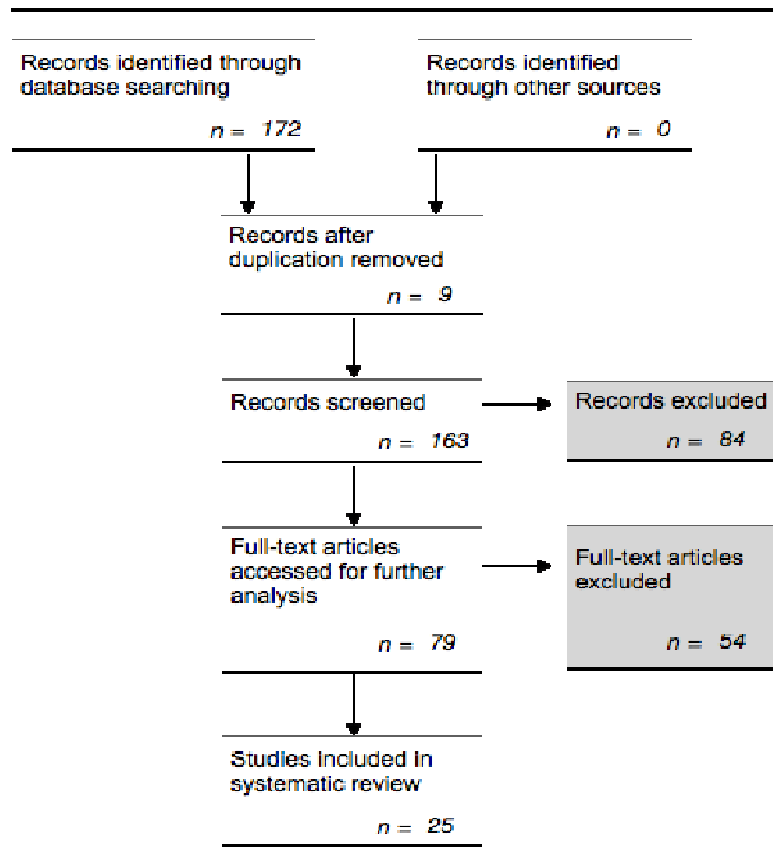
The independence on other professions has been contradicted by proven examples of interdependence, for example, in medical professions, psychiatry and social work, law, and accounting. Prioritizing social structure and cultural demands as opposed to what is actually done in the profession. This assumption was contradicted only by Freidson (1989).

The homogeneous group was a simplistic assumption of traditional studies. Indeed, the profession is not a homogeneous group as evidenced by more recent studies dealing with issues of mutual professional prestige. The professional process as a general process does not change over time. This assumption was contradicted by both Larson (1977) and Johnson (1972), both illustrating the growing influence of the state pushing the profession into bureaucratic procedures. In particular, Abbott (1988), as the central feature of career development, used the second hypothesis, which was contradicted by many authors, while on the third hypothesis he demonstrated that theoretical sociologists of our time have not yet learned that their own work carried out within the given profession must be a central subject of the concept of job development in the profession. Abbott (1988) describes the links between this central concept - own work carried out as a professional occupation - and the professional structure itself as a jurisdiction. This specific concept allows Abbott (1988) to work with a dynamic model of professions, where the professions as such constantly have to adapt to changing conditions in order to defend their own territory. This argument brings him to five basic levels in which he defines the profession: the ecological-growth level, the jurisdiction-conflict level, the system level, the jurisdiction-control level, and finally the level of a degree of knowledge abstraction. The latter construct - and the degree of knowledge abstraction, which is the basis of the competitive advantage of the given profession - enables the survival and development of a profession within the profession system. Obviously, Abbott (1988) works consistently with the defined system of the third level in the sense of the Boulding (1956) system approach.

Bourdieu (1977) puts a fatal question, the question why? Why do some groups control others? And he finds answers to it. Somewhat surprising answers led by the rejection of the concept of professionalism. Professionally he described it as a folk concept, which was uncritically embedded in the language of science and subsequently supported and built. Yes, Bourdieu (1977) calls for abandoning the use of terms. In Bourdieu's theory (1977), the critique of professionalism is consistently carried out from the positions of relational logic, which is also evident in the alternative proposal of Bourdieu (1977) how to work with the topic of professionalization. Bourdieu (1977) proposes to work with the term of an autonomous historical field that one can imagine as a social space of corresponding positions or as a network of relations between such positions. This field is always of a strong nature. In Bourdieu (1977) the concept is a field definable as a network of objective relationships between the mentioned positions. This section should follow keywords. This section should provide background of the study and highlight research motivation.

## **Methods**

The authors used the literature review method from available sources - Web of Science, Scopus and Springer. Due to the intention to consistently trace the origin and characteristics of the subject under study - the profession - they did not use only reference studies in the detected articles but also related links to frequently cited books. For the purpose of this analysis, and due to the considerable amount of research studies on the subject, certain limitations and criteria were applied. A sequential selection of selected studies is shown in Figure 1 below. It consists of the following steps: (1) identifying keywords; (2) selecting available articles published over the last decade, i.e., from 2008 to 2018 - a total of 178; (3) checking duplicates of available source articles; (4) evaluating the relevance of the articles on the basis of the comparison of the contents of the abstracts of individual articles; (4) removing the non-relevant articles; (5) conducting a systematic analysis on a selected set of articles - a total of 25 articles.



**Fig. 1: Results of the selection procedure**

Given the fact that the information found in the studies and their interpretation differ, a more detailed analysis of a set of articles to which the 25 articles above mentioned are referenced was conducted. A total of 22 original articles was detected and another 9 articles were identified during this review process. Thanks to the duplicates, 7 articles were removed and due to the results of the initial screening, another 8 articles were removed. The remaining 16 articles were subjected to the systematic analysis. For the same reasons, i.e., clarification and verification of interpretations, the sources were extended with books. Altogether 11 most frequently cited books were detected. The screening eliminated one book. Thus, in total a set of 10 books remained for the systematic analysis.

## Findings

A very precise introduction to the issues of professions, the process of professionalization and professionalism can be found in Evetts (2014), where the definition of the profession despite the efforts of many scholars remains unresolved. On the contrary, the concept of professionalization is relatively strictly defined and is considered as a process of achieving a status of profession. It pursues the following domains: monitoring, developing, and maintaining a professional group with the aim of keeping professional's own professional interests in terms of their salary, status and power, as well as monopoly protection of professional competence (Larson, 1977). The third concept, professionalism, was usually interpreted as a discourse and linked a work or normative value with ideological interpretation. It is certainly something worthwhile to preserve, because obvious disposable benefits are associated with the

discourse concept. The analysis of professionalism is interpreted as a discourse of interpretations of work, professions and practices based on expertise, often used by managers because it enables them to replace: (i) organizational values with professional values; (ii) bureaucratic and management control with collegiate relationships; (iii) managerial and organizational goals with mutual trust; and (iv) prioritize the standardization of work processes before discretionary powers (Evetts, 2014). Assessing professionalism in discussion terms is wise also with respect to the contested definition of the phenomenon and the ambivalent attitudes of the professions (Thomas, 2011).

The authors of the past decade mainly focused their research on the study of the development of professions in the corporate environment, in which Faulconbridge and Muzio (2009) and Leicht and Fennell (2008) develop previous research (Brock, 1999; Cooper, 1996; Fennell, 2001; Hanlon, 1998). Furthermore, they explore the corporate organization of the Professional Service Firms (PSF) (Faulconbridge & Muzio 2009; Muzio & Kirkpatrick 2011; Muzio, Kirkpatrick, & Kipping 2011; Muzio et.al. 2011), with special attention being paid to hospital environments (Adler & Kwon 2013; Kirkpatrick, Altanlar, & Veronesi 2017; Thomas, 2011). The themes of the definition of profession and managerialism are still being discussed. On the subject of the definition of a profession, Evetts (2003) highlighted the idea of leaving out of any non-deliberative discussion on the subject of the profession definition by saying that it is no longer important to draw a hard definitional line between professions and other expert occupations. This approach, contradicted by the neo-Weber positions (Saks, 2012), was explained by Muzio, Brock, and Suddaby (2013). In their study, they stated that Abbott's book revitalized a somewhat dull program of research on how to define the profession, and managed to encourage researchers to think of professions as ecology or systems, rather than fixed entities.

The topic of managerialism pervades all studies of hospitals, both corporations and PSF. Paradoxically, in the context of the professionalism discourse, they are often hovering with a call for professionalism, management programs that can disrupt traditional professional features such as autonomy and discretion (Evetts, 2003). Paton, Hodgson, and Muzio (2013) summarize fairly well the discussions about the organization of professional work, focusing either on the growing dominance of managerial attitude over traditional professions, or on the reluctance/inability to professionalize the new professional profession. The attention of researchers of the last decade was paid mainly to hospitals. The reason is that the model for the profession was often a doctor who, as an independent lord with his own competencies and experience, was a trusted person within a community of interdependent clients of middle and upper classes. Thomas (2011), for example, studied the effect of introducing clinical governance on the data collected by his predecessor and from his assessment he found out that the professionals (general practitioners) actively and successfully contradicted new orders with arguments based on their specialization, expertise and skills.

The changes related to the impact of introducing clinical governance are also being studied by Adler and Kwon (2013). They call the spreads of new organizational practices among professionals the mutation of professions and follows them on three levels: an individual professional, a professional organization, and a wider institutional area. It is based on Scott (2008), who identified four types of carriers that can transfer institutional changes - symbolic systems, relational systems, routines and artifacts. Adler and Kwon (2013) discovered that the dissemination of the guidelines contained in the Clinical Guidelines caused gradual replacement of the traditional decision-making autonomy of doctors by procedural rules, formalization and standardization of the key elements of professional practice, including the management of mutual relationships between the doctors and other healthcare providers. He also found out that the procedures for reducing costs rather than the improving of quality of medical care were often codified, but considered more important the situations during which the doctor would be subordinated to non-doctors.

Developments in corporate knowledge are historically based on the model of bureaucracy (Mintzberg, 1979), which includes both elements of a professional model and bureaucratic structure. A key part of the configuration is the operational kernel, where the professionals autonomously provide services directly to the client, always following the best interests of their clients and organizations. Professional bureaucracy works with the standardization of skills, internalized values and de facto clan control. The model of professional bureaucracy was refined by Greenwood (1990) into the so-called P2 model by defining two basic aspects: a professional - the partner is not only the business owner, but also responsible for the company's governance while managing and providing professional services; and the primary task of the professional, the partner, is to choose the way of applying corporate expertise to client problems, which requires a considerable degree of discretion.

Not even ten years after presenting model P2 of the professional firm, Cooper (1996) points out that the P2 model does not match the new market dynamics and deregulation trends that are being translated into professional firms and comes with a model called Managed Professional Business (MPB). Brock (2006), following MPB, introduces a new typology of professional firms, defining nine different types of professional organizations. Bureau (2009) explains in the context of the Abbott system of professions how to address the characteristics of the profession in the case of Human Resources Management, which is today an important corporate position claiming the position of profession. Muzio and Kirkpatrick (2011) focuses on professional organizations - a professional service firm. In the context of his interdisciplinary study on sociology, healthcare, management and accounting, he examines the extent to which professional organizations create, institutionalize and manipulate new forms of professionalism and models of professionalization. A professional service company is the primary site for professional control and regulation. In the context of PSF, professions are themselves institutions that creep in logic (Faulconbridge & Muzio, 2009; Leicht & Fennell, 2008) and the structure (Brock et al. 1999; 2007) of business corporations. In such an institution, alongside the concept of the profession, managerial and organizational structures coexist and jointly develop (Hwang & Powell, 2009; Leicht & Fennell, 2008). Subsequently, Muzio, Kirkpatrick, and Kipping (2011) pay attention to the selected PSF-management consulting - which was somewhat surprisingly much less successful in creating a system of professional regulation and organization than other PSFs. In addition to confirming the fact that somewhat fuzzy knowledge base and a lack of interest in professionalization are not beneficial, they find out that management consulting firms are going their own special path. According to Leicht and Fennell (2008), companies such as McKinsey, Booz Allen, and possibly the Big 4 prefer a professional status that relies directly on corporate practices. Thus, they do not use the values to build the status of an industry-wide association. These professions develop a new model of corporate professionalization based on the membership in the employing organization (Muzio et al., 2011). Thus, PSF is the primary locus of professionalization (Faulconbridge & Muzio, 2008). In this case, it is the largest law company. Muzio et al. (2011) gradually show how the PSF - management consulting and project management and executive search - can modify the corporate professionalisation model to suit their individual conditions. In addition, Brock (2014) suggests that future research should focus on a perspective area of politics, charity and culture. He also believes that the borderlines between individual professionals and organizations will be explored.

It would certainly be beneficial to uncover the answer to the question Why do professions arise? Van der Leij (2008) comes up with a social model of occupational segregation between different social groups, based on which he found out that even with a small amount of homophilia in each group, even segregated occupational segregation occurs. Griffiths and Lambert (2012) studying Social Interaction Distance Analysis (SID) and SNA, which was originally not used for detailed employee structure studies, suggest that it allows to identify the patterns of employment links and thus complement the SID. Susskind and Susskind (2017), on the other hand, monitor the influence of technology on the development of professions, and asks what positions will be affected by the rise of machines, computers and robots. Susskind and Susskind (2017) expects it to be unskilled work involving simple workflows that can be easily automated.



On the other hand, Susskind and Susskind (2017) are interested in systems like IBM Watson, which could be able to absorb and apply expertise that jeopardizes the core work of professional jobs such as lawyers, doctors, accountants, consultants, architects and teachers. And despite the ongoing research at Stanford Labor and Technology Center, Stanford and the Institute for Labor and Employment Research at MIT, predictions about the transformation of technological transformations are very cautious (Susskind & Susskind, 2017). Susskind and Susskind (2017) also claim that technology will not (just) replace professionals, but those thanks to technology can increase their skills to work smarter, faster and more thoroughly. Furthermore, in studying the impact of technology on the profession, it will be necessary to leave the overall view of professional work, but rather it will be useful to examine the phenomenon at the level of roles, tasks and activities - all will be technologically influenced by both degree and timing.

In addition, Novotný (2017) explores the issues that can have a major impact on the future credibility and authority of the profession. He examines the differences in the IT domain between the professional character of university staff at classical faculties and university faculties focused on technology transfer. The Community of Practice (CoP) are an interesting phenomenon from the point of view of the initial development stages of the profession. They generate a certain body of knowledge that the community values, cultivates and defends against the outside world. It is also interesting where CoPs can develop. For example, Cox (2008) explored the possibilities of the list server as the ICT media space to be a latent community in itself, and showed that it did not meet the criteria of the online community and it is therefore not CoP.

## Discussion

Professions are today an occupation. From the point of view of sources of income, both occupations and professions belong to the same category. Where are the differences that distinguish these two categories? There is a certain version of the definition, but given the exceptions to the more or less declared lack of interest in finalizing the definition by the authors mentioned in the Introduction, there is no answer to it.

Nevertheless, the state of today's knowledge would make it possible to formulate the definition. Structurally, the phenomenon of the profession is relatively well defined (e.g., Burrage, 1990; Freidson, 2001; Larson, 1977; Wilensky, 1964). The highly specific and sophisticated concepts of the above-mentioned authors allowed Abbott (1988) to accurately and specifically formulate his substantiated arguments. The most promising formulation seems to be as follows: The links between the central concept - that is, the work carried out in the context of professional employment - and the professional structure itself is a jurisdiction (Abbott, 1988).

And the study of the emergence of jurisdiction (= the creation of links of work), anchoring of jurisdiction (= anchoring of links to formal and informal social structures) and, last but not least, the interplay of jurisdiction (= the formation of links between related and competing professions) uncovers the profession itself. Similarly, Bourdieu (1977), who proposes to work with the term of an autonomous, historically created field, whose concept is defined as the social space of corresponding positions or as a network of relations between such positions.

It is clear from the literature that now authors prefer three main themes:

1. The theme of professional companies (PSF). In the context of professional firms (PSF), the professions are themselves institutions (Leicht and Fennell 2008), which increasingly accept elements of corporate governance, bureaucratization mechanisms (Mintzberg, 1979). However, each of the PSFs studied has its own specifics of how its professionalization project (Muzio &

Kirkpatrick, 2011) is taking place, what institutional entities it uses (Faulconbridge & Muzio, 2009), respectively it ceases to use (Muzio, Kirkpatrick, & Kipping, 2011).

2. The second theme deals with the management of the original professional bureaucracies of hospitals. The authors discuss the issues of formalization and standardization of the key elements of professional practice, management of mutual relations between professionals and other actors. They consider it important that there is a threat for the doctor to be subordinated to non-doctors and wonder if this is not a very high cost for reducing medical costs.
3. The third topic focuses on further development of profession and professionalization. Susskind and Susskind (2017) monitor the impact of technology on the development of professions, typical systems such as IBM Watson, which could be able to absorb and apply expertise that jeopardizes the core work of professional jobs, such as lawyers, doctors, accountants, consultants, architects and teachers. Novotný (2017) explores the issues that can have a major impact on the future credibility and authority of the profession. He examines the differences in the IT domain between the professional character of university staff at classical faculties and university faculties focused on technology transfer.

The findings indicate that the time to work with an operable definition of the concept of a profession has not yet occurred. The situation is best described by Evetts (2003): It no longer seems important to draw a hard definitional line between profession and other expert occupations. The statement that leaves ambiguities at the basic level of the definition and creates room for questioning both existing and follow-up work, for example, those summarized above. Why does such a situation exist at all? Given the enormous amount of work in this area, it is likely that the situation has been grossly underestimated at a very early stage, and the subsequent work, opinions and statements of major scholars have gradually closed the possibility of reversing and correcting. This statement is supported by the abovementioned similar position of Bourdieu (1977) ... the profession is a folk concept that has been uncritically embedded in the language of science and subsequently conceived and construed as Durkheim (1915) ... well founded delirium.

Is there a chance to open and solve an unpopular topic? Basic theories exist. Abbott (1988) and Bourdieu's (1977) indications refer to a more detailed examination of the essence of the problem. The phenomenon of a rising profession really exists. Van der Leij et al. (2008) provide evidence that even with a small amount of homophily, there is a uniform occupational segregation in each group. The original studies of Bourdieu (1977) and Abbott (1988) explain that the current descriptive approach to defining any socio-economic notion has its limitations both in language and the subsequent interpretation of the original author's ideas and inaccuracies linked with these two phenomena. The study of the analysis of social segregation by van der Leij et al. (2008), which overlaps descriptive sociological and descriptive sciences and addresses the relative distances of each job position at a much more precisely defined level of interrelationships between the examined jobs, might be an indicator for further research. Include any acknowledgement right before the references section (if applicable). Also, if research was funded by an organization / institution, please write the acknowledgement here

## Conclusion

It seems understandable that time sophisticatedly interconnected metaphorical expression will need - even in the socio-economic field - to free space for concepts and theories, which are based on methods enabling more precise and clearer structures and wording of definitions, hypotheses, and possibly statements.

However, the authors of this study believe that the state of today's knowledge would make it possible to develop a definition. Structurally, the phenomenon of the profession is very well defined, as well as the focus of professional work - the work carried out within the given profession - is described to a high degree of detail. The solution might be a Social Network Analysis.

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## References

- Abbott, A. (1988) *The System of Professions. An Essay on the Division of Expert Labor*, University of Chicago Press, USA.
- Adler, P.S. and Kwon, S.W. (2013), 'The mutation of professionalism as a contested diffusion process: Clinical guidelines as carriers of institutional change in medicine,' *Journal of Management Studies*, 50, 5.
- Boulding, K. (1956), 'General systems theory,' *Management Science*, 2, 197-208.
- Bourdieu, P. (1977), *Outline of a Theory of Practice*, Cambridge University Press.
- Brock, D. M., Leblebici, H. and Muzio, D. (2014), 'Understanding professionals and their workplaces: The mission of the Journal of Professions and Organization,' *Journal of Professions and Organization*, 1, 1-15.
- Brock, D. M., Powell, M. and Hinings, C.R. (1999) *Restructuring the Professional Organisation: Accounting, Healthcare, and Law*, Routledge, London.
- Brock, D. M., Powell, M. and Hinings, C. R. (2007), 'Archetypal change and the professional service firm,' *Research in Organizational Change and Development*, 16, 221-51.
- Brock, D. M., Yaffe, T. and Dembovsky, M. (2006), 'International diversification strategies and effectiveness: A study of global law firms,' *Journal of International Management*, 12, 473-89.
- Carr-Saunders, A.M. and Wilson, P.A. (1933) *The Professions*, Clarendon, Oxford.
- Cooper, D.J., Hinings, C.R., Greenwood, R. and Brown, J.L. (1996), 'Sedimentation and transformation in organizational change: The case of Canadian law firms,' *Organization Studies*, 17(4), 623-647.
- Durkheim, E. (1992) *Professional Ethics and Civil Morals*, Routledge, London.
- Evetts, J. (2003), 'The sociological analysis of professionalism: Occupational change in the modern world,' *International Sociology*, 18, 395-415.
- Evetts, J. (2014) *The concept of professionalism: Professional work, professional practice and learning*. In S. Billett, C. Harteis, & H. Gruber (Eds), *International Handbook of Research in Professional and Practice-based Learning*, Springer.
- Fennell, M. L. and Warnecke, R. B. (1988) *The Diffusion of Medical Innovations: An Applied Network Analysis*, Plenum Press, New York.

- Burrage, M. and Torstendahl, R. (Eds). (1990) *Professions in Theory and History: Rethinking the Study of the Professions*, Sage, London.
- Faulconbridge, J.R. and Muzio, D. (2008), 'Organizational professionalism in global law firms,' *Work, Employment and Society*, 22, 7–25.
- Faulconbridge, J. R. and Muzio, D. (2009), 'The financialization of large law firms: situated discourses and practices of organization,' *Journal of Economic Geography*, 9, 641–61.
- Freidson, E. (1989), 'Theory and the professions,' *Indiana Law Journal*, 64(3), 1.
- Greenwood, R., Hinings, C.R. and Brown, J. (1990), 'P2-form strategic management: Corporate practices in professional partnerships,' *Academy of Management Journal*, 33(4), 725–755.
- Griffiths, D. and Lambert, P.S. (2012), 'Dimensions and boundaries: Comparative analysis of occupational structures using social network and social interaction distance analysis,' *Sociological Research*, 17(2), 1-23.
- Hanlon, G. (1998), 'Professionalism as enterprise: Service class politics and the redefinition of professionalism,' *Sociology*, 32(1), 43–63.
- Hwang, H. and Powell, W.W. (2009), 'The rationalization of charity: the influences of professionalism in the nonprofit sector,' *Alternative Science Quarterly*, 54, 268-298.
- Johnson, T. (1972) *Professions and Power*, Macmillan, London.
- Kirkpatrick, I., Altanlar, A. and Veronesi, G. (2017), 'Corporatisation and the emergence of (under-managed) managed organisations: The case of English public hospitals,' *Organization Studies*, 38(12), 1687-1708.
- Leicht, K.T. and Fennell, M.L. (2008) Institutionalism and the professions. In R. Greenwood, C. Oliver, R. Suddaby, K. & Sahlin Anderson (Eds), *Handbook of Organizational Institutionalism* (pp. 431-448), Sage Publications, CA
- Larson, M.S. (1977) *The Rise of Professionalism*, University of California Press.
- Muzio, D., Brock, D.M. and Suddaby, R. (2013), 'Professions and institutional change: Towards an institutionalist sociology of the professions,' *Journal of Management Studies*, 50, 5.
- Muzio, D., Hodgson, D., Faulconbridge, J., Beaverstock, J. and Hall, S. (2011), 'Towards corporate professionalization: The case of project management, management consultancy and executive search,' *Current Sociology*, 59, 443.
- Muzio, D. and Kirkpatrick I. (2011), 'Introduction: Professional organizations - a conceptual framework,' *Current Sociology*, 59(4), 389-40.
- Muzio, D., Kirkpatrick, I. and Kipping, M. (2011), 'Professions, organizations and the state: Applying the sociology of the professions to the case of management consultancy,' *Current Sociology*, 59(6), 805–824.
- Mintzberg, H. (1979) *The Structuring of Organizations*, Prentice-Hall.

Novotny, A. (2017), 'The heterogeneity of the academic profession: The effect of occupational variables on university scientists' participation in research commercialization,' *Minerva*, 55, 485.

Paton, S., Hodgson, D. and Muzio, D. (2013), 'The price of corporate professionalisation: Analysing the corporate capture of professions in the UK,' *New Technology, Work and Employment*, 28, 227–240.

Saks, M. (2012), 'Defining a profession: The role of knowledge and expertise,' *Profession & Professionalism*, 2(1), 1-10.

Scott, W.R. (2008) *Institutions and Organizations: Ideas and Interests*, Sage Publications.

Susskind, R. and Susskind, D. (2015) *The Future of the Professions: How Technology Will Transform the Work of Human Experts*, Oxford University Press.

Thomas, P. (2011), 'Managerial organization and professional autonomy: a discourse based conceptualization,' *Organization Studies*, 32(10), 1373–1393.

van der Leij, M.J. and Buhai, I.S. (2008) A social network analysis of occupational segregation. <https://core.ac.uk/download/pdf/6300671.pdf>. (Accessed 25 February 2018).

Wilensky, H.L. (1964), 'The professionalization of everyone?,' *American Journal of Sociology*, 70, 137-158.

## Market Share and Accuracy in the Credit Rating Industry

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### Abstract

This paper investigates the relationship between accuracy and market share within the credit rating industry. The findings indicate that accurate CRAs are punished by the market. The VECM estimation indicates that accuracy has a negative effect on market share. The effect of market share on accuracy has also been empirically tested. These results indicate that market share does not influence accuracy. These findings refute the reputational concerns invoked by CRAs in light of conflict of interest allegations and. Further on, a distinction between investor paid and issuer paid CRAs is made. On average, the first ones perform better when it comes to accuracy.

**Keywords:** CRAs; accuracy; market share; investor pays model.

### Introduction

On November 26th, 2001 Enron was rated by the three major credit rating agencies with “AAA”, thus investors consider it to be a “safe investment”. Five days later, Enron went bankrupt. The rating agencies have also been slow to observe the deteriorating financial state of WorldCom before going bankrupt in 2002. Later on, in 2008 the major rating agencies kept their “investment grade” for the Lehman Brothers even until the morning when the company declared bankruptcy. These facts imply that the Credit Rating Agencies (CRAs) ratings have not been particularly accurate, leading to major losses for investors at that time. If the CRAs had fulfilled their role properly, the damages could have been minimized. Thus, investors should be careful and take their ratings with a grain of salt (White, 2010). One might wonder why they were unable to warn investors about these major bankruptcies. These reasons will be explored further in this paper.

A credit rating is an assessment of the creditworthiness of a corporation or security, based on the issuer’s quality of assets, its existing liabilities, its borrowing and repayment history and its overall performance (Becker& Milbourn, 2010).

CRAs have several functions in the economy. First, they measure the issuer’s credit risk in an objective manner and influence investment decisions of institutional and not- institutional investors alike. Their purpose is to bridge the gap of asymmetric information between issuers and investors, so issuers can have easier access to financing (OECD, 2010). Besides rating, CRAs are meant to monitor a firm’s performance. This function is exercised through credit watch procedures. This implies that they need to take action when changes in the market or firm might affect the credit rating and adjust the rating level. This consists of either upgrading or downgrading. (Boot et al., 2005). Secondly, CRAs coordinate the behavior of investors in the market. They create a focal point and investors follow their lead. The assigned rating and the credit watch process condition investment decisions, it influences firm behavior and preempts coordination failure. Thus, CRAs can solve the eventual multiple equilibria problem and prevent unwanted risk shifting (Boot et al, 2005). Thirdly, CRAs create a known, common standard for credit risk. Thus, the credit risk measure becomes accessible and known by all parties and can be mentioned in regulations or contracts. Currently ratings have a common form from AAA to D with AAA

being the highest rating on the scale, while a D rating describes imminent default risk. These ratings are needed by private actors in the economy and can be used in private contracts and investment recommendations.

In this paper, will investigate the relationship between accuracy and market share. Conclusions will be drawn on whether the market mechanism is effective or not. Would the market share increase or decrease as accuracy of ratings decreases? Are CRAs punished for inaccurate ratings by the market or not? These questions are important because if the market mechanism is not functional, there is a market failure which needs to be in the attention and possible intervention of policymakers.

## **Theoretical Framework**

In the introduction, it has been made clear the importance of CRAs in the financial markets and the negative consequences of inaccurate ratings. The goal of the paper is to establish the relation between accuracy and market share in the credit rating industry.

### ***The effect of accuracy on market share***

Within the credit rating industry, 95% of the market share worldwide is held by three rating agencies, Standard & Poors, Moodys and Fitch. Literature describes the position of these three CRAs in the market to be a natural oligopoly due to high entry barriers. However, it is argued that the “natural oligopoly” state of credit ratings market is not natural. Initially, high entry barriers have been set by S.E.C, which imposed an artificial barrier in 1975, when it created the “Nationally Recognized Statistical Rating Organization (NRSRO) requirement. Another reason for the “natural” characteristic of the oligopoly within CRA industry is the expectation that new rating firms would be ignored by most financial institutions and investors. If investors would ignore the bond rater, so would bond issuers (White, 2010).

There is research that shows evidence for a negative effect of competition on accuracy but there is also research which disproves this argument. It is argued that the credit rating industry switching to the issuer pay model in the early 1970's set the stage for a potential conflict of interest. A rating agency might have the incentive to “inflate” the rating of a customer (issuer) in order to avoid that the issuer buys the rating of another agency (Skreta et al., 2009). In literature, this is called “rating shopping”.

Based on the literature mentioned so far, it is assumed that accuracy has no or limited consequences on the market share, because most inaccurate (inflated) ratings are done in bubble periods, so trusting investors are most affected ones. However, if the literature that backs the reputation argument is taken into account, it can be expected that actually accuracy should have a positive effect of market share because there is a market mechanism in place through which investors reward accurate CRAs and punish less accurate CRAs. Since the literature is contradictory, the first hypothesis is formulated as follows:

H1a (naive investors hypothesis). The market share of a rating agency is not influenced by its rating accuracy

H1b (reputation building hypothesis). The market share of a rating agency is positively influenced by its rating accuracy

### ***The effect of market share on accuracy***

So far, a two-sided hypothesis about the effect of accuracy on market share has been formulated. The findings of Becker and Milbourn (2010) show how new entrants in the market affects the accuracy ratings of the existing rating agencies. Increased competition is correlated with lower quality ratings for the

“older” players in the market. It seems that reputational incentives for providing quality in the rating industry are decreased by competition. There are two possible explanations for these findings. The first reason could be that the incentive to cheat is enhanced by the pursuit of a bigger market share. Namely, current profits become large in comparison with future rents. Another explanation could be that the incentive to have a good reputation is shrined, thus they invest less in information acquisition. (Becker and Millbourn, 2010). Based on the literature above presented it is assumed that costs do have an influence on accuracy and competition affects accuracy. If there is an increase in competition, there is a decrease in profits, thus the available resources for accurate ratings also decreases. Thus, the following hypothesis is formulated:

H2 (cost-saving hypothesis). A reduction in the market share of a rating agency leads to a reduction in its rating accuracy

### ***Investor paid vs Issuer-paid business model***

So far, the implications of the issuer pays business model of CRAs have been discussed. It is the predominant business model in the credit rating industry, however it is not the only one. The investor pays model is an alternative to the mainstream business model and it implies that the CRAs receive fees directly from investors. In the context of the regulators initiative to reduce entry barriers, a few investor paid agencies are building their way through the market. The most prominent investor paid CRA in the market is Egan Jones. So far, CRAs which adopt this business model are very few and have negligible market share but it is very relevant to discuss them because this alternative CRA business model for CRAs since doesn't have same caveats as the issuer pays model and can have an effect on the issuer paid CRAs accuracy (Xia, 2014).

An empirical study done by Xia (2014) shows that issuer- paid rating agency tends to release more issuer friendly ratings than the investors- paid agency. Increased competition negatively affects the accuracy of ratings just when the entrant is an issuer paid rating agency. The results of this study show that Moody's was slower in identifying default risk.

Another study by Jiang et al (2012) provides evidence that the issuer pays model is correlated with higher ratings. Their analysis compares the ratings performance of Standard & Poor's before and after it switches from investor paid to issuer paid business model, using Moody's as a benchmark. Their findings suggest that the investor paid Standard Poor's has lower rating than Moody's while upon becoming an issuer paid CRA, S&P registers higher ratings and don't differ from Moody's ratings. The third hypothesis is formulated as following:

H3: the effect of rating accuracy on market share is stronger for investor-paid CRAs than issuer-paid CRAs

## **Methodology**

### ***Data and variables***

The data set used in this study has been hand-collected from the European Securities and Market Authority (ESMA) CEREP database. It initially contains information regarding ratings, defaults rates and transition matrices of 26 ratings agencies across the globe over 6-month periods for for 18 years (1997-2015). Due to the insufficient amount of data available, 11 CRAs have been excluded bringing the total number of CRAs to 15. Each CRA is observed for a number of periods varying between 11 and 37. It is interesting to see how the effect could differ across CRAs, thus a VAR analysis is performed for the 15 remaining CRAs individually.



In order to create a proxy for the market share of each CRA  $i$  during the period  $t$ , the number of new ratings assigned in  $t$  by  $i$  minus the average of new ratings assigned by all CRAs in the dataset during the same period is used. The proxy variable for market share is “Mkshare”.

Following Nickel et al. (2000); Bangia et al. (2002); Amato et al. (2013), in order to create a proxy for accuracy an index based on transition matrices is computed. A transition matrix reports for each CRA and for a specified period of time (6 months in the dataset used in this study) the share of securities that received a rating  $x$  at the beginning of the period and a rating  $y$  at the end of the period.

In this study, there are two specific indexes based on transition matrices, computed as in Amato et al. (2013). The first one, accuracy, is computed as:

$$I1a(M) = I0a(M) + 17 [\sum \sum P_{hk} + h > 4 \quad h \leq 4 \quad \sum \sum P_{hk} \quad h \leq 4 \quad h > 4]$$

The ratings mobility is calculated by subtracting the identity matrix from the transition one. Then, its average is computed and it is used as an index for accuracy (Amato et al., 2013). The equation written above calculates the index of absolute mean mobility of the double loss model. This index accounts for each transition probability for each number of rating classes. Besides accounting for the changes between investment grade ratings to non- investment rating it also accounts for upgrades in rating. It measure overall dispersion as well (Amato et al, 2013). As a robustness check, an alternative proxy is used, accuracy abs computed as:

$$I = 17 \sum_{h=7} |\sum P_{hk} - 7k = 1(h-k)|$$

The difference between accuracy and accuracy abs is that the latter gives to all rating transition the same sign. By analyzing the equation, it is clear that the difference is given by the fact that when calculating the accuracy index one seventh of the probabilities sum of transitioning from an investment grade to under investment grade and vice versa is added. The first index account for overall dispersion of ratings and gives more weight to the transition from BBB to BB (investment grade to under investment grade). (Amato et al, 2013). The actual difference in calculation was done in excel by using the “absolute condition, which gives all values included in equation a positive sign. Further, both indexes will be used for the empirical analysis and the results will be compared.

Thus two proxy variables for accuracy are generated, accuracy abs and accuracy. When generated, the average for accuracy across all CRAs has been subtracted. This is done in order to control for and eliminate systemic faults in accuracy.

### ***Descriptive Statistics***

Graph nr.1 describes the evolution of accuracy over time, measured by the accuracy proxy. It seems that accuracy fluctuates over time. It does not have a downward or upward trend over time, which is in line with Dilly and Mählmann (2016), who found that CRAs are more prone to be inaccurate during boom periods and accuracy levels increase during recessions.

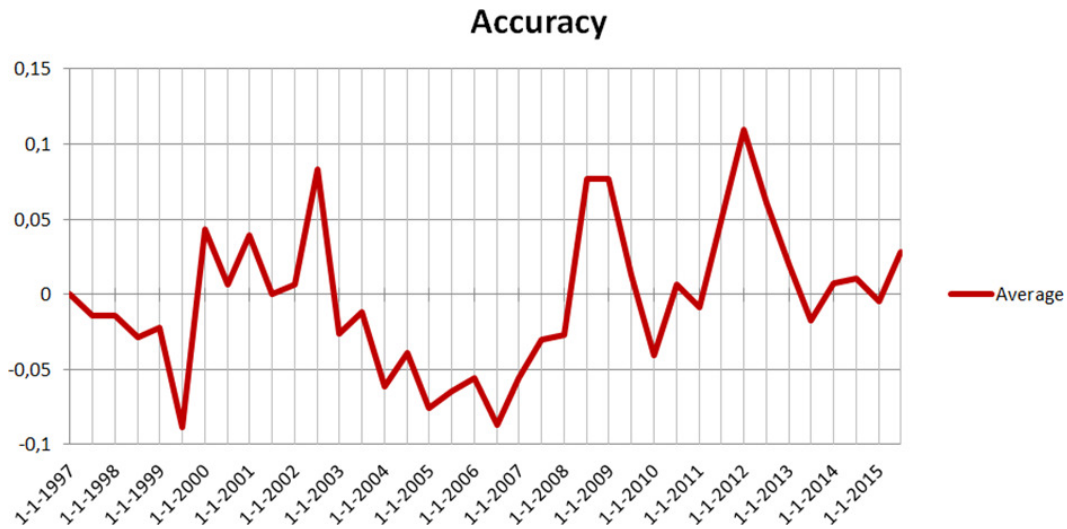


Fig.1: The average of accuracy across time for all CRAs included in the analysis

Table1: Accuracy and Market share across the 15 CRAs.2

CRA	Nr.of obs	Accuracy			Accuracyabs			Mk share		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Moody's	32	0.01	-0.12	0.08	-0.05	-0.11	0.25	-0.16	-0.18	-0.13
A.M.Best	28	-0.00	-0.15	0.28	-0.08	-0.15	0.22	0.36	-0.17	4.99
ARC.Ratings	32	-0.00	-0.01	0.05	-0.10	-0.11	-0.04	0.20	-0.19	1.45
BRCA	22	-0.01	-0.11	0.15	-0.08	-0.11	0.05	-0.01	-0.21	1.29
CAP.Int	30	-0.03	-0.25	0.02	-0.07	-0.11	0.14	-0.19	-0.21	-0.17
Cyprus										
Cerved. Rspa	14	0.17	0.03	0.05	0.34	0.03	0.81	-0.01	-0.15	0.39
Creditreform	29	-0.00	-0.20	0.25	-0.06	-0.11	0.14	0.13	-0.21	0.90
Crif.spa	11	0.08	-0.15	0.44	0.14	-0.11	0.84	-0.03	-0.17	0.43
DBRS.Limited	32	0.09	-0.23	0.55	0.03	-0.11	0.45	-0.14	0.21	0.04
Egan Jones	16	-0.01	-0.38	0.29	0.09	-0.01	0.31	-0.15	-0.21	0.06
Euler Hermes	27	-0.01	-0.09	0.04	-0.10	-0.11	-0.01	0.10	-0.21	0.79
Fitch	29	-0.09	-0.39	0.35	0.15	-0.04	0.40	-0.15	-0.19	-0.05
GBB. Ratings	37	-0.03	-0.30	0.16	-0.04	-0.11	0.37	-0.19	-0.19	-0.13
Icap Group	22	0.02	-0.61	1.06	0.30	-0.07	0.96	-0.03	-0.19	0.16
Standard & Poors	32	0.01	-0.30	0.21	0.05	-0.06	0.28	-0.16	-0.19	-0.14

Table1 presents the number of observations available for each CRA. It is noteworthy that only CRAs effectively analyzed are included. The values of accuracy, accuracyabs and Mkshare for each CRA are described in the last 3 columns. So far, these observations indicate that there is a negative correlation

between accuracy and market share. Further on, the regression analysis will shade light on this initial observation.

### ***Empirical model and hypotheses testing***

In the pursuit of finding out how accuracy affects market share and vice versa, a VAR autoregressive model within multiple time series is used. In order to test for the hypothesis 1 and 2, an autoregressive model will be estimated for each CRA.

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 X_{t-1} + \beta_3 X_{t-2} + u_t$$

$Y_t$  measures market share and is the dependent variable.  $Y_{t-1}$  gives the coefficient of market share's first lag.  $\beta_1 X_{t-1}$  and  $\beta_2 X_{t-2}$  stand for the effect of first and second lag of accuracy on market share. The error term over time  $u_t$  is included and controls for the unobserved variables which affect market share.

### ***Dickey Fuller test***

DF tests have been ran the  $Mkshare$  variable as well for both versions of accuracy index; accuracy abs and accuracy included in the analysis. Results show that all three variables are stationary time series and do not follow a random walk for 15 out of 15 CRA. Based on these results, the model is estimated further in levels and not differences.

### ***Breusch Godfrey test***

Further on, a Breusch Godfrey test for autocorrelation is performed. This is done with the purpose of testing for the number of lags for the independent variable. For most CRAs no autocorrelation was found, or just in the first lag. However, it goes away once the second lag is introduced. For two of CRAs, ten lags need to be added in order for serial correlation to be removed.

### ***Engle Granger and Johansen test***

Since the results of the unit root tests suggest that the market share and accuracy do not follow a random walk and are stationary time series, the model is estimated as a VAR in levels. However, due to a limited number of observations, it is better to estimate the model with an error correction specification. We estimate the model in levels and perform an Engle Granger test. As expected, for most CRAs the null hypothesis of causality couldn't be rejected.

### ***VECM model***

Initial VAR model:

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 X_{t-1} + \beta_3 X_{t-2} + u_t$$

The error correction specification of the model is the following:

$$\begin{aligned} \Delta Y_t &= \beta_0 + \gamma_0 \Delta X_{t-1} + (\beta_1 Y_{t-1} - \beta_2 X_{t-2}) + u_t \\ \Delta X_t &= \beta_0 + \gamma_0 \Delta Y_{t-1} + (\beta_1 X_{t-1} - \beta_2 Y_{t-2}) + u_t \end{aligned}$$

In this paper, it is relevant to estimate the short and long run effect from each equation. The first equation estimates both the short and long-term effect of accuracy on market share while the second equation estimates the effect of market share on accuracy. These estimations can answer the first, second and third

hypothesis. The long term effect is given by the lagged error correction term( $\delta$ ) represents the feedback necessary to bring market share back to equilibrium. The short-term effect is given by  $\gamma_0$  in each equation.

## Results

The results on the effect of accuracy on market share are presented and we did an analysis of the effect of market share on accuracy

### *Effect of accuracy on market shares*

This is the summary table of all 15 CRAs estimations for the effect of accuracy on market share. The CRAs marked with an asterisk follow an “investor pays” business model. It presents both the short and long-term effect of accuracy on market share. Colum two and three exhibit the short term coefficient and its corresponding p-value. The long-term effect and its p-value are shown in column four and five The CRAs marked with two asterisks follow an investor paid business model. The p-values marked with an asterisk below the critical value of 0.05 and indicates statistical significance at the 5% level.

**Table 2: Effect of accuracy on market share**

CRA	Short term	P-value	Long term	P-value	R-sq	Nr of obs
Moodys	-0.06	0.212	-0.37	0.002*	0.2881	32
A.M Best EUROPE	1.12	0.033	-0.41	0.00*	0.932	28
ARC Ratings	-8.48	0.025*	-1.53	0.00*	0.6833	32
BCRA	1.29	0.213	-0.74	0.003*	0.3537	22
Cap. Int Cyprus	0.03	0.182	-0.83	0.002*	0.4678	30
Cerved. Raspa	0.34	0.043*	-0.39	0.06	0.5612	14
Creditreform	1.33	0.181	-1.14	0.001	0.6701	29
Crif.Spa	0.11	0.658	-0.16	0.662	0.0732	11
DBRS.RA.LIM**	1.58	0.747	0.50	0.739	0.6652	32
Egan Jones**	0.05	0.759	0.00	0.983	0.3089	16
Euler Hermes	-1.93	0.318	-1.04	0.00*	0.5263	27
Fitch	-0.01	0.603	-0.17	0.312	0.4509	29
GBB Rating	0.11	0.002*	-0.75	0.054	0.7025	37
ICAP GROUP	-0.13	0.044*	-0.71	0.00*	0.812	22
Standard& Poors	2.77	0.039*	-12.1	0.041*	0.8894	32

The short-term causality coefficient on accuracy ( $\gamma_0\Delta X_{t-1}$ ) has a positive sign for 10 out of 15 CRAs. However, it is statistically significant just for 4 out of 10 positive coefficients. These results indicate that overall, on short term, if accuracy increases by 1 percentage point, it has no statistically significant effect on market share.

On the other hand, the long term causality coefficient on accuracy ( $(Y_{t-1}-\beta X_{t-2})$ ) has a negative sign for 13 CRAs and is statistically significant for 10 out of 15 CRAs at a 95% confidence interval. Thus, on long term, if accuracy increases with 1 %, it has a negative effect on market share; results have a range from -12 % to -0.1%.

There are also VECM estimations for each CRA using the variable accuracy build with the index calculated with an “absolute” condition. These estimations are done as a robustness check. Using this index gives similar results. For the short-term effect of accuracy on Mkshare, the sign across CRA is mixed, however only two positive coefficients are statistically significant at the 95% confidence interval. The long-term effect of accuracy on Mkshare has a negative sign for 14 out of CRAs and just eight of them have coefficients that are statistically significant at the 5% level. When it comes to the long-term effect, results are similar as well but less consistent.

The results above mentioned show no support for either side of hypothesis 1. The assumption that there is no effect of accuracy on market share because predominantly naive investors suffer the consequences of inaccuracy does not hold. The time series analysis shows that accuracy does have a statistical significant effect long-term effect on the market share of CRAs. The other side of the hypothesis is in line with the reputation costs argument invoked by CRAs and states that accuracy has a positive effect on market share. However, the empirical analysis results disproves it. Thus, the reputational costs invoked by CRAs do not have a real base. The lack of rating accuracy has no negative consequences on the market share of CRAs, thus it incurs no punishment by the market, translated in loss of profits made by CRAs. Moreover, there is evidence for a negative effect of accuracy on the market share for most CRAs, suggesting that accurate CRAs are punished by the market. This evidence is highly consistent with the idea that CRAs have strong incentives to cater to the interest of their customers, rather than provide an accurate signal to the market, which is actually the role CRAs assume in the financial market.

However, alternative explanations for this result cannot be ruled out in the empirical setting of this study. Since the proxy for rating accuracy used is based on ratings transactions, it could be that CRAs are actually punished for not providing timely updates to their evaluations. Future research could try to disentangle these two possible explanations by using alternative proxies for rating accuracy, for example distinguishing between upward and downward rating revisions.

### ***Effect of market share on accuracy***

This is the summary table of all 15 estimations in Stata for the effect of accuracy on market share. The p-values marked with an asterisk are below the critical value of 0.05 and indicates statistical significance at the 5% level, 95% confidence interval. The CRAs marked with two asterisks adopt an “investor pays” business model. In the first column, all CRAs included in the analysis are listed. The second and third column contains the short- term effect coefficients of Mkshare on accuracy and p-values. The long term effect coefficients and the corresponding p-values are found in column 4 and 5. The R-square and number of observations are also included can be seen in the last two columns.

**Table 3: Effect of market share on accuracy**

CRA	Short term	P-value	Long term	P-value	R-sq	Nr of obs
Moodys	-1.81	0.049*	1.39	0.001*	0.272	32
A.M Best EUROPE	-0.01	0.58	0.00	0.735	0.424	28
ARC Ratings	-0.01	0.221	0.00	0.505	0.1553	32
BCRA	0.03	0.38	-0.04	0.283	0.5437	22
Cap. Int Cyprus	2.35	0.09	-3.63	0.059	0.2554	30
Cerved. Raspa	0.05	0.898	-0.27	0.53	0.2239	14
Creditreform	-0.08	0.259	0.11	0.216	0.6337	29
Crif.Spa	0.51	0.076	-1.30	0.002*	0.7159	11
DBRS.RA.LIM**	-0.95	0.005*	3.52	0.00*	0.997	32
Egan Jones**	-0.58	0.01*	0.49	0.00*	0.8386	16
Euler Hermes	0.03	0.084	-0.03	0.168	0.4197	27
Fitch	2.55	0.073	-5.71	0.00*	0.4992	29
GBB Rating	2.88	0.076	-4.07	0.003*	0.5419	37
ICAP GROUP	-0.09	0.886	0.79	0.376	0.2563	22
Standard& Poors	-22.4	0.665	16.9	0.779	0.9037	32

The short-term effect estimation of Mkshare on accuracy gives mixed results. It indicates that 8 out of 15 CRAs have a negative coefficient, but is it statistically significant just for 3 of them. None of the other 8 coefficients which have a positive sign are significant. Thus, on short-term, if Mkshare increases with 1%, it has no statistically significant effect on accuracy.

Mixed results are also found when looking at the long-term effect. The estimated coefficient is statistically significant for 6 out of 15 CRAs. Three of them have a positive sign and the other three have a negative one. These results are inconsistent. On average, we can thus conclude that there is no statistically significant effect of a CRAs market share on its level of accuracy.

The results above presented indicate that market share also does not influence accuracy. If the market share increases, it does not have any effect on accuracy, which is not in line with the second hypothesis that once the market share of credit rating agencies goes down they will cut costs, thus affecting the accuracy of ratings.

### ***Difference between investor paid and issuer paid CRAs results***

There is no statistical evidence for a stronger effect of accuracy on market share for investor paid CRAs. Thus, hypothesis 3 does not hold either. However, both investor paid CRA exhibit a statistically significant positive effect of Market share on accuracy. Furthermore, inspection of the data on accuracy shows that based on either index, one of the two investor paid CRAs has a positive mean value of accuracy. **Table 3** below contains the accuracy score of all CRAs that were initially in our dataset. The new entrants have been dropped from the empirical analysis due to limited number of observations. These have been added in order to have a list with CRAs as exhaustive as it can be if observations about the new entrants in the credit industry are to be made. There are 4 CRAs that score far above average when it comes to accuracy. They have positive values for both accuracy abs and accuracy. One of them is

investor paid and the others are relatively new entrants. These findings go against the reputation costs argument. If this argument would be valid, it is expected that the other small CRA should be concerned with building a reputation as well, since they compete in a market where 90% is already taken by just three well-established CRAs.

**Table 4: Accuracy across ALL 26 CRAs**

CRA	Accuracyabs	Accuracy
Moody's	- 0.05	-0.01
A.M Best EURO	-0.08	-0.00
ARC Ratings	-0.10	-0.00
ASSEKURATA	-0.11	-0.01
AXESOR CONOCE	-0.02	-0.04
BCRA	-0.08	-0.01
Cap. Int Cyprus	-0.07	-0.03
Cerved. Raspa	0.34	0.17
Creditreform	-0.06	-0.00
Crif.Spa	0.14	0.08
Dagong.Europe	-0.19	0.00
DBRS.RA.LIM*	0.03	0.09
Egan Jones*	0.09	-0.01
Euler Hermes	-0.10	-0.01
European.R.A.A.	-0.11	-0.00
Euroring.s.p.z.	-0.08	0.01
Feri Euroring	0.11	0.01
Fitch	0.15	-0.09
GBB Rating	0.04	-0.03
HR Ratings. S.A	-0.07	0.00
ICAP GROUP	0.30	0.02
JAPAN.CRA	-0.00	-0.00
Kroll Bond Rating	-0.01	-0.01
Scope Credit	- 0.06	0.02
Standard& Poors	0.05	0.01
Spreadresearch	0.04	-0.06

## Conclusion

Whereas reputational arguments would suggest that accurate CRAs should benefit from an increase in their customers, statistical evidence shows that on average, accuracy has a negative long term effect on market share. These negative results are not consistent with the theory that naïve investors do not reward (punish) CRAs exhibiting better (worse) performances in terms of accuracy.

Furthermore, these results refute the reputational costs mechanism that discipline CRAs into providing accurate ratings, and indicate the presence of a conflict of interest. CRAs have an incentive to cater to their customers instead of providing accurate signals to the market. Furthermore, there is no consistent evidence for a positive effect of market share on accuracy. These findings are not in line with the theory of Bar-Issac and Shapiro (2013) that resources affect accuracy.

Despite the expectations, accuracy does not have a stronger effect on market share for investor paid CRAs. However, statistical evidence indicates that indeed investor paid CRAs exhibit better accuracy overall and this is consistent with the literature about investor paid CRAs. Previous literature points out the positive effect these CRAs have in the credit rating industry, such as raising reputational concerns for CRAs with an issuer pays business model (Jian, 2012; Xia, 2014).

The findings of this research regarding the first two hypotheses have rather negative implications. The lack of punishment for inaccurate ratings indicate a market failure. The signal that the market receives cannot be trusted. Furthermore, the fact that market share does not influence accuracy can be perceived in a negative manner. It implies the small CRAs in the market will most likely not improve their accuracy once they will gain more market share.

The main limitation of the findings above mentioned is that it addresses accuracy but does not account for a difference between upward and downward mobility of ratings. Thus, the conclusion about the conflict of interest might be rather strong and there could be other explanations for the negative results. The number of observations available for this analysis are a major limitation of this paper.

Finally, based on the findings of this research, policy recommendations can be made. This research adds to previous literature, which revolves around the oligopoly within the credit rating agency and issues related with the current mainstream issuer pays model. Its main addition is the finding that accuracy has a negative effect on market share. Based on the literature discussed and empirical analysis performed it can be inferred that the current problems within credit rating industry are linked with the dominance of the issuer pays model. Thus, increasing competition would only exacerbate the moral hazard and conflict of interest associated with this business model (Becker and Milbourn, 2010; Bolton et al., 2010; Xia, 2014). An alternative solution could be the investor pays model (Jiang et al., 2010; Xia, 2014).

If the dominant issuer pays model is changed with the investor pays model, the incentive of CRAs to cater to issuers instead of giving accurate signals to the market would change. However, this change could also lead to CRAs gaining an incentive to cater the investors at the cost of issuers. Thus, such a change in the market would not lead to ratings that are more accurate.

A solution to this eventual problem for policy makers would be to encourage a balance. Ideally, an increase in competition within the credit rating industry that will result in a credit rating market with a balanced number of issuer paid and investor paid CRAs. It is expected that they will discipline each other in providing accurate ratings.

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## **References**

Amato, P., Ferri, G., Lacitignola, P., & Sinisi, N. Searching for Consistent Indices of Rating Mobility Through the Crisis.



- Bae, K. H., Kang, J. K., & Wang, J. (2015). Does increased competition affect credit ratings? A reexamination of the effect of Fitch's market share on credit ratings in the corporate bond market. *Journal of Financial and Quantitative Analysis*, 50(05), 1011-1035.
- Bangia, A., Diebold, F. X., Kronimus, A., Schagen, C., & Schuermann, T. (2002). Ratings migration and the business cycle, with application to credit portfolio stress testing. *Journal of Banking & Finance*, 26(2), 445-474.
- Bar-Isaac, H., & Shapiro, J. (2013). Ratings quality over the business cycle. *Journal of Financial Economics*, 108(1), 62-78.
- Becker, B., & Milbourn, T. (2011). How did increased competition affect credit ratings? *Journal of Financial Economics*, 101(3), 493-514.
- Bolton, P., Freixas, X., & Shapiro, J. (2012). The credit ratings game. *The Journal of Finance*, 67(1), 85-111.
- Boot, A. W., Milbourn, T. T., & Schmeits, A. (2006). Credit ratings as coordination mechanisms. *Review of Financial Studies*, 19(1), 81-118.
- Cornaggia, J., & Cornaggia, K. J. (2013). Estimating the costs of issuer-paid credit ratings. *Review of Financial Studies*, 26(9), 2229-2269.
- Dilly, M., & Mählmann, T. (2016). Is There a “Boom Bias” in Agency Ratings?. *Review of Finance*, 20(3), 979-1011.
- European Commission. (2013). Stricter rules for credit rating agencies to enter into force, retrieved from [http://europa.eu/rapid/press-release\\_IP-13-555\\_en.htm?locale=en](http://europa.eu/rapid/press-release_IP-13-555_en.htm?locale=en), on 05.05.2016
- Hirth, S. (2014). Credit rating dynamics and competition. *Journal of Banking & Finance*, 49, 100- 112.
- Jiang, J. X., Stanford, M. H., & Xie, Y. (2012). Does it matter who pays for bond ratings? Historical evidence. *Journal of Financial Economics*, 105(3), 607-621.
- Mathis, J., McAndrews, J., & Rochet, J. C. (2009). Rating the raters: are reputation concerns powerful enough to discipline rating agencies?. *Journal of monetary economics*, 56(5), 657-674
- Nickell, P., Perraudin, W., & Varotto, S. (2000). Stability of rating transitions. *Journal of Banking & Finance*, 24(1), 203-227.
- OECD.(2010). Competition and Credit Rating Agencies, retrieved from <http://www.oecd.org/competition/sectors/46825342>, on 05.05.2016.
- Skreta, V., & Veldkamp, L. (2009). Ratings shopping and asset complexity: A theory of ratings inflation. *Journal of Monetary Economics*, 56(5), 678-695
- White, L. J. (2010). Markets: The credit rating agencies. *The Journal of Economic Perspectives*, 24(2), 211-226.
- Xia, H. (2014). Can investor-paid credit rating agencies improve the information quality of issuer-paid rating agencies?. *Journal of Financial Economics*, 111(2), 450-468.

## **Improvement of State Regulation of Natural Monopolies in the Conditions of Globalization**

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### **Abstract**

The problems of state regulation of natural monopolies have been topical since the moment of transition of the country to market relations that have a serious impact on the social and economic development of the Russian economy. Natural monopolies in modern Russia are the key budget-forming elements of the national economy, providing more than half of all tax revenues. Taking into account the positive foreign experience, we can claim that the construction of an effective system of measures for state regulation of the activities of natural monopolies in the context of globalization is urgent. The purpose of the article is to determine the vector of development of state regulation of the activities of natural monopolies in the context of intensifying globalization processes. The significance of the results is to deepen the notion of the periodization of the stages of formation and development of natural monopolies in Russia, which made it possible to identify the specifics of their development at the present stage, as well as in the development of directions for adapting the foreign experience of state regulation of natural monopolies for certain types of economic activity. It is proved that under the conditions of globalization there is a change in the system of external factors that determine the activity of natural monopolies in Russia associated with the promotion of natural monopolies to international markets.

**Keywords:** state regulation, natural monopolies, globalization.

### **Introduction**

Over the past decades, the global economy has undergone profound changes caused by the intensification of the processes of globalization. The interdependence of economic systems in different countries and the intensification of globalization processes are due to the development of international business structures, an increase in the volume of capital exports, the exchange of information, the development of new technologies, and the migration of labor. As a result, new conditions have led to deepening of ties between countries, as well as to changes in the conditions for the functioning of natural monopolies, as currently globalization processes affect not only the macroeconomic level, but also individual economic entities.

In these conditions, the state faces the task not only to protect the interests of consumers of goods and services of natural monopolies, but also to protect the monopolies themselves from the negative impact of globalization processes, which should be taken into account to improve the state regulation of their activities.

## Methods

The study is based on the works of Russian and foreign economists, who analyzed the problems of state regulation of natural monopolies (through the prism of their influence on the intensive development of the national economy), the materials of scientific and practical conferences of different levels.

The article is also based on the data of informational and analytical developments and methodological materials, expert assessments of the state of natural monopolies in Russia, as well as the development of international organizations, data from the Federal Service for State Statistics of the Russian Federation and Internet materials.

Both general scientific and special research methods were used, including analysis, induction and deduction methods, problem-chronological, scientific abstraction, system-functional, economic-statistical methods.

## Results and Discussion

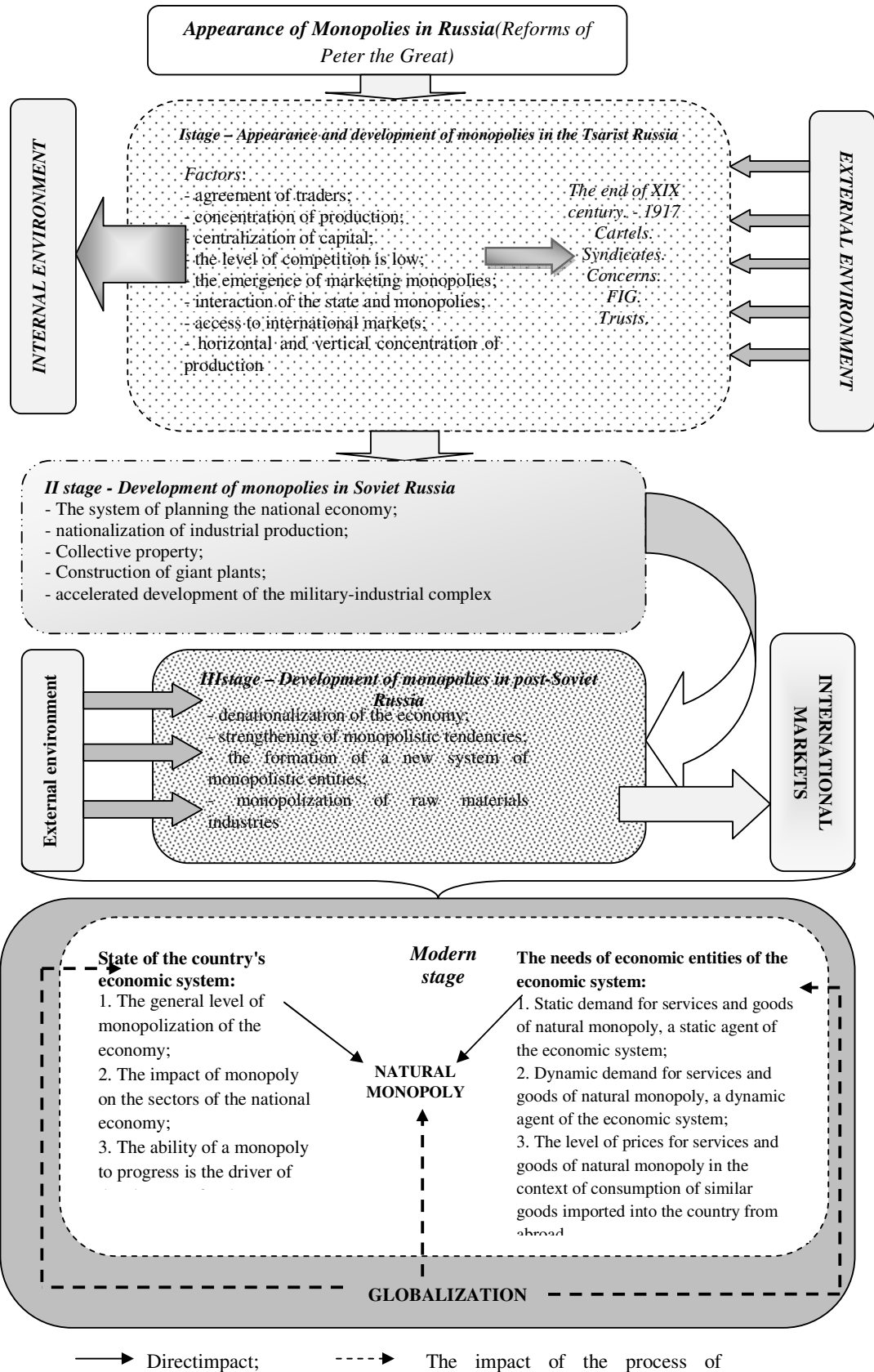
The existence of natural monopolies in the economy of any state is possible thanks to a number of factors:

- availability of special technologies;
- absence of substitute goods, which is caused by unique properties of goods of services of natural monopolies;
- the availability of infrastructure (production complex) and resources used by natural monopolies to produce goods and services (for example, control over the field is quite capable of generating a natural monopoly);
- the existence of high barriers to entry into the industry. This factor allows to maintain competitive advantages to the existing monopolistic entities.

Monopolistic formations have a number of specific features:

- the effect of scale and the lack of substitute products;
- subadditivity of costs;
- the boundary of the social effectiveness of natural monopoly, determined by the equality of the cumulative increase in costs in another market structure (due to the loss of subadditivity) to additional public losses from monopoly (determined on the basis of the "Harberger's triangle", proposed O.Yu. Abrosimovoy, M.Yu. Malkinoy (2012));
- the barriers at the entrance to the industry, both financial and geographical, and administrative and related to property rights;
- absence of substitute goods;
- the interrelationship of enterprises participating in the production cycle, due to the existing physical infrastructure of natural monopolies;
- the external effects from the production and economic activities of natural monopolies;
- low elasticity of demand in the short-term period for the products of natural monopolies.

Y.Y. Radyukova and A.Y. Zhuchkov on the basis of a retrospective analysis highlighted the stages of formation and development of natural monopolies in Russia are highlighted (Fig. 1).



*I stage.* Formation and development of monopolies in Tsarist Russia is organically linked with the assertion of capitalist monopolies in industry, the financial system and in transport as the determining factor of the country's economic life. As in other capitalist countries, in Russia the development of monopolistic tendencies was accelerated by the conditions of wartime.

*II stage.* The development of monopoly in the Soviet period was facilitated by total state-wide economy; administrative restriction of the market; use of non-market management principles; rigid centralized planning; hierarchical administrative structures, built on the principles of administrative subordination - the main factors that formed a highly concentrated economy and highly specialized production.

*Stage III.* The creation of modern natural monopolies in Russia is a consequence of the privatization that had an ambiguous impact on the structural development of the economy. On the one hand, during the privatization process, the enterprises were disaggregated by liquidating their associations. On the other hand, in the course of privatization, there were trends in the concentration of capital through the acquisition of blocks of shares, stakes in the authorized capital of other economic entities. Specific features of the Russian economy in the post-Soviet period (the growth of the shadow economy, the privatization of infrastructure sectors, the concentration of capital, the raw material orientation of the national economy, the imbalance of the national economy and the default crisis) contributed to the formation of vertically integrated companies.

Currently, natural monopolies are the main components of the maintenance and development of the national economy. They form their own infrastructure and financial system, which in turn are the basis of the country's viability.

On the basis of the study, both positive and negative aspects of the functioning of natural monopolies in the modern Russian economy can be identified. Among the positive aspects of functioning of natural monopolies in the Russian economy are:

- unity of tangible and intangible assets;
- creation of conditions for effective functioning and development of various spheres of the economic system and the national economy as a whole;
- reduction of costs due to the scale of production and the channel for the sale of goods and services by reducing the costs of making a unit of production;
- state share in the ownership of natural monopolies, which contributes to meeting the needs of the subjects of the national economy;
- mobilization of financial resources, in order to ensure the production process at the proper level;
- introduction of the achievements of scientific and technical progress in production and economic activities;
- implementation of quality standards in production activities;
- introduction of a system of contractual relations, which helps to reduce losses associated with economic risks and uncertainty.

However, it should be noted that in addition to the positive impact on the national economy, the activities of natural monopolies are inherent in negative aspects, such as:

- unreasonable tariffs in some cases;
- poor quality of services;
- lobbying for personal interests;
- shifting unnecessarily high costs to the consumer.

Currently, the state is interested in overcoming a high level of monopolization of the Russian economy. In this regard, state regulation of the activities of natural monopolies should be aimed at creating and further regulating them at the state and regional levels. The main direction of the policy of state regulation in this sphere should be the achievement of an optimal share of natural monopolies in the national economy of Russia.

Among the main problems of the development of natural monopolies are:

- high level of depreciation of fixed assets, which in some industries exceeds 60%;
- a shortage of investment resources against the background of high depreciation of fixed assets of enterprises of natural monopolies, which in some industries is about 60% (38% of oil pipelines and 47% of oil pipelines have been operating for more than thirty years). The most critical situation has arisen in the electric power industry and gas production;
- the lack of an effective system of interrelations between enterprises of various industries, at all levels of the national economy.

Taking into consideration all these facts, we can conclude that the development of national natural monopolies is the result of the influence of two contradictory tendencies: on the one hand, natural monopolies have preserved a number of specific features and functioning features that inherent in the Soviet and early post-Soviet period (obsolete equipment, imperfect structure property, lack of mechanisms of control over their activities that are adequate to modern conditions); on the other hand, the modernization potential of this sector of the Russian economy is very large (natural monopolies are the nucleus of the development of the national economy, providing 13.5% of GDP; in addition they contribute to the development of related industries and activities). There are some scientists who work on this problems: E.A. Kolesnichenko, V.Y. Sutyagin, Y.Y. Radyukova, V.V. Smagina and I.N. Yakunina (2017)

The unfavorable situation on the international market is aggravated by the possibility of a new recession, a further decline in the export supplies of fuel and energy resources due to a decrease in demand and due to the increased competition with the Middle East gas market, as well as a drop in domestic demand.

In the course of regulating natural monopolies, the state implements a number of functions:

- coordination of interests of the society, business structures and natural monopolies;
  - suppression of natural monopolies abuse and infringing upon the interests of consumers;
  - development of competition, limitation of the sphere of influence of monopolies and their elimination in those industries if it is expedient to create and maintain a competitive environment
- This problem is the focus of attention of K. Totiev (1997).

In turn, the need to regulate the activities of natural monopoly structures is due to:

- the need to ensure a balance between the interests of the society and the monopolies themselves, which allows the monopolies to intensively develop;
- the so-called X-inefficiency, or the organizational weakness of natural monopolies, which implies internal losses that arise when the producer acquires monopoly power and does not feel pressure from competitors and does not have incentives to maintain costs at a competitive level. This problem is the focus of attention of P.L. Joskow;
- the lack of the desire of enterprises of natural monopolies to use innovative developments in their production and economic activities, thereby contributing to a decrease in the quality of the products (services), as well as to increasing production costs, in contrast to competitive industries;
- the social importance of goods and services of natural monopolies for all categories of consumers;
- the pluses and minuses arising in the process of carrying out production and economic activities of monopolistic structures. External advantages are manifested in the case of connection of consumers to infrastructure networks, which contributes to the health of the population, saving time, and the competitiveness of the real sector of the national economy. Negative features are associated with a low level of development of natural monopoly industries, which cause pollution of the environment, over exploitation of resources, etc. This problem is the focus of attention of S.N. Khorunzhaya (2009);
- the need for continuity and efficiency in the provision of services.

When improving the system of state regulation, it is necessary to take into account the specifics of the development of natural monopolies at the present stage, as well as the transnational activity of national monopolies. Therefore, in addition to distinguishing the competitive environment of the Russian market, it is also important to form a vector for the development of monopolistic entities, according to the opinions of Radyukova, Y.Y, Zhuchkov A.Y. (2013) (Table 1).

**Table 1: Directions of state regulation of natural monopolies under the influence of globalization processes**

№	Direction	Expected results
1	Improvement of the laws and regulations in accordance with the international standards	<ul style="list-style-type: none"> <li>– Improvement of the Federal Law related to "Natural Monopolies";</li> <li>– separation of powers between regulatory and antimonopoly authorities;</li> <li>– regulation taking into account the principle of universality of services, the introduction of quality parameters (including a commercial one), providing feedback (complaints, satisfaction with quality)</li> </ul>
2	Enhancing the processes of market integration	<ul style="list-style-type: none"> <li>– regulation of the quality of services on the international market;</li> <li>– strengthening the functions of market regulation and consumer protection, in accordance with Directive 2009/72 / EC of the European Parliament</li> </ul>
3	Providing an opportunity to the countries on whose territory Russian natural monopolies operate. Establishing criteria for classifying consumers	<ul style="list-style-type: none"> <li>– ensuring an unimpeded access to information on the websites of monopolistic entities;</li> <li>– control over anti-competitive policies;</li> <li>– independent servicing of complaints in national regulatory bodies and alternative ways of revision;</li> <li>– the division of consumers into groups by the authorities of the country in whose territory monopolistic entities operate</li> </ul>
4	Establishment of transparent requirements for providing parties with an access to the infrastructure networks	<ul style="list-style-type: none"> <li>– providing consumers (at least every six months) with the information about the consumption levels, the level of costs;</li> <li>– no penalty sanctions and unhindered termination of contracts with subjects of natural monopolies, in case of providing inadequate quality of goods and services;</li> <li>– the right to replace suppliers of fuel and energy resources;</li> <li>– the right to choose the supplier of goods and services of natural monopolies;</li> <li>– protection against abuse (the national bodies regulating the activities of natural monopoly market entities must have the right to set maximum prices)</li> </ul>

## Conclusions

On the basis of the retrospective analysis, we have identified the stages of formation and development of natural monopolies in Russia (Stage I – concentration of production, centralization of capital, horizontal and vertical integration of production, Stage II - nationalization of industrial production, the system of planning the national economy, accelerated development of the defense industrial complex; Stage III – denationalization of property, monopolization of raw materials industries, access to international markets). It is possible to see the specifics of their development at the present stage – Stage IV. Monopoly is the driver of the sectors of the economy; there is transnationalization of natural monopolies under the influence of globalization processes; the demand for services and goods of natural monopolies is dynamic.

Also, in the conditions of globalization, a system of external factors determines the activity of natural monopolies in Russia (the involvement of natural monopolies in a new system of competitive relations, the development of information and innovation technologies, the export of capital, the formation of transnational corporations, the migration of labor resources) that are promoted on the international markets. This intensifies contradictions in the process of satisfying the economic interests of the state, natural monopolies and consumers. Moreover, it causes the reduction of investment in the development of natural monopolies, which means that they have less social responsibility.

There are limitations of the state regulation of the activity of natural monopolies. These restrictions have an institutional character (high level of shadow economy, imperfect legislation and irrational distribution of powers among institutions of state regulation of natural monopolies); an organizational character (the destruction of horizontal and vertical infrastructure links, the lack of a system accounting for the interests of the state, natural monopolies and consumers, the lack of tools for the use of new technologies and secondary raw materials, a low level of investment in the development of new deposits); a functional character (high depreciation of fixed assets, shortage of investment resources, construction of modern highways, expansion of the geography of sales markets).

We propose the ways how to use the foreign experience of state regulation of natural monopolies in the following spheres: railway transport – regulation of tariffs on the basis of the rate of profit, organization of franchise trades for passenger and freight traffic in the domestic market with the dominance of national operators, ensuring equitable access of private operators to railway tracks; electric power industry - competitive bidding for the right to obtain a license in conjunction with the approval of tariffs, pricing regulation, control of investment activities; the telecommunications industry - regulation of tariffs for long-distance communication services, regulation of the upper limit of the tariff supplemented by a restriction on the rate of return.

The directions for improving the state regulation of the activities of natural monopolies in the short term perspective (providing investment incentives, attracting foreign investments, targeting public investments, differentiating tariffs for the subjects of the national economy), in the medium-term perspective (implementation of investment programs, providing free access to goods and services of natural monopolies, increasing the transparency of the activities of bodies regulating the functioning of natural monopolies, eliminating inter-regional imbalances in the real sector of the economy) and in the long-term perspective (elimination of cross-subsidization, the introduction of a system of long-term contracts, the search for ways to minimize production costs, the introduction of innovative and environmentally friendly technologies). These perspectives help to provide a balance of the economic interests of the state, of the natural monopolies and consumers. Moreover, they allow to reach the goal of intensive development of the national economy.

## References

- Ambrosimova, O.Yu., Malkina M.Yu. (2012) Features of the functioning of natural monopolies in modern Russia, *Economic analysis: theory and practice*, No. 12 (267), pp. 56-64.
- Radyukova, Y.Y., Zhuchkov A.Y. (2013) Natural monopolies in the conditions of strengthening of globalization processes, *Proceedings of the Southwest state University. Series: Economics. Sociology. Management*, No. 2, pp. 16-20.
- Kolesnichenko, E.A., Sutyagin V.Y., Radyukova Y.Y., Smagina V.V., Yakunina I.N. (2017) Valuation cost of equity capital in the conditions of economic instability on emerging markets (by the example of Russia), *Russia and the European Union. Development and Perspectives Cep. "Contributions to Economics"* © Springer International Publishing AG 2017. Cham, Switzerland. pp. 383-391.
- Totiev, K. (1997) Regulation of the activities of subjects of natural monopolies, *Law*, № 12, pp. 14-20.
- Joskow, P.L. (2005) Regulation of Natural Monopolies, *Massachusetts Institute of Technology, Center for Energy and Environmental Policy Research (05-008 WP)*, April, URL: <http://web.mit.edu>.
- Khorunzhaya, S.N. (2009) Financial mechanism of regulation of natural monopolies (on the example of the Russian electric power industry), *Finance*, № 6, pp. 41-42.



## Origin and Legality of Ownership in Retrospective

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### Abstract

The article considers the evolution of views on the origin of the concept of “property” in a historical retrospective. The authors emphasize the importance of taking into account the historical and economic approach to the study of the transformation of the categorical content of the most important economic concepts, which includes the notion of “property”. Particular attention is paid to the structuring and analysis of various approaches that explain the origin and legitimacy of property rights. The authors come to the expediency of distinguishing various approaches that explain the origin and legitimacy of property rights, which is due to the multifaceted nature of the essence of this concept in economic practice. An analysis of these approaches leads the authors to the conclusion that rights are not granted by “positive” laws but rather determine, precede and serve as their basis.

**Keywords:** economic categories; property; rights; institute of property; legality of property rights; historical and economic approach.

### Introduction

The study of economic categories, processes, systems cannot be conducted without taking into account the historical context of the changes taking place. The significance of the historical and economic approach is that it is important to take into account not only the empirical data of a particular historical moment (a period of time) but also the sequence of events, the trajectory of economic development and the transformation of categorical content. History serves as a necessary component of theoretical constructions, especially concerning the phenomenon of institutional transformation. Of particular importance is the historical context in economic research in the study of dynamic transformations associated with the change of institutions in time, which is very characteristic for the institution of property.

It should be noted that in no division of economic science there is no such a spread of opinions as in relation to the category of property. On some aspects of the problem, more or less harmonious systems of views have been developed, but a number of them are still at the periphery of discussions (Ryazanova, 2008). In order to give a clearer basis for the theory of the institution of property, it is necessary to study retrospective property rights and their legitimacy, which emphasizes the relevance of the topic chosen for analysis.

### Evolution of Approaches to the Problem of Origin and Legality of Property Rights

The analysis of retrospective sources on the problem under consideration testifies to the attempts of foreign and domestic authors to structure theories explaining the origin and legitimacy of property rights. The authors believe that with a certain degree of conventionality, it is possible to single out seven approaches explaining the origin and legitimacy of property rights: from the point of view of Roman law, labor theory, contract theory, supremacy of legal law, natural law, behavioral relations between people, problems of limited resources and systemic right.

Thus, in Roman law, private property was defined through the rights to own, use and dispose of objects in such a way that it does not contradict the law and does not harm third parties. Roman lawyers believed that private property can only be lawful to movable property, which can be captured

and retained (such as a found thing or an animal obtained on a hunt). Most of the proponents of this theory admit some kind of primitive community, but add that ownership of a thing taken into possession is possible only on the condition that all people agree to give up their share in the inseparable right of possession on this thing. However, this approach could not be applied to the land, since any land was either in collective ownership or state property.

In his work "On Property", Tiher Adolf (1872), borrowing the idea of Cicero, compares the world to a theater where the viewer in the theater only uses his seat on which he sits. The theater gives the viewer only a temporary right, and not perpetual ownership of a place in the hall, and the viewer occupies only one place, and not a lot, as long as he wishes. Based on this, he argued that a person can only assign that piece of land that he actually occupies and can process.

The approach to the origin and legitimacy of the institution of property based on labor was first proposed by J. Locke in his work "About Civil Government". Land, being in public ownership, is cultivated by individuals and one individual can use only products that were born on the cultivated land. Everyone has the exclusive right to his work and body, therefore what is produced through personal labor is a personal property. "People ... by means of a contract and agreements have approved the property, the beginning of which was laid down by work and diligence" (Locke, 2014: 267).

However, no legislation allowed the legality of ownership only on the basis of labor. Kant noted that the peasant, having plowed the land, cannot have the right of ownership to it. Moreover, under such an approach, the owner would not have the right to increase the value of the land given for rent. The tenant would automatically become a joint owner on the land as his work improved the quality of the land, and at the end of the rental period, the legal owner could lose his property altogether and never be able to increase the rent. Otherwise, he would illegally take the results of someone else's labor, which is tantamount to kidnapping someone else's property (Kant, 2007).

Thus, if labor was the only legitimate source of property, then in a society in which there are working poor and "idle" people face contradiction to any right and violation of the very basis of the institution of property. This theory was accepted by most economists, but rejected by lawyers who believe that if labor was a source of property, this would necessarily be reflected in legal norms (Arens, 1863).

Even more contradictory is the approach according to which property is the result of a contract. If we want to get the right out of the fact, we must first establish the reality of this fact; otherwise, the law itself cannot have a basis. From a retrospective view of the institution of property and our point of view, there was no such treaty, and even more so, this approach cannot now serve as a basis for the legitimacy of the institution of property. The agreement cannot be the basis of a common property right, because it itself has a value consistent with justice.

According to Kant's statement, the "specification" of the good generates only temporary property, which becomes final only due to the consent of all members of society. We consider that Kant meant the legal component of the agreement (contract). If there is an idea of justice in the agreement, then the confirmation of property is based on an agreement in accordance with the law and the law.

The next approach is property as a legal category and its legitimacy. Rights determine it. According to the original law of nature, no one can have the exclusive right to public goods (air, sun ...) and here a special place belongs to the state, which should monitor, control relations. Even Montesquieu Sh. (1999) wrote that "how people abandoned their natural independence to live under the laws of the political, so they abandoned the natural community of property to live under the laws of civil rights. The first of these laws gave people freedom, the second - the property". Honore de Mirabeau spoke from the rostrum of the constituent assembly that private property is property acquired by virtue of the law. Only the law establishes the right of ownership, since, only a voluntary refusal of society in favor of someone can serve as a legal basis for the right of ownership. First is the law, and then the property. There is no law - no property (Mirabeet, 1906). Bentham I. in the book "Principles of Morals and Legislation" writes that "property and law were born together and die together. Previously, there is no property before laws; if abolish laws - all property ceases to exist" (Bentham, 1998). However, E. de Lavelle went even further in his reflections. He wrote that "laws not only patronize property, they generate it ... The right of ownership is a social phenomenon, and it is not

existing in a natural way." His special merit is that he thought about the boundaries of property, which should be clearly spelled out in the law: "what are the legal boundaries between yours and mine - that's what needs to be determined" (Lavelle, 2011).

From the height of the processes, occurring in the modern economy there is a blurring of property rights (this process is described in more detail in Ryazanova, 2009). If the law creates property, then who is the legislator and whose interests he defends, what will eventually the law be and what will it decide? Throughout the evolution of the theory of ownership, the latter took various forms. It is not known, which form should be prescribed in the law from the standpoint of justice and public interest? There was a time when the property of a slave was recognized: is such property legal, did the law that created it really create law? - No: the case is fair or unjust, the institution is qualified or unskilled, a person or group of people-legislators are just or unfair, and so on... before it is formulated and promulgated by law. The relationship of objects does not depend on the will of people: they can issue good and bad laws, sanctify the law or violate it, but the law does exist anyway. However, society believes that justice stands above the contract and the law and therefore the latter are just. In any society and historical moment, a political and social organization corresponds to the reasonable needs of the person and is most conducive to its development. This order is the rule of law. Science has to recognize it, and sanctify its legislation. Any law consistent with this approach is just and perfect; otherwise, the law opposite to this order is unjust and dumb. Summarizing, the law does not create the right, but on the contrary, the right dictates the law.

According to the fifth approach, property is a natural right. Let's turn to the German philosopher-lawyers, who most clearly covered this approach in retrospect. Thus, Fichte I. wrote that the personal right of man in relation to nature consists in possessing a sphere of action in order to obtain means for its existence. Consequently, this physical sphere must be guaranteed to everyone who earns means for life by its own labor (Fichte, 1853).

The position of the lawyer-philosopher, professor of philosophy of law Arens (1863), has a lot of interest as he argued that property is the realization of the totality of means and conditions necessary for the physical and spiritual development of an individual in the quantity and quality necessary for rational consumption. The property right combines the conditions and means for obtaining, preserving and using property, and at the same time encompassing judicial actions that are presented to the given person, both for the purpose of restoring losses or for claiming property, and regarding its use. It turns out that property is for every person a condition of his life and development. It is based on the very nature of man and, therefore, must be regarded as an initial and unconditional right that is not the result of any external action in the form of "possession", labor or contract/agreement. Since the right comes directly from human nature, it is enough to be a man to have the right to property.

Proofs of the validity of Arens' judgments are the statements of Portalis J., Dallos D., Malthus T. in support of these principles. Thus, Malthus T. in his book *Essays on the Law of Population*, writes that a person who has no property has no right to life at all: "There is no place for him at the feast of nature; he is superfluous on earth. Nature orders such a person to retire, and she will not delay to bring such a sentence into execution" (Malthus, 1998). It turns out that if a person does not have property, then he has no right to live by the fruits of his labor, and there is no right to live by the fruits of someone else's labor. Without a doubt, one can help a person and give him a piece of land, means of production, etc., but this will already be a charity, not a legal solution to the problem.

With the development of market relations, the phenomenon of property began to be derived from the problem of limited resources. For the first time such an approach was substantiated in 1871 by K. Menger in the book *"Foundations of Political Economy"*, where he pointed out that property on its ultimate basis has the existence of benefits, the number of which is less than the needs in them. Therefore, the institution of property is the only possible institution for resolving the problems of "disproportion between the need and the available disposal of the amount of benefits" (Menger, Bem-Bawerk, Wieser, 1992: 79).

The study of approaches to the problem of the origin and legality of property rights was reflected in the modern period. So, prof. Ivashkovskiy S.N. notes the peculiar approach to the treatment of the

property of such well-known economists of the neo-institutional school as I. Bartsel, G. Demsets, D. North, R. Posner, and others. In their works they used the term “ownership”, since not a resource in itself is a property, but the bundle or share of rights to use the resource. Thus, “property rights are understood as socially sanctioned behavioral relationships between people that arise in connection with the existence of goods, and relate to their use” (Ivashkovsky, 2000: 70).

It should be noted a special contribution to the development of the problem of a systematic approach, one of whose eminent representatives in Russia is prof. K.A. Khubiyev (1988). Recognizing that the content of property unfolds throughout the system of production relations, he showed the relationship of property with the rest of the relationship, refuting the illusion that “property has a magical power, determining the content of all other categories” (Ibidem, p.72). For followers of the system approach, the initial relation is only a primary characteristic of its content, i.e. economic relations of property are understood by them from the moment of the combination of factors of production, which results, first of all, from their understanding of property as a complex multi-level economic phenomenon.

## Conclusion

Summarizing our reflections, it can be argued that the institution of property is a necessary condition for the existence, freedom and development of man. The natural property right and, above all, the right to appropriation of property, was recognized by all peoples and was inextricably linked with the very nature of man. Rights are not endowed with “positive” laws, but determine them, precede and serve as their basis. The legal right, as well as the property right, are mutated in the process of the development of society and peoples, because man himself changes as an object of law. Some nations have laws and orders alone, and they are fair, while others have others. In one place, the basic form of ownership (for example, how in a market economy this is private property) ensures the most equitable distribution of benefits and the best production, and in another place it can have negative results. Only on the basis of studying the nature of man, his needs one can understand the meaning of natural law, and an innate sense of justice, primitive law and reasonable law impose on society the duty to arrange so that each for person is guaranteed legitimate property.

## References

- Arens, G. (1863). *Legal encyclopedia or Organic exposition of the science of law and the state based on the principles of ethical philosophy of law*. Translation from German. Moscow: Printing house of Alexander Semin.
- Bentham, I. (1998). *Introduction to the foundation of morality and legislation*. Moscow: ROSSPEN.
- Fichte, I.H. (1853). *System der Ethik*. Leipzig: Dyk.
- Ivashkovsky, S.N. (2000). Property rights as "rules of the game" in economic systems. In Chepurin, M.N., Kiseleva, E.A. *The course of economic theory: a textbook - 4th ext. and revised edition*. Kirov: “ASA”.
- Kant, I. (2007). *Critique of Pure Reason*. Moscow: EKSMO, St. Petersburg.
- Khubiev, K.A. (1988). *Ownership in the system of production relations of socialism*. Moscow: MGU Publishing, 1988.
- Lavelle, E. (2011). *Property and its original forms*. Moscow: URSS.
- Locke, J. (2014). *Two treatises on the government*. Moscow-Chelyabinsk: Social life.
- Malthus, T. (1998). *Essay on the Principle of the population*. London, 1798, Electronic Scholarly Publishing Project.
- Menger, K., Bem-Bawerk, E., Wieser, F. (1992). *Austrian School in political economy*. Moscow: Economics.
- Mirabeet, H., G. (1906). *Selected speeches*. Trans. From French. Kiev: Prince. S.I. Ivanova and K shop.

Montesquieu, Sh. (1999). *On the spirit of the laws*. Moscow: Thought.

Ryazanova, O.E. (2008). *Transformation of the institution of property in the context of economic globalization: monograph*. Moscow: MGOU Publishing, p.19-23.

Ryazanova, O.E. (2009). *Transformation of the institution of property in the context of globalization of the economy*: thesis for the degree of Doctor of Economics. Moscow: MGOU, p. 21-25.

Thiers, A. (1872). *On the property*. Trans. A. Stepanova. St. Petersburg: Typography V.V. Prac.

## Development of an Innovative Banking Market in Russia and the Developed World

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### Abstract

This article presents the development of information technologies that make a huge contribution to increasing the efficiency of most business processes and, on this basis, are the most important indicator of the competitive advantage of financial companies in the market. **Objectives.** Financial organizations representing cloud services are undergoing significant changes under the influence of information technology. Cloud services provide savings through standardization of equipment, virtualization, new features of multiple use of software applications, as well as paying for a new format for the use of resources by the client, which will be the main driving force of the global IT market in the next ten years. **Methodology.** Methods of analyzing the scientific and information base, methods of synthesizing the obtained data into theoretical conclusions and practical recommendations were applied. The methodological and theoretical basis of the research is the scientific works of domestic and foreign scientists on the theory and practice of economic and financial security. **Results.** Currently, there are two main areas of development and research for the state, financial companies, banks, as well as for software vendors in Russia and abroad. The first area is software as a service. In due course, all applications that have client demand do not require the need for a licensed purchase, their public access is put on the Internet. The second area is to allow access to applications via mobile devices. **Conclusions.** The development trend looks so that there is a great industrial revolution in the financial services market, where IT technologies, speed, availability and security come to the fore. Partnership relations of financial companies with IT suppliers, government agencies and banks will contribute to the country's high growth in the market of innovative technologies and the development of the digital economy.

**Keywords:** IT-service; financial services; third platform; information technology; digital service.

### Introduction

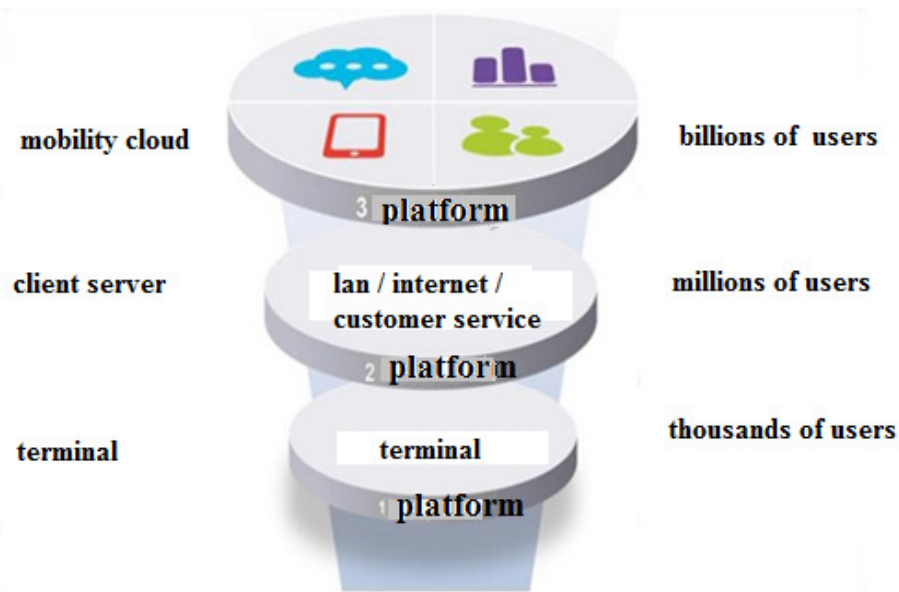
Currently, the total volume of the world IT market exceeds 2 trillion USD. The largest part of the market in terms of costs is equipment. An enormous increase in the volume of information provokes demand for servers and systems for the transfer and storage of databases. The global distribution of information processing centers and cloud solutions ensures stable demand for a wide range of network equipment. The personal computer market is systematically dropping, while the mobile device market is growing steadily. The demand for IT services is guaranteed by the growing diversity and complexity of the IT systems in use, which require large costs for installation, integration, study and maintenance. IT-outsourcing (partial or complete transfer of works on support, maintenance and modernization of IT infrastructure to the hands of companies specializing in this type of work) is one of the promising directions in this market. This system can be represented as an interrelated monitoring program that includes strategic, project, transactional, operational services, as well as services of quality and control (Figure 1.1).



**Fig. 1.1: IT outsourcing scheme and its components**

Much attention is paid to cloud technologies, the analysis of large amounts of data, the integration of mobile devices and social networking technologies in the corporate environment in a diverse range of strategic directions of IT development. The volume of these technologies and IDC processes (International Data Corporation) is combined into a typed definition "third platform", the development of which will lead to the transformation of business models in most industries in the next few years.

The development stages of IT-direction IDC can be represented in the form of three platforms. The first platform was built on the basis of mainframes and terminals, which had been utilized by thousands of applications and users. The second platform is based on traditional personal computers, the Internet, client-server architecture and hundreds of thousands of applications. The third platform is characterized by a rapidly growing number of mobile devices constantly connected to the Internet in combination with the extensive use of social networks and a developed cloud infrastructure, applicable for solving complex analytical tasks and for mass use of contactless technologies. Applications, content and services based on third platform technologies are available to millions of users. Cloud platforms, large data, mobile and social technologies provide mutual development. Obviously, users of a progressive number of mobile devices produce more and more content that is more convenient to store in the clouds. Due to the growth of mobile devices, users are creating activity in social networks. The content accumulated in them becomes an important source for analyzing and extracting valuable information through the use of large amounts of data. The development of the IT-technologies market, created on three platforms, with components of each platform level included, is given in Fig. 1.2.



**Fig. 1.2: Three platforms for the development of IT services**

The third platform is a method of applying applications from mobile medium to provide access to corporate data, information from social networks, analytical calculations of this access online and build further actions based on information analysis. The remarkable thing is that applications can be located in different types of media, both in personal and in public. Repeating what had been said before the last platform is based on four indicators : complete database, mobile devices, cloud services and social technologies. These indicators mean technologies and new generation architectures for the economic achievement of the results from more data of the whole volume by their instant capture, processing and analysis. Full database technology has three distinctive features: speed, variability and volume. Volume means that a huge amount of information is analyzed in tens of terabytes. Speed means the capture and processing in real time. Variability means that the data is taken from different sources and in different formats.

Cloud solutions are at the heart of the third platform, as they designate remote, non-contact access to information resources produced using mobile devices. Cloud services provide economy by standardizing equipment, virtualization, new features of multiple use of software applications, as well as paying for a new format for using resources by the client. According to IDC research, the budget for public cloud products and services in the world in 2016 was 100 billion USD and a further forecast for the next 3 years indicates an increase in costs in 5 or more times. Today, 16 of the top 100 software companies receive the majority of their profits by means of the revenue from the cloud model. The third platform is a technological revolution in the sphere of consumption and demand for IT technologies, as a result of which new types of business models and schemes are formed. The development and expansion of mobile devices and mobile access is another major element of the third platform. The colossal annual growth rates of mobile device sales encourage organizations to dynamically implement the concept of using their own employee devices (BYOD) by deploying specialized solutions for the safe and efficient integration of personal mobile devices into the corporate IT environment. Mobile applications become a component of communication between the device and the user. Most business offers today have a mobile version or represent a mobile application development environment. The development of applications for private consumers has a great impact on the growth of mobile application market intensity indicators.

Social networks have become the standard tools for attracting customers and providing products and services.



## Materials and Methods

A number of limiting factors are typical for modern IT-infrastructure these days: size of premises, high energy consumption, individual connection and installation, provision of highly qualified employees. The newly developed IT-technology should be integrated into the existing infrastructure, which requires solving only additional integration tasks. Solutions of the convergent infrastructure are voluminous, easily configurable and energy-saving all-in-one systems, automated from the point of calculation of costs, which were created using the latest IT equipment and can provide solutions to problems. Today, an open series of convergent infrastructure systems is already available on the market, combining: computing devices, storage systems, network equipment, software for virtualization and infrastructure management on a preconfigured platform from a single supplier. A number of companies, such as HP, IBM, EMC and Oracle, already provide similar solutions that allow the user to choose the configuration that best suits his needs and is most cost effective. The classic center is a combination of servers, storage systems, network equipment of various suppliers that have formed an IT infrastructure for many years. Such a diverse environment was created as a result of automating specific business processes using the best solutions.

As a rule, it is difficult to create and produce centralized management of the entire infrastructure in such centers, since each separate element has an individual management system. The bottleneck in the functioning of such computer centers is the diagnosis and elimination of malfunctions in work. The converged infrastructure concept offers the "all-in-one" class solution for the entire infrastructure. The acquisition of a set of infrastructure equipment from one supplier eliminates many integration and compatibility issues, and also allows the control of infrastructure management, since the software is specifically designed for that particular equipment, and the service is provided by the same supplier.

To date, the implementation of convergent infrastructure systems is shifting from the pilot operation stage to a wider use. This is facilitated by significant advantages in terms of reducing downtime, saving costs, increasing the productivity of IT staff and more efficient use of IT resources in general. According to IDC analysis, the total market of network equipment, servers and external storage systems will increase in the next 5 years with an average annual rate of 0.1%, while the supply of converged network equipment, servers and external data storage systems - 19.6%.

Information make a huge contribution to increasing the efficiency of most business processes and, on this basis, are the most important indicator of the competitive advantage of financial companies in the market. At this time the growth rates of IT projects are initiated by business users. According to IDC research conducted over the past 3 years, 63% of business leaders interviewed in 2015 conducted local IT projects independently, and 41% financed projects without innovative technology participation.

The scale of IT projects is growing, thereby developing new competencies in the work of financial companies. As of today, knowledge of the structure, business processes and goals of financial companies is not enough, one needs to participate in the development and analysis of the development of corporate strategy and business planning.

Meetings are held annually to study the trends in the development of financial innovation banking from the Bank Administration Institute, in which bankers, representatives of credit companies, analysts and specialists from financial institutions from around the world take part. Nine vectors of development of IT-services in the sphere of financial innovations are revealed:

1. Platformification of banking. The combination of credit and financial institutions with fintech companies will become centers for the distribution of a large range of solutions and financial products and services, which will enable them to use the bank's advantages of size, trust, skills and experience with compliance. Banks and financial institutions will attract customers at every stage of their purchase, as 2/3 of customers' decisions are made based only on experience from previous acquisitions.

2. Decision-making based on data analysis. Acquiring and applying previous customer experience can be the main distinguishing feature for a company building new relationships and strengthening old ones. A study by GAPGeminy found that more than 60% of US financial institutions consider data statistics as the basis for a significant competitive advantage, and 90% are convinced that the success of initiatives is directly related to the results that will determine success in the market. Drawing a conclusion: having a database and access to its analysis and processing is not enough for consumers, the provision of recommendations in real time is required. It should be noted that marketing services have become such an internal consumer since the middle of 2016.

3. Opticality. The next step after multi-channeling (communication with the client through several different channels) and omni-channeling (simultaneous communication with the client through all channels) is opti-channeling, which implies the usage of the most beneficial channel for the client created based on the preferences and needs of the client. This is explained as follows: Instead of offering different solutions, the analysis of BIG Data will propose for the company exactly the channel that will be able to provide the client with the best user experience. This system will lead to the transformation of all banking products and services, the client will be able to receive an overdraft directly in the store when appropriate, and if necessary, to control savings and expenses by applying the solutions of opticality.

4. The growth of digital payments and the creation of a digital economy. A study conducted by Accenture North America Consumer Digital Payments Survey Company revealed that the number of customers who know about the possibilities of using mobile devices to perform transactions is 40% more than the number of customers who actually use these types of services. Over the past 2 years, the number of users has increased by 18%, and the number of informed customers has increased by only 10%. Experts believe that the partial fault can be the uncertainty of customers in the large selection of e-wallets and applications provided. The growth of digital operations will continue and this will not yet threaten the classical banking products.

5. Focus on innovation. Innovation is already a proven way to differentiate and compete. But the point is whether banks will be able to reproduce the best practical solutions of fintech startups by applying their leadership in the client base, thus creating a challenge to the changing market of services.

6. Study of high technologies. Blockchain, automatic advisors for investments (robo-advisors), artificial intelligence, biometric authentication and Internet of things - all this is listed in the BAI report. Analysts make forecast that all of the above technologies will be introduced into the financial system of the market during the current year.

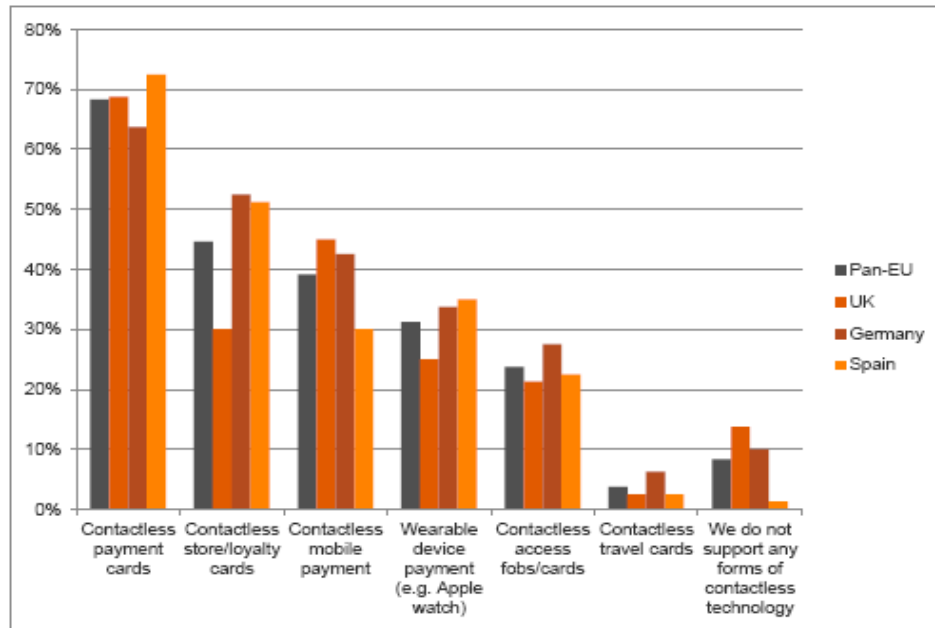
7. The emergence of new types of banks. Definitions of "neobank" or "bank-applicant" are actively used to characterize banking organizations starting activities from scratch and not relying on back-office support of other banks. The founders of this activity are neobanks in the UK. Neobanks appeared in 2016 in Germany, Malta and Denmark. Forecasts for 2017 indicate the emergence of such types of banks around the world.

8. Search for new talents. The attraction and retention of the best talents in the digital sphere, which support the internal cultural changes of banks, has become a priority in 2016. According to Accenture, more than 62% digital companies see a major challenge in digital transformation as a lack of skills for staff, as well as attracting and retaining the best employees.

9. Answers to change in regulation. New European regulations require third-party access to open APIs from banks. This is both a risk and an opportunity for banks. The solution to this issue has not yet been found, but API experts consider this necessary, since obsolete legacy systems greatly complicate the integration of new products, thereby hindering the technological development of banks.

## Literature Review

Day by day IT innovations bring us closer to the moment when one does not have to make visits to branches of bank offices for banking services. According to the PLUSworld.ru, Gemalto company, currently 92% of all companies in the European Union support contactless technology in one form or another, with the most common contactless payment cards - 68% of companies, respectively mobile payments - 39% and with wearable devices payment - 31% (Figure 1.3).



**Figure 1.3: The level of penetration of contactless payments (European Union)**

It follows from Figure 1 that penetration level of contactless cards in Germany, the United Kingdom and Spain is almost the same, but only 25% of British companies use wearable devices, while only 34% of companies in Germany and 35% in Spain use them. In addition, the chart shows that Spanish companies are less prepared for contactless mobile payments (used in 30% of companies), compared with 43% in Germany and 45% in the UK.

Technical equipment develops relative to operations in the online network. Financial companies that want further development switch over to remote service channels. The development trend is simple: the more it is profitable for the bank in the financial plan, the more it is convenient and easier for the client.

## Results

Drawing a conclusion: the predominance of regional users of online services among banking customers is associated with a number of reasons. Firstly, there are more regional customers than in Moscow and St. Petersburg. Secondly, the growth of financial capability in the country influenced their activity in the part of using online services. Thirdly, remoteness from offices affects the need to have access to remote services - most often the offices of banks are located in the city center in regions, and a significant number of people live in remote access. The majority of internet banking users (56%) and mobile banking users (61%) are male. The statistics of the online services clients by age shows the following data for the Internet bank: 37% at the age of 25 ... 36 years, 30% - over 45, 29% - 36 ... 45 years and 4% - under 26 years old; and the following indicators are about a mobile bank: 53% at the age of 25 ... 36 years, 24% - 36 ... 45 years, 13% - over 45 years and 10% - under

26 years. In terms of customer income, the online banking service was divided as follows: 43% of Internet bank users and 43% of mobile bank users earn 25 ... 50 thousand rubles; 24% of Internet bank users and 20% of mobile bank users earn up to 25 thousand rubles; - 20% of Internet bank users and 21% of mobile bank users earn 50 ... 75 thousand rubles; and 13% of Internet bank users and 16% of mobile bank users earn more than 75 thousand rubles. Russian banks keep up with the times, developing remote channels for customer service. Inference should be drawn that if a third of customers in Moscow use an Internet bank, then most of the regional clients of the Russian banking sector still prefer to receive documents on the operation performed in hand, relying on the view that it will be possible to provide the credit organization with the documents received in the event of technical errors, thereby proving their rightness. Perhaps this is the main reason for the conservative attitude to remote service channels. Despite many reasons that slow the development of RBS in Russia, all credit institutions will switch to remote maintenance in the next 3 - 5 years. The largest analytical agency Markswobb Rank & Report conducts annual research on the development of online services and products of banks and its statistics show an increase in the growth of the mass number of customers who prefer remote services. It is necessary to introduce a number of transformations to accelerate the development of the Russian remote market, which are extremely necessary for the banking networks. Top-5 transformations are as follows.

1. Development of remote communication channels and reducing the number of offices. Technology and electronic financial services are rapidly developing. "Virtualization" of people's lives is increasing, and the number of clients in the offices is not enough for the economic substantiation of the content of an extensive network of offices.

2. improvement of the effectiveness of front-office systems and processes, reducing waiting time in the queue, separating the client stream, simplifying the operations, optimizing the work of the branch staff, developing technology for customer comfort.

3. Reduction in the number of communications to solve one issue. The ability to solve all customer issues for one visit to the office or one communication. Integration of functions into a "single window", provision of initially prepared proposals to the client, compiled in accordance with the behavioral model of the client.

4. Improving the quality of the dialogue with the client. Creating an atmosphere of trust, providing customers with timely and complete consultation on financial matters and operations. Advanced training of client managers in both the B2B and B2C segment.

5. Increase of the convenience of the digital environment in the office space. Convenient spaces of electronic environment for short service operations in the bank office. Increase of technical equipment of self-service zones.

Development of remote channels of customer service, attracting new customers, financial consulting and solving complex financial issues should be the main function of the standard offices of credit institutions.

Large Russian organizations choose a different path of development, mainly building individual clouds. Cloud technologies are mainly used to provide non-crisis applications and test programs at the current stage of IT development in Russia.

## **Results**

Considering the development trends and the influence of the third platform on the development of Russian financial companies, it can be noted that, on the one hand, IT service providers as high-tech companies are starting to incorporate new technologies of the third platform in order to be able to implement and test for the customer. Thus, many system devices in Russia reprogram their IT infrastructure into the cloud and develop mobile technologies. Also note that a large number of suppliers began to support users not only by phone and e-mail, but also through social media. These technologies are used to optimize the workflow, for example, checking for malfunctions in the operation of customer equipment and remedying identified faults remotely. On the other hand, IT service providers are actively developing the services of providing training and implementing

solutions on the technologies of the third platform. The provision of cloud hosting services is in great demand among customers. New types of services are created, called the cloud broker. The cloud broker is an intermediary between cloud providers and cloud consumers, it integrates cloud services from different suppliers, monitors the use and security of the cloud solution complex. This service is becoming popular with IT providers, and they are actively engaged in the development of centers and training specialists in this field.

It is necessary to introduce new trends in the development of the banking industry for the advent of the new digital era, without which the development of the bank as a digital client-oriented company will not be possible. The author offers 10 indicators of a digital client-oriented company:

1) individualization: Today, with the rise of API technologies, any services can be connected to the payment banking infrastructure or it is possible to integrate new capabilities into own platform. This strengthens old relationships with customers and creates new ones;

2) work in the 24/7 mode: all banks switch to the possibility of constant access to financial services for clients. Such programs as WeChat, Facebook Messenger, Google Hangouts, Whatsapp, etc. actively develop and gain popularity;

3) focus on representatives of small and medium-sized businesses: small businesses, cooperating with banks, brought them a big risk, but today, through integration with financial start-ups, banks get new access to scoring entrepreneurs and can allow the reanimation of this huge number of potential customers;

4) voice transactions: The new format of the interaction form in online banking applications allows to notify the client about unplanned expenses and other events on his accounts in a voice form;

5) wearable payment devices: choose any object convenient for you as a means of payment. You will have the right to choose any thing, for example, a bracelet, pendant or branded pen that will be able to pay for purchases by simply touching the terminal;

6) a new level consulting: today banks provide a service, recalling your friend's birthday, but soon they will be able to advise the gift, having analyzed his preferences according to the account and the possibilities of your budget. In addition, the analytical platform will indicate the place where it is more profitable to buy a gift. Banks, having the information about our expenses, will be able to provide actual advice. No more wasting time to choose a gift for a friend;

7) banking of things: the birth of a new financial direction is similar to the principle of the Internet of things. Digital wallets tied to the client account will be built into cars, refrigerators, light bulbs, etc. Cars will be able to pay for parking automatically or pay for gasoline without human intervention, smart bulbs will pay for used energy, and the refrigerator will pay for the order of products and all this will be tied to the customer's account;

8) robotization of financial services: robotized consultants in the field of investment - this is only one of the directions. UBS already offers its wealthy clients analytical services to assess their capital in real time with the help of IBM's Watson supercomputer;

9) active social interaction: the representatives of the banking industry should know the desires of their customers, which gave rise to the trend of outsourcing banking ideas to clients who are given the opportunity to design and describe the banking products they are interested in. One example of such an approach is the Italian bank Widiba;

10) data monetization: banks already well understand that they have a lot of data about their customers: habits, expenditure headings, interests, etc. This information hardly had any use up until not long ago, but the picture is starting to change.

The statistics of the leading countries on spending on IT ranks Russia 13th in the world, far ahead of such developed countries as the Netherlands, Sweden and Switzerland. The share of leading countries in spending on IT - the US, China, Japan, Britain and Germany - accounts for 60% of the total

volume of the world market. China took the second place in the world in terms of IT spending, and China became the fastest growing market in terms of growth, the volume of which is increasing by more than 8% every year. Unstable growth rates during the year are provided by developing countries, such as Brazil, India and the countries of the Asia-Pacific region. The growth rate of IT spending in these countries significantly exceeds the annual growth rate of GDP, which indicates the use of information technology to increase the competitiveness of these countries in the world ranking.

In the coming years, innovative technologies will enable companies to modernize their storage systems into more productive ones, easy to manage and having compact dimensions. It is planned that the development of virtualization and the introduction of cloud technologies and the growth of diversity of projects will convince the company to invest in data storage software.

## Conclusions

Currently, there are two main areas of development and research for software vendors in Russia and abroad. The first area is software as a service. In due course, all applications that have client demand do not require the need for a licensed purchase, their public access is put on the Internet. The second area is to allow access to applications via mobile devices. Software versions are launched via mobile operating systems, such as IOS or Android. Russian users have long been attracted by the open source system, since it avoids the potential dependence on foreign suppliers. The main problem that arises when working with this direction is the lack of competent high-qualified specialists needed to create, implement, support and operate an operating mobile open source system. In the near future this direction should attract interest on the side of state, because the use of open source software in areas of strategic importance, will make a huge reset, which will bring state organizations to a new level of management.

Considering the interests of the state, as well as large companies that determine the bulk of the software market in Russia, software vendors do not forget about attracting small and medium-sized businesses. Large companies are currently at the stage of completing automation of business processes, and medium and small organizations are just beginning to take an active interest, which will provide suppliers with enough work related to the release and implementation of increasingly new types of cloud solutions and business process complexes. The model of software consumption will change dramatically after the transition to the general automated system of the entire market of financial companies in Russia. Instead of buying licenses, a new rental service will appear - subscription to the application. This service will include various types of options, which, if desired, will be added to its application. And the most profitable is that the payment will be made for the time of a particular use or for the amount of used traffic. The program of using cloud technologies in Russia is lagging behind the world results.

The state has adopted a program for the development of the IT industry until 2025, which encourages the development of partnerships between IT service providers and government agencies, namely: large-scale projects related to the supply of equipment, system and network association, consulting and cloud networks. These partnerships of IT suppliers with financial companies, state institutions and banks will contribute to the country's high growth in the market of innovative technologies and the development of the digital economy.

## References

- Kulikov N.I., Kudryavtseva Yu. V. (2017). Development of digital technologies of PJSC "Sberbank" and their effectiveness. *Banking accommodation*, 2: 37 – 47.
- Gagartseva N.V. (2014). A modern understanding of banking innovations. *Economics*, 3(4).
- Oblozhin S.Yu. (2013). On the classification of banking innovations. *TDR*, 3.
- Prosalova V.S., Nikitina A.A. (2013). The concept of banking innovations and their classification. *Territory of new opportunities*, 1 (19).
- Samorodova I.A., Medvedenko A.V. (2016). Innovative technologies of contactless payments as a factor of growth of the competitive advantage of a commercial bank. *Problems of Economics and Management*, 5 (57).

FinTech companies - competitors or partners. (2015). Russian Bankers' Association (RBA) Retrieved from [http://arb.ru/b2b/trends/fintech kompanii konkurenty ili partnery-9902037/#5395/](http://arb.ru/b2b/trends/fintech_kompanii_konkurenty_ili_partnery-9902037/#5395/)

## **The Research and Development Process of High-Performance, Spunlace Non-Woven Fabric Production at Novita S.A**

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### **Abstract**

The article describes the process of planning research and development work related to the production technology for high-performance, Spunlace non-woven fabric. The design of the technological line and research are in response to worldwide market demand for personal hygiene products manufactured in Poland. The expectations of customers in this regard concern increasing production and the guarantee of a better product quality. In view of the limited production capacities and the known technical problems in the enterprise studied, the authors designed the concept of a high-performance technological line for the production of non-woven fabric. A study was proposed consisting in developing a mathematical model of a technological line, creating its prototype and measuring the work, storing the data in a database and then using the empirical data measured, to parameterise the technological line depending on the properties and intended use of the products.

**Keywords:** Spunlace non-woven fabric, manufacturing, technological line, research project

### **Introduction**

**Novita S.A.** is a leading producer of non-woven fabric, manufactured with the application of Spunlace technology, that is, needling with water and mechanical needling. Thanks to the development strategy adopted, the constant search for new solutions in product development, as well as the knowledge of the strengths and weaknesses of the market and a skilful observation of its competitors, the **Novita S.A.** has been at the forefront of companies providing high quality non-woven fabric for the market. Based on our own observations over many years of activity and co-operation with entities from around the world, the Company's management is witnessing an unrelenting development trend in this sector of industry.

Due to the dynamics of market changes in the textile industry and knowledge of existing technologies for the production of non-woven fabrics, it was decided to use the TRL model for the commercialisation of works related to high-performance, Spunlace, non-woven production technology.

Therefore, tasks have been defined leading to the commercialisation of the entire innovation process in the form of a high-performance process line, producing Spunlace non-woven fabric, in particular:

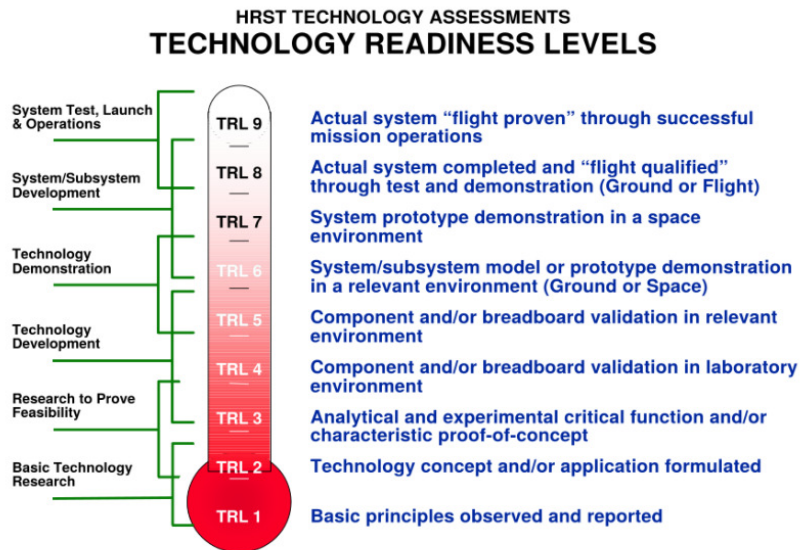


- developing the technological process concept,
- developing the theoretical model of a technological process,
- computer simulation of a technological process,
- conducting start-up and production tests of the technological process in relation to the defined process and product parameters,
- elaboration of the optimal tables for setting and regulating parameters of machines and devices at the technological line,
- determining the correlation between setting the parameters of machines and equipment of the process line and examining their impact on the course of the process and the quality of the final product,
- monitoring and control of the technological process.

### **Commercialisation of the Research Results**

Commercialisation of the results of the research conducted is an important impulse for introducing changes in an economic process. The search for new products, new consumer markets, new applications or new technologies is undoubtedly a challenge for the research and development (R&D) departments of economic entities. Usually, the idea of commercialisation begins with the development of a concept of a new technology or a new product. The idea continues with studies on a new solution and ends with any marketing activities that allow the product to be placed on the market. In the literature, various models of the commercialisation of research results are presented and they show some similarities due to groups of repetitive activities. An example of the above are the models by Jolly VJ (1997), Schumpeter (1964), Cooper and Edgett (1988), in which the segmentation approach to the commercialisation of research can be clearly seen. Initiation of the research process begins with an idea or a discovery and ends with commercialisation and the introduction of new solutions to the market. The whole process is quite lengthy and often very expensive which in turn discourages enterprises from investing in research and from searching for innovative solutions. Another method is the TRL model (Technology Readiness Levels) described by Shishkio, R., D.H. Ebbeler, and G. Fox. which simplifies and shortens the time of the final commercialisation of the research by assessing the maturity of new technologies, among other things.

This assessment will already include the state of work on the development of a new product or technology and will analyse prospects for further development, estimate the amount of financial resources required for the investment and will assume and measure the new risk. Thus, evaluation becomes a source of information and a tool supporting decision making. In this way, evaluation becomes a source of information and a tool supporting decision making. Sauser B., Ramirez-Marquez J., Verma D.Gove R., in the TRL model (Figure 1) is called Technology Readiness Assessment (TRA).



**Fig 1: Technology Readiness Levels**

On account of the long-term experience of R & D personnel and the fact that Novita S.A. is at the forefront of the Spunlace non-woven companies, levels 1, 2, 3 of the TRL research (Technology Readiness Level) were omitted, with the research process being started from level 4 of the TRL.

### ***1. Description and characteristics of industrial research***

According to the methodology adopted, industrial research is included in levels IV, V of TRL, described in Chapter 2.

As part of level IV, intensive research and analysis of available technological solutions for the production of a Spunlace product, with the possible scalability of the selected mechanical and quality parameters, were carried out. This activity has been divided into the following tasks:

1. specification of basic parameters (interchangeably: properties) of the Spunlace product, hereinafter referred to as the 'reference product', specification of the quality characteristics of the reference product and specification of the assumed mechanical parameters of the technological process;
2. analysis of the market of suppliers of complex technological lines and/or individual assemblies and devices for the planned technological process in the production of a reference product and modified products, due to selected parameters (properties) and quality features;
3. laboratory tests of product samples obtained from competing companies in terms of compliance with the reference product and analysis of the improvement of selected parameters (properties) and quality characteristics of the product, obtained with respect to the reference product.

The first task resulted in the development of a detailed specification of the reference product, in which:

- a) the parameters (properties) of the reference product (interchangeably: non-woven):
  - composition (20% of viscose, 80% of polyester),
  - linear fibre mass: from 0.9 to 1.7 dtex (*a conventional unit: 1 dtex = 10,000 m fibre/g*).
  - coefficient of fibre strength of raw materials used in the process of non-woven production, i.e. fibres arranged in the machine direction MD (along the direction of the technological line), for cross-directional fibres CD (Cross Direction): MD/CD <2.8  
*- determined on the basis of the strength standard PN-EN 29073-3 "Methods of testing non-wovens - determination of tensile strength and elongation",*
  - specific weight: 40 g/m<sup>2</sup>.
- b) general quality characteristics of the reference product (non-woven):
  - lack of foreign bodies: wood and metal micro-elements (optical evaluation based on a random sample - statistical method of the reference product obtained),
  - no discolouration (optical evaluation based on a random sample - statistical method of the reference product obtained),
  - no thickening (optical evaluation based on a random sample - statistical method of the reference product obtained),
- c) mechanical parameters of the technological process, based on written statements of the producers, in particular:
  - maintaining process stability with the speed of units and devices in the planned technological process for producing a reference product in the range of 250 to 300 metres per minute (in short: m / min) and transverse width of 3.2 m, i.e. achieving efficiency of 2 tonnes per hour (T / h)
  - maintaining process stability in a production regime of 365 days a year / 24 hours a day with OEE coefficient of 85% (OEE - Overall Equipment Effectiveness).

As part of the next task, a market analysis of equipment and machinery suppliers for the planned technological process, was carried out. Trade contacts were established with the most well-known producers and suppliers of equipment in the world, for the planned production line of Spunlace non-woven fabric. In the course of the analyses, it became apparent that there were no manufacturers or suppliers of comprehensive solutions for the production of the planned reference product on the market. Therefore, industrial research was limited to the manufacturers of critical equipment in the planned technological line, i.e., carding machines and water needles (totalling just 3 suppliers in the world).

Based on the materials and technical documentation received from leading manufacturers, it was found that the assumed parameters, both in the area of the technological process and as a reference product, were achievable. These were preliminary assumptions due to the necessity of individually considering the technical parameters achieved by individual and independent devices, *not* for considering the entire designed technological line, as had been expected. As a result, the development of an original innovative technological solution, consisting of independent devices, supplied by different manufacturers, was planned which would guarantee mass production of a defined reference product. Therefore, the following methodology for the research, based on modelling and theoretical simulation, followed by the design and building of the prototype and ending with testing and launching the planned technological process, was adopted.

The third task was limited to material and quality tests of non-woven samples with specified characteristics of the reference product. Samples were obtained from manufacturers of non-woven Spunlace, as indicated by producers and suppliers of equipment for the planned technological process. Although the non-woven samples were in line with the intended reference product, none of the producers or suppliers, during industrial research by Novita S.A., confirmed that the reference product was manufactured in accordance with the assumed mechanical parameters of the technological process.

In the next level of conducting industrial research (TRL V), within two months, the R & D Team of Novita S.A. carried out an analysis of the mechanical parameters and technical and operational documentation of the machines and devices for the technological process planned. To this end, the largest producers and suppliers of equipment in the world were visited, in particular manufacturers of carders and water needle looms for the production of the non-woven, Spunlace type. Unfortunately, none of the producers was able to present the full technological process of non-woven Spunlace production, in accordance with the adopted mechanical parameters of the technological process. All attempts concerned only selected activities in the process, which were performed by the devices under the test and manufacture of semi-finished products.

On the basis of the semi-finished products obtained (e.g. web after carding), it was not possible to clearly determine the parameters and quality characteristics of the final reference product. In addition, it was not possible to assess the stability of the process, *vis-à-vis* breakdowns/stoppages or its performance due to the short length of time that the sample was presented. Therefore, the assurances and guarantees of the above producers and suppliers could be viewed as '*theoretical*' to say the least, there being no possibility of examining them in a near real-life environment.

The industrial research carried out by **Novita S.A.** confirmed that the planned technological process, *as based on the received documentation, visits to enterprises producing individual teams and machines and samples of products obtained through the above-mentioned suppliers*, is theoretically possible. On this basis, it was found that achievement of the parameters of the reference product assumed, as well as the technological process, is conditional upon the following development works being implemented:

- modelling and simulation of the technological process of the production of Spunlace non-woven fabric, in order to select assemblies and devices;
- construction of a prototype, commissioning it, testing it, collecting and processing the ensuing data, in terms of the optimisation of the parameters of the technological process of the production of Spunlace non-woven fabric,
- stability/failure testing of the technological process of the production of Spunlace non-woven, at the assumed efficiency

Unfortunately, such knowledge could not be obtained from either the producers or the suppliers of assemblies and machines, due to the lack of appropriate tests, nor could it be obtained from competitors, due to the protection of commercial data.

### ***Research Methodology***

As a result of the industrial research conducted and the applications received, a decision was made to carry out the project and then to build a prototype technological line for the production of high-performance, Spunlace non-woven, in accordance with the parameters of the reference product adopted. Based on the methodology of conducting development works (level VI of the TRL), a mathematical model and its testing, by means of a computer simulation of a technological process for the production of non-woven Spunlace fabrics, was planned. The aim of this part of the project will be a detailed description of the technological process, consisting of various, independent, specialist sets of machines and devices for the production of a reference product, with a scalability option, i.e. changing the weight composition of non-woven fabrics and the diversification of its components, with such as viscose and polyester. It is assumed that the basic research parameter for the entire process, consisting of various machines and devices, will be the winding speed of the finished product. It is also assumed that the object of the research will be to adapt the work of all the machines and devices, configured in the technological process, in such a way that the process of winding non-woven fabric with a width of 3.2 m, will take place effectively at speeds ranging from 250 to 300 m/min while maintaining the quality parameters defined by the end-users of the non-woven fabrics produced. During industrial research it was found that

there is currently no credible confirmation that any producer is in continuous production with a system line efficiency of over 80%, for producing a non-woven fabric with the indicated product reference parameters nor with the proposed technological line settings.

The design of the model for the non-woven fabric manufacturing process, with a defined reference product and assumed performance and quality parameters of the process, will be limited to the configuration of machines and devices, implementing the technological process and their interconnection, in order to ensure a proper coupling between them, in the context of material flow and control signals. On this basis, it is planned to develop a mathematical model by means of which a simulation will be carried to imitate the actual state of the technological process. Hence, on the basis of the process simulations performed, the theoretical dependencies of particular parameters, both for settings and/or for controlling the parameters of machines and devices, in particular, regarding the final, defined effects of the process, will be determined.

All machine and equipment assemblies, responsible for the implementation of specific technological operations in the Spunlace, non-woven production process and their adjustment capabilities, which previously affected defined key parameters of the technological process, have been defined for the computer simulation project; in particular:

- the feeding assembly,
- the carding machines assembly,
- the water needle loom,
- the dryer,
- the winder.
- 

On this basis, the R & D research team will prepare a research programme based on:

- o definition of physical quantities, including appropriate units of measurement, their tolerances and the range of changes affecting the continuity and stability of the technological process designed,
- o development of a theoretical model of the technological process through the mathematical recording of parameters, defining the above physical quantities,
- o development of the correlation of changes and the mutual influence of individual physical quantities, using operational research methods,
- o downloading the model adopted to a selected simulator and conducting research with the use of IT tools, enabling the scope of changes and the mutual influence of research parameters to be determined, that is, the previously indicated parameters of the technological process, characterising the physical properties defined,
- o collecting data, working out the results and preparing the settings of those parameters tested, for their different variants *vis-à-vis* the model of the technological process adopted.

As a result of the planned tests, a database containing parameters with their modulation ranges for individual assemblies and process equipment should be created to ensure that, theoretically, a winding speed is obtained for the non-woven fabric, ranging from 250 to 300 m/min with a width of 3.2 m for the reference product and products with a variable fibre ratio, variable fibre weight and variable MD/CD - which should be no higher than 2.8 - and variable specific gravity.

An additional effect of this part of the research will be the design of a remote system for monitoring the work parameters of individual elements of the technological process.

In the next level, according to the methodology for conducting development works adopted (level 7 of the TRL), a prototype of a technological line for the high-performance Spunlace non-woven fabrics and a test

launch are envisaged. The aim of this stage will be to check the conformity of the developed mechanical parameters of the designed technological line, that is, the parameters of settings registered in the database based on theoretical tests and simulations: TRL - level VI) under operating conditions.

It is assumed that at this stage, all mechanical parameters, related to the operation of both individual device sets will be checked, as well as those related to the full technological process. In particular, it is planned to measure the velocities and parameters affecting these speeds on the individual sets of devices in the process, related to the transport of processed fibres and the production of Spunlace non-woven fabric. Additionally, in order to optimise the parameters of the technological process, it is planned to measure its reliability *vis-à-vis* the following parameters:

- **process stability** resulting from the synchronisation of the operation of all device sets in the process, to include measurement of the slowdown or stoppage of the process,
- **uniformity of the process** resulting from a uniform loading of devices working in a parallel system, e.g. a fibre mixing operation, that is, measuring the quality of the mixed fibres using the optical method,
- **durability of the product** resulting from the measurement of the MD/CD ratio, which should be no higher than 2.8 for speeds ranging from 250 - 300 m/min, while maintaining the highest possible speed. It has been assumed that the needling operation and the associated pressure setting of the technological water, hitting the transported non-woven fabric, that is, the measurement of the non-woven fabric tension which is a finished product, will have the biggest impact on this coefficient,
- **process quality** resulting from the speed of finding impurities caused by the input material, that is, the quality of purchased BIGBAGs with viscose and polyester for measuring waste material due to the appearance of impurities.

The final level of the planned tests (level 8 according to TRL) will be a demonstration of the designed technological line, taking into account changes in the value of the technological parameters obtained during the trials and tests of the prototype of the technological line designed. As a result of the ongoing development works (TRL: levels 6 and 7), the database settings should contain optimal mechanical parameters (winding speed) and guarantee the appropriate quality parameters (colour, uniform thickness, MD/CD ratio not higher than 2.8) in the non-woven fabric produced. Therefore, it is planned to carry out tests with the aim of obtaining uniform quality parameters of a non-woven reference product and other variants related to the change of non-woven properties and mechanical parameters of the technological line.

The research process will include the design of measurement points, installation at measurement points and then reading and analysing the selected quality parameters through the control and measurement solutions available on the market.

It has been assumed that the optimum operating ranges of the technological process will be determined empirically, in order to guarantee the achievement of basic mechanical parameters (i.e. production speed in the range from 250 to 300 m/min and non-woven width of 3.2 m for different weight mix of fibres, with an MD/CD strength of no higher than 2.8) and the quality parameters specified by the non-woven recipients (uniform/even weight, uniform thickness and strength of the non-woven) in the pipeline production and an uninterrupted work regime, i.e. 24 hours a day/360 days a year, with OEE=85%).

## Conclusions

Demand for non-woven fabric, which is the subject of this article, has been increasing dynamically in recent years. The forecasts for future years are also encouraging, in the context of the newly emerging markets of Africa or South America [edana report]. In order to meet changing market conditions and

competition, NOVITA S.A. decided to implement an innovative technological line for the production of Spunlace non-woven fabric. This line and its individual modules are described in this article. The planned research process and its stages have been outlined and are described in detail. The implementation of the technological line outlined here at NOVITA S.A. will contribute significantly to the increase of production capacities and the production of non-woven fabric with the qualitative and quantitative properties required in a demanding market of personal care articles.

## References

Cooper, R.G., Edgett, S.J., Kleinschmidt, E.J. Best Practices for Managing R&D Portfolios, *Research-Technology Management* (41)4:20-33, July-August 1998.

<https://www.cheatography.com/davidpol/cheat-sheets/dod-technology-readiness-levels/>

[https://www.nasa.gov/directorates/heo/scan/engineering/technology/txt\\_accordion1.html](https://www.nasa.gov/directorates/heo/scan/engineering/technology/txt_accordion1.html)

[https://www.nasa.gov/pdf/458490main\\_TRL\\_Definitions.pdf](https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf)

Jolly, V.J, *Commercializing new technologies: getting from mind to market*, Harvard Business School Press, Boston 1997,s. 3.

Sauser B.,Ramirez-Marquez J., Verma D.Gove R.: From TRL to SRL: The Concept of Systems Readiness Levels Conference on Systems Engineering Research Los Angeles, CA, April 7-8, 2006, paper #126

Schumpeter, J. A., *Business Cycles. A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, McGraw Hill, New York 1964

Shishkio, R., D.H. Ebbeler, and G. Fox. "Nasa Technology Assessment Using Real Options Valuation." *Systems Engineering* 7, no. 1 (2003): 1-12.

## **Organisation of the Research Process into an Innovative, Anti-Clogging Assembly for Heavy Vehicles in the Interests of Increased Road Safety**

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### **Abstract**

Safety in road traffic is crucial and depends on many factors related to the road conditions, the condition of vehicles, etc.

Safe road traffic, especially during rain and snow, is a task that requires optimum road conditions, both in terms of the road surface and the motor vehicles that travel on it. In the context of cars, it is important that during heavy driving conditions, such as in rain and snow, vehicles do not create spray in their wake or churn out large lumps of slush which has become lodged in a car's - *or in a truck's* - wheel arches. The article presents the concept of the research process for designing, developing and implementing the technology for the mass production of an innovative "anti-clogging" assembly for mounting in the wheel arches of trucks, which will facilitate the automatic and continuous removal of excess rainwater and dirt, in particular slush, during driving and stopping.

**Keywords:** designing, technology development, implementation for mass production, mudguards or mud-flaps with an anti-clogging facility, road safety, automotive industry,

### **Introduction**

Many mudguard manufacturers struggle to adequately remove the large amounts of rainwater- *which fly off the wheels of vehicles, in all directions* - in order to reduce risks for other vehicles along the road. There are known attempts to solve this problem by properly directing the inner surface of the mudguard, in the direction of the wheel. However, an important problem with shaping the mudguard's surface, especially in winter, is the slush or mud coming from the road surface. The repeated spattering and accumulation of dirt, on the surface of the mudguard, often renders it quite unserviceable for draining rainwater. As a result, frozen lumps of ice or mud which have become large enough, fall off and pose a serious threat to other road users. Solutions available on the market do not cater for all the needs of the wide range of road users, primarily because they do not eliminate the risks posed by large trucks in traffic, in difficult weather conditions and also because none of the mudguards, available on the market, combine the prevention of mud and slush sticking to the wheel arches with draining the rainwater (Figure 1). Pursuant to European Union Directive 2007/46/EC, category N and O vehicles (*i.e. motor vehicles with at least four wheels, which have been designed and constructed for the carriage of goods, including trailers, with the exception of off-road vehicles*) must be built or equipped with spray suppression protection on the wheels to comply with the provisions of Directive 91/226/EEC.



Mudguards facilitate a reduction in the rainwater spraying from truck wheels, while meeting all the requirements set out in Directive 91/226/EEC. The special structure of the mudguards is to reduce the impact of the rainwater, absorb it and drain it directly back onto the road surface. Limiting the churning up of rainwater from under the wheels, as spray, increases the safety and comfort of other road users.



**Fig. 1: Slush, packed tight, in a vehicle's wheel arch**

In 2016, there were 36,664 accidents in Poland, 1/3 of which took place in the period January to February and September to December; these accidents happened mostly because of the driver's maladjustment of his speed to road conditions. Almost every third event took place during rain or snow, or on a cloudy day. The scale of the problem is greater, naturally, when more vehicles are on the roads. Observing market data, it can be noticed that:

- 1) regarding sales of new trucks in the EU, in 2016, there was a recorded increase of 11%, which means that 365,051 vehicles were sold. All member countries recorded smaller or larger increases. In the two largest markets - Germany and France - the increases were well below the European average and amounted to 3.1% and 12.6% respectively. Poland, with sales of 26,628 trucks, (18.7% more than in 2015) also made a significant contribution, once again taking 4<sup>th</sup>. position in the ranking as reported by ACEA, or Association of European Automobile Manufacturers.
- 2) According to ACEA, the upward trend should continue over the long term, according to Automotive World Ltd. Demand for heavy vehicles in Europe will remain high over the next few years
- 3) Analyzes prepared on the basis of data from Central Register of Vehicles (MSW / MC) show that it has a DMC (Permitted Maximum Weight) of over 3.5 t; this is 245 units more than the previous year (+ 14.1%) and at the same time, was the best result since 2009,
- 4) As it results from PTM research in 2016. There was an increase in the registration market for new trailers by 13%, but only by 1.5% growth in the used semi-trailers market. The growth of the new vehicles sector results mainly from the growing demand for curtain semi-trailers for international

transport. Companies such as Schmitz, Krone, Wielton or Koegel can be mentioned because together they delivered almost 14,000 semi-trailers with curtains.

**DAF** became the sales leader in the Polish truck market in 2016, with their sales of 4807 vehicles, gaining more than 23% growth. **MAN** ranks second with 4691 vehicles sold and a recorded increase of 12.1%. **Volvo Trucks** sold 4,526 vehicles, which means a year-on-year increase of up to 36.9%. **Scania** sold 4439 vehicles making that a jump in sales of over 25%. **Mercedes-Benz** (4,000 units) recorded an 8.5% increase according to PZPM data.

According to the statistics of the International Council for Clean Transport (ICCT), there were about 13 million heavy trucks and 23 million light vehicles on European roads at the end of 2015. Forecasts predict that the trend is growing and by 2030, numbers will reach 15 million for heavy vehicles and 24 million for light vehicles, respectively.

The conclusion is that the demand for assemblies, including wheel arches, anti-splash mud-flaps with an anti-clogging structure and a system to connect them up, *the so-called "anti-clogging" system*, could amount to 78 million units in Europe and that is considering heavy trucks only and assuming a minimum of 6 wheels each. The above forecast depends on several significant factors, such as economic growth, fuel prices, the demand for transport services for goods and people, all resulting in increased demand for new trucks, trailers, semi-trailers, buses and coaches.

## Defining the Research Problem

Following the needs of the market, as defined, the research problem being considered concerns the design and development of technology and the introduction of the mass production of an innovative, anti-clogging assembly for mounting in passenger vehicles and load bearing vehicles weighing over 7.5 tonnes.

The research area covers material engineering and production engineering for selected material groups, i.e. polymers, as well as materials and alloys, taking into account the links between groups or composites. The starting point will be a design for a mud-flap or mudguard which is *"clog-free"* and so shaped, that it will be possible to automatically- *and continuously*- remove any excess rainwater and any dirt, including slush, minimising as it does so, any spray from escaping from under the wheels, on account of the roughness of its surface and the fact that it is mounted in the wheelhouse arch of the truck.

It is expected that the concept of an anti-clogging flap or guard, creating a unique anti-clogging system *in tandem* with the wheel arch, will be an integrated product that satisfies the needs both of carriers and vehicle manufacturers in terms of significantly increased comfort and safety for drivers and other road users. It has been assumed that this will be achieved by shaping the surface of the flap as three-dimensional protruding laths; this will create the desired roughness, which, in turn, will break down the crystallised snow clumps, thereby aiding drainage. This roughness will be appropriately, densely distributed over the entire surface of the mud-flap and will be appropriate in length with the profile of its curvature having been modelled during the research process. In addition, the entire shape and design of the wheel arch will be conducive to the mud-flap's *"anti-clogging"* function and it will be so constructed as to control vibrations to the mud-flap, in order to give extra *impetus* to removing the snow and slush.

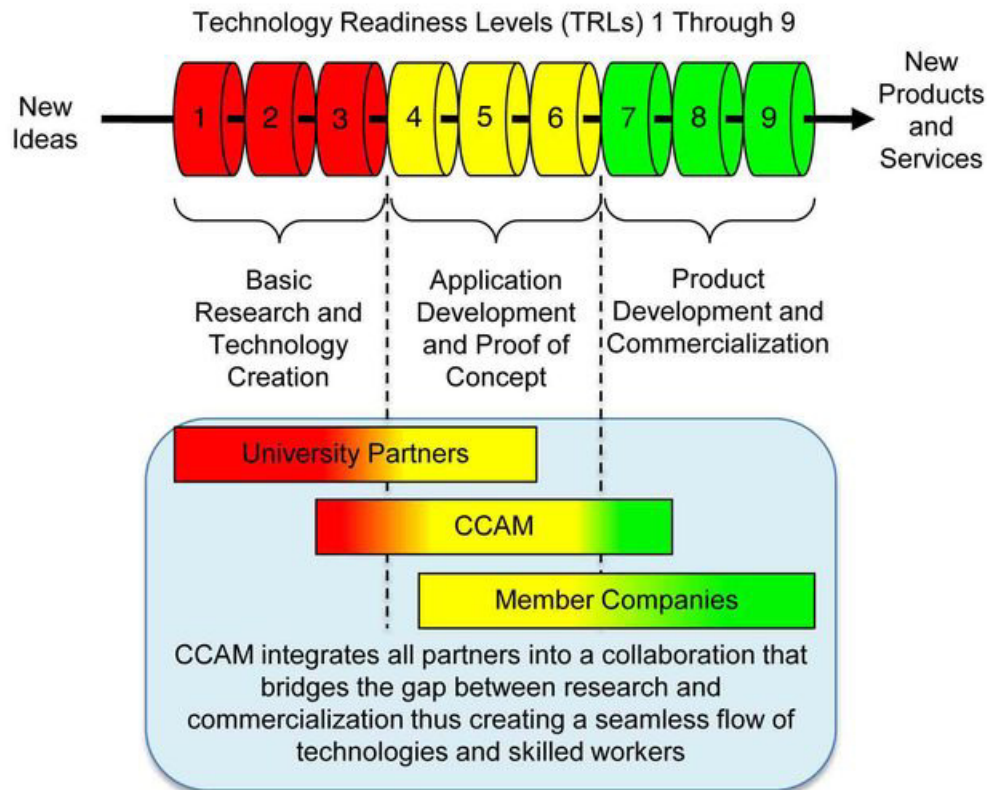
In connection with the above, the *"anti-clogging"* assembly is aimed at **preventing**:

- **uncontrolled splashes** of rainwater in the wheel arch space, which is pumped out of the pool of liquid back onto the road surface with the laths this increases rolling resistance and increases fuel consumption;

- **the snow and slush from collecting**, sticking and crystallising; this, also increases rolling resistance and increases fuel consumption and at the same time, poses a danger for other road users, on account of the very large, hard lumps of ice and slush falling off the vehicle;
- **the negative impact**, on the operation of EBS, ABS, ASR/TSC, ESP safety systems, that the accumulation of slush in the wheel arch area produces;
- **accelerated wear and tear** to the tyres, which, when encountering vertical obstacles along the road, hit against the ice build-ups in the wheel arches;
- **noise coming from the tyres**, or more specifically, air noise between the tyres and the ice-encrusted wheel arches, as well as the noise of uncontrolled flows of rainwater and mud in the wheel arch;
- **increased weight in the vehicle**, caused by the frozen slush which has become lodged in the wheel arch, having started there and having then continued on to the chassis components, taking with it a hard layer of ice. In the case of trucks, up to as much as 100 kg of slush can freeze in the wheel arches and chassis.

### **Planning the Research**

The research was divided into three complementary tasks, developed on the basis of the **Technology Readiness Levels** assessment method (TRL - Technology Readiness Levels) and Shishkio, R., D.H. Ebbeler, and G. Fox. (Figure 1), which is the basis of the commercialisation model of research focussed on innovative solutions, for both products and manufacturing techniques. In its assumption, the TRL method simplifies and shortens the time of the commercialisation of research by, among other things, assessing the maturity of the solutions proposed and is currently used in the assessment of projects, co-financed from the European Union funds



**Fig 2: Technology Readiness Levels**

**Task 1** is part of the TRL IV - VI methodology, i.e. from an analysis of the expectations and assumptions of potential clients, to the testing of a prototype solution, presented in conditions close to reality. This task consists in the:

- identification and classification of factors affecting the design of the object being tested,
- designing and testing of a wheel arch assembly connected to a mud-flap or mudguard with a fixed or elasticised connection which simultaneously takes care of draining the rainwater away, in accordance with the EU requirements specified,
- development of technological solutions in order to put the object of the research into production, with special emphasis on mass production.

In connection with the above, it has been assumed that the basic, innovative functionality of the research object will be:

- the partial (at least 80%) -and ultimately the complete- removal of slush while driving a heavy goods vehicle (over 7.5 tonnes) in difficult weather conditions (i.e. at temperatures from +3 to -20 degrees Celsius) at the same time as following EU guidelines concerning drainage of rainwater at a level of 70%,
- a reduction of the assembly's own weight by fitting the wheel arch's mudguard to the wheel arch; this reduction in weight totals some 10% when compared to the current solutions,
- noise reduction in the wheel-arch's anti-clogging flap while driving; this noise reduction totals some 20% when compared to current solutions,

For this purpose, it has been assumed that the design of the test object will meet the guidelines of the reference product, in particular (as the authors propose in the publication Kielec R., 2013):

***In geometrical features:***

- the width of the "anti-clogging" guard or mud-flap should not be smaller than the width of the tyre or tyres,
- the height of the bottom edge of the "anti-clogging" guard, in accordance with the '*Regulation of the Minister of Infrastructure of December 31, 2002 on the technical conditions of vehicles and their range of necessary equipment*' (based on Art. 66, section 5 of the Act of June 20, 1997 - Road Traffic Law - Legal Journal No. 98, item 602, as amended.2),

***In the area of selected product properties***

- the rigidity of the "anti-clogging" flaps should ensure that a minimum of vehicles, travelling behind the lead vehicle, get splashed,
- the geometrical shape of the "anti-clogging" flap, will ensure that at least 80% of the rainwater which is thrown onto the "anti-clogging" flap of the vehicle will be "captured" and then "drained away" from its wheels by the "anti-clogging" flap.
- the secure fitting of the mudguard or mud-flap to the construction elements of the car, should guarantee durability of mounting and the safety of the car's driver, as well as that of other road users driving behind the lead vehicle.

***In the area of material features***

- direct material for the production of the above Product: PE (polyethylene) with different density, for example PE HD with an option for using recycled materials,

The process of designing the research product and its implementation for mass production will focus on the following groups of factors:

- a) 1<sup>st</sup>. group - factors related to the construction of the mud-flap or mudguard;  
In addition to standard, thermoplastic or rubber mudguard designs, additional designs which are more hybrid in nature, along with multi-material systems, modular systems and others, will also be considered.  
The tests will include mud-flaps of various geometry, especially the layer which captures the stream of rainwater taken up by centrifugal force from the wheels of cars, i.e. various surface configurations.  
The basic requirement, or criterion for these mud-flaps will be "taking up" and draining at least 70% of the rainwater by gravitational force when driving in adverse weather conditions, in accordance with the assumption of the reference product and EU requirements. In addition, **the requirements** for the subject of the innovation, - *vis-à-vis the mudguard's properties*- regarding driving on snow-covered roads or at reduced temperatures, which results in the formation of a layer of slush or ice on the mudguard or mud-flap, **will be taken into account**. It has been assumed that the mud-flaps and their fasteners will be designed and tested and will be characterised by the real-time removal of the accumulated layer of mud and ice; this will be undertaken cyclically, once the critical mass has been exceeded. This will require that the mud-flap or mudguard be properly attached, by such means as an element, forcing mechanical vibrations of a specific form and parameters and preferably made of a non-corrosive material. Moreover, it has been assumed that in the case of difficulties with developing a mud-flap that also acts as a drain, *simultaneously preventing the formation of a layer of solidified slush or ice*, the design of the solution should enable the rapid and trouble-free assembly and disassembly of

the right cover part. This means that in the case analysed, a separate design and adjustment for the rain and mud-flap, *vis-à-vis* weather conditions, is presumed.

- b) 2<sup>nd</sup>. group - factors related to the type of apron material;  
The tests carried out (TRL level IV and V) indicate that the basic material to be used for making the mud-flaps or mudguards is polyethylene (PE). This can be a primary material, such as granules, or it can be a high-quality re-granulate. The properties of the materials can be changed, over a very wide range with so-called additives. In addition to commonly applicable pigments or dyes that change the colour of the article, plasticisers, and in particular, agents, which modify resistance to impact and also change adhesion (friction) and the coefficient of friction of the surface of the product, in the case of the layer on which snow/ice is deposited, have been assumed.
- c) 3<sup>rd</sup>. group - factors occurring in the production of mud-flaps or mudguards;  
In producing mud-flaps, selected parts of the structure are injected while others are extruded and combined with the material previously produced, or machined on the press; these are then trimmed. In the injection and extrusion processes, the parameters related to plasticising the material, such as the temperature of individual sections of the plasticising unit and the different times of the individual phases, as well as the parameters related to the flow of material through the mould or head channels, namely, the pressure and the rotation of the worm gear, will be important. In addition, the testing and selection of parameters related to cooling the product are assumed; these include the temperature of the mould, the cooling time and other things. In the case of designing additional treatments, such as pressing and trimming, the process will take into account other parameters, such as the temperature of the blank and tools, the force and the "ironing" speed and the time at which the device must be "closed", in order to obtain products of the required quality.  
The parameters of the technological process will be selected according to the principle of 'maximum efficiency meeting the required quality' of the product, without negative impacts or various defects in the material, such as scorching, de-lamination, flowing and others.  
The parameters for additional operations that may occur in the technological process, such as the application of a special coating, will be selected in accordance with the requirements obtained during the experiment.
- d) 4<sup>th</sup>. group - factors related to the use of mud-flaps or mudguards;  
The use of the test object will be considered during its design phase. To this end, tests have been prepared for mud-flap designs and their prototypes.

The research process carried out as part of Task I has been divided into the following stages:

**1. Analysis of the operating conditions of the "anti-clogging" assembly:**

- a) analysis of regulations and standards regarding the "anti-clogging" assembly;
- b) analysis of existing structures;
- c) analysis of the actual operating conditions of the "anti-clogging" assembly, *viz.*, loads, deflections, temperatures, precipitation, UV, means of road maintenance in winter, etc.;
- d) review of structures and technologies in terms of their application in the construction of the "anti-clogging" assembly;
- e) determination of the design requirements for the "anti-clogging" assembly *viz.*, loads, deformations, dimensions and other matters;
- f) analysis of technical operating conditions;

**2. Development of the construction concept for the "anti-clogging" assembly:**

- a) development of constructional assumptions;
- b) proposals for the constructional concept;

- c) technological possibilities for producing individual structures;
  - d) selection of several concepts for the construction of the "anti-clogging" assembly, *vis-à-vis* further research;
3. Simulation studies of the constructional concept
- a) preliminary selection of materials for the components of the sub-assembly;
  - b) development of discrete 3D construction models;
  - c) strength calculations for the FEM structure;
  - d) modelling and simulation of the sub-assembly with the element for activating the vibration;
  - e) simulation of liquid flow in constructions and an estimation of their interaction with solid bodies;

#### 4. Development of several prototype solutions for the "anti-clogging" assembly

- a) preparation of preliminary construction and technological documentation for several concepts;
- b) preliminary analysis and estimates of the costs of the structures adopted;

As a final result, ready-made prototypes for direct research into obtaining a response to the assumed functionalities and predefined expectations, in compliance with the adopted assumptions.

The indicator of the evaluation of the first task will be the theoretical and computational total arresting of the crystallisation of slush and will take the form of a block of ice on the designed "anti-clogging" assembly.

**Task 2** will be a continuation of Task I, in which the emphasis will be placed on TRL VI and VII in the scope of prototype construction and basic tests of the functionality adopted. Therefore, the following are to be expected:

- prototypes of the "anti-clogging" assembly,
- design of test stands for testing prototypes,
- testing prototypes of anti-clogging assemblies for compliance with the reference product and achieving the goal of the research, i.e.:
  - increase in safety, due to limiting- *or even completely eliminating*- crystallised slush discharges onto the road where slush has solidified and has stuck fast onto the flaps covering the wheels of a truck in motion,
  - reduction of the weight of the "anti-clogging" assembly itself, resulting in a reduced expectation of combustion and thus a reduction in social tax, on account of the reduction of exhaust emissions into the atmosphere
  - noise reduction, consequential upon the movement of heavy goods vehicles,

To this end, prototypes of the innovative "anti-clogging" assemblies will be made.

**As a first step**, prototypes will be limited to the production of Stage 1 design, mud-flaps *only*, *viz.*, "anti-clogging" assemblies. As a result, each mud-flap prototype will be tested on a laboratory stand with the object of:

- a) maintaining the parameters of the reference product,
- b) preventing crystallisation and removing artificially created slush.

The above tests will be implemented by forcibly spraying artificially created slush, in order to simulate the real, test surface conditions of truck driving in difficult weather conditions *viz.*, at temperatures from +3 to - 20 degrees Celsius,

At this point, it is not expected that the removal of slush, from 80% to 100%, will be fully achievable due to the fact that the element supporting the product's innovation, that is, slush removal, will be the attachment of the mud-flap which forces the mud to vibrate and fall off gravitationally, in the solutions designed.

Nevertheless, in this part of the research process, the adoption of an appropriate solution for the construction and for the materials used in the production of mud-flaps, will be of the utmost importance.

**In the second step**, the system for attaching the mud-flaps to the wheel arches will be made and then used in the prototype of the "anti-clogging" assembly. In this step, the efficiency of removing both rainwater and slush from a fully designed "anti-clogging" assembly, through solutions for various fasteners, designed in Task I, is expected to increase. As a result of a prototype demonstration and the creation of complete prototype assemblies, all groups of factors, affecting the quality and technical parameters of this innovative product will be checked.

**In the third step**, in laboratory conditions, tests on the reduction of the "anti-clogging" assemblies' own weight – a reduction of 10%- and a noise reduction -by 20%- will be carried out.

The research process of **Task 2** will be divided into the following stages:

**1. Development of the research programme:**

- a) development of a basic research programme on the usability (functionality) of the selected structures of the "anti-clogging" assembly, i.e.:
  - o identification of input, output and constant factors of the test object;
  - o determining the range of variability of the factors examined;
  - o estimation of the influence of input factors on the initial factors and deciding on the initial tests (e.g. random balance) to eliminate non-significant factors (for  $i \geq 5$ );
  - o choosing a plan of experiments and developing a matrix for them;
- b) determination of the size of the construction batches of the "anti-clogging" assemblies, in individual series (concepts);
- c) development of a test programme for the 'activation of vibration' element;
- d) development of a research programme related to the reduction of own weight,
- e) development of a research programme related to noise reduction,
- f) development of a complementary research programme: static strength, durability, environmental factors, in operating conditions (real);

**2. Development of the concept of research stations:**

- a) development of the concept- *and modernisation of the stands*- for basic research on the construction of the "anti-clogging" assemblies;
- b) development of the concept and construction (or extension of the research scope) of the stands for testing the efficiency of snow and slush *fall-off* and noise reduction;
- c) development of the concept of construction of test devices: static, durability, impact of environmental factors, in operating conditions (real);

**3. Design and preparation of testing stands for the "anti-clogging" assemblies:**

- a) development of the concept- *and modernisation of the stands* - for basic research on the construction of the "anti-clogging" assemblies;
- b) development of construction documentation and execution of a test bench for testing the effectiveness of snow and slush *fall-off*, as well as noise reduction;
- c) development of construction documentation for test devices for static, durability, environmental and operational (real) impact testing;

**4. Building prototype structures of the "anti-clogging" assemblies:**

- a) preparation of the required amount of "anti-clogging" assemblies in individual series (concepts) - prototypes for basic research (the number of series will be accepted empirically, depending on the results obtained);

**5. Bench tests of the "anti-clogging" assemblies:**

- a) conducting testing on the influence of input factors on the output factor/factors for specific ranges of their variability and according to the selected plan of the experiment;
- b) analysis of the influence of test factors on the output factors;



- c) elaboration of the response function, determining the influence of the input factors on the tested output factors together with the determination of optimal values, characterising the construction of the "anti-clogging" assembly (i.e. the maximum "take-up of rainwater");
  - d) as above for snow/slush;
  - e) as above, for the *own weight* of the "anti-clogging" assembly;
  - f) as above for the noise;
  - g) conducting static, durability tests, impact of environmental and operational (real) factors;
  - h) analysis of the results of tests: static, durability, environmental factors, operational (real) factors;
  - i) selection of solutions that meet design assumptions for the "anti-clogging" assemblies;
6. Implementation of the next series of the prototype "anti-clogging" assembly, taking into account changes and limitations after testing the prototype series I (point 5):
    - a) preparation of the required amount of "anti-clogging" assemblies in individual series (concepts) - prototypes II for complementary and other essential research (optionally - in the case of negative results, i.e. those not in line with the assumptions);
  7. Complementing workplace tests of the "anti-clogging" assemblies:
    - a) conducting research on the influence of the relevant input factors on the factor/input factors for specific ranges of variability and according to the selected plan of the experiment, for a lower (by assumption) number of input factors and therefore a lower number of the measurement systems investigated;
    - b) analysis of the influence of test factors on the input factors and development of the response function (mathematical model) defining the influence of the input factors on the output factors tested, along with the determination of the corrected optimal values characterising the construction of the "anti-clogging" assembly (i.e. the maximum of "take-up of rainwater");
    - c) as above for snow/slush;
    - d) as above, for the *own weight* of the "anti-clogging" assembly;
    - e) as above for the noise;
    - f) conducting and analysing the supplementary results of static, durability, environmental and operational (actual) studies (optional - in the case of negative results, i.e. those not in line with the assumptions);
  8. Elaboration of documentation and execution of the prototype series III (construction for implementation) of the "anti-clogging" assembly:
    - a) development of constructional and technological documentation for prototype III (construction for implementation) of the "anti-clogging" assembly;
    - b) optimisation and modernisation of the selected construction of the "anti-clogging" assembly, in terms of technological, material and operational parameters;
    - c) estimation of the sub-assembly's operational vulnerability (*disassembly - element replacement - re-assembly*);
    - d) cost analysis of the assembly;
    - e) execution of a fixed number of "anti-clogging" assemblies - prototype III for implementation;
    - f) operational tests (in real, road conditions);
    - g) validation of the construction of the "anti-clogging" assembly;
  9. Environmental impact of the "anti-clogging" assemblies and re-cycling:
    - a) analysis of construction costs (final);
    - b) analysis of the costs of implementing the "anti-clogging" assembly for production.

It has been assumed that the series of prototypes will be re-designed and modified until the required "anti-clogging" assumptions, in terms of the drainage of rainwater, slush removal, noise reduction and reduction of *own weight*, have been achieved.

Next *-and final-* **Task III** of the research process includes developmental works consistent with levels VIII and IX of the TRL. The objectives of this task will be to design and implement implementation tests and optimise a high-performance technological line for the production of "anti-clogging" assemblies that meet the objectives of the research process and define the expectations of potential customers (in accordance with the methodology proposed by Kielec, R. and M. Doligalski, 2017).

As part of this task, a pilot technological line for the production of the entire 'anti-clogging' assembly will be designed, constructed and built. Due to the uneven production cycle of typical devices servicing the processes of moulding, injection, stamping, and milling, it will become necessary to design and select equipment and develop a technological route that will reduce, in the best possible way, any bottlenecks in the technological process. The task is expected to increase efficiency when compared to the features of an innovative product, i.e. the assembly: wheel arch /mudguard/-mounting-mud-flap, as well as the optimisation of technological parameters for manufacturing the pull-type. The solution adopted should reduce the level of inventories, enable production of low production batches, solve quality problems simply and easily and above all, lead to technological specialisation. As a result of a demonstration of the prototype and the creation of complete prototype assemblies, all groups of factors influencing the quality and technical parameters of the innovative product and the optimisation of individual parameters of the technological line, will be checked. Therefore, the new technological line should be properly automated and the process optimised in terms of efficiency, the quality achieved, waste minimisation, gaps, and work ergonomics.

The research process in **Task III** will be divided into the following stages:

1. Technological analysis of the injection process of the fastening elements of the "anti-clogging" assembly:
  - a) selection of parameters of the injection process of the fastening elements of the "anti-clogging" assembly in the form ordered;
  - b) defining technical requirements for the product;
  - c) optimisation of injection parameters in order to achieve maximum efficiency while maintaining the required technological quality (change in thermal conditions, injection pressure and speed and cooling conditions);
2. Technological analysis of the vacuum-forming process of the wheel arch of the "anti-clogging" assembly:
  - a) selection of the parameters of the vacuum-forming process of the "anti-clogging" assembly of the wheel arch in the form ordered;
  - b) defining the technical requirements of the product;
  - c) optimisation of vacuum-forming parameters in order to achieve maximum efficiency while maintaining the required technological quality (change of thermal conditions, pressure - vacuum);
3. Technological analysis of the milling process (CNC) of selected surfaces, holes, etc. elements of the "anti-clogging" assembly:
  - a) selection of milling parameters for the elements of the "anti-clogging" assembly;
  - b) defining technical requirements for the product;
  - c) optimisation of milling parameters, in order to achieve maximum efficiency while maintaining the required technological quality (selection of rotational speed, feed rate);
4. Technological analysis of the ultrasonic welding process of the elements of the "anti-clogging" assembly:
  - a) selection of milling parameters for the elements of the "anti-clogging" assembly;
  - b) defining technical requirements for the product;
  - c) optimisation of the welding process parameters, in order to achieve maximum efficiency while maintaining the required technological quality (change of thermal conditions - frequencies);

5. Assessment of the usable and technological quality of the "anti-clogging" assembly:
  - a) basic mechanical and technological tests of individual elements of the "anti-clogging" assembly and the entire "anti-clogging" assembly;
  - b) ergonomic, organoleptic evaluation, etc.;
  - c) Analysis of individual phases of the above-mentioned technological processes, in terms of improving production processes in the field of the collection and storage of products (elimination of possible post-production defects), internal transport, packaging and storage;
6. Analysis of the production process regarding the management of raw materials, energy and waste:
  - a) resource management: savings, use of re-cycling, etc.;
  - b) energy management: savings in the implementation of technological processes, organisation of production slots/manufacturing cells/ and technological lines (e.g. internal transport), etc.;
  - c) use of production waste (defective parts, scrap, filling systems, etc.) - recycling;
  - d) analysis of operations and treatments, in terms of improvements in performance;

It is expected that the final result of the third task will be a technological route including the complete synchronisation of individual machines and devices in the mass production process of the "anti-clogging" assemblies.

## Conclusions

As previously mentioned, the structures and organisation of the production process of rainwater-repelling mud-flaps which eliminate the production of spray from the wheels of vehicles in motion, are known. This undoubtedly has an impact on limiting the formation of streams of rainwater from the wheels of vehicles in motion and, in turn, impacts on road safety. This method for maintaining safety has been guaranteed by separate, European Union regulations, imposing on producers the need to conduct research in this direction and to adapt their products, i.e. the mud-flaps/mudguards, to the regulations adopted. While the problem of the amount of rainwater has already been mastered, the limitation of these mud-flaps, especially in the winter, is the mud from the road surface accumulating on them, especially slush. Snow and slush quickly merge into one block and crystallise. Such accumulation of dirt on the surface of the mudguard/mud-flap often deprives it of its beneficial features, *vis-à-vis* the shape of its surface, and at the same time poses a threat to other road users. As a result, frozen lumps of ice or mud, once they have become large enough, fall off and pose a serious threat to other road users. The key challenge is to construct a mud-flap or mudguard that will prevent mud/snow from accumulating on its surface, while ensuring the durability of the mud-flap/mudguard itself. The article presents the concept of developing a prototype, the technology and the implementation of the mass production of "anti-clogging" assemblies which, using physical phenomena and the latest achievements in material and production engineering, will meet the expectations of users and will, above all, eliminate the dangers posed by large trucks in difficult weather conditions on the road.

## References

Europe's new vehicle market: Prospects to 2021, Publisher: Automotive World Ltd, April 2017

European vehicle market statistics Pocketbook 2015/16,

[http://www.theicct.org/sites/default/files/publications/ICCT\\_EU-pocketbook\\_2015.pdf](http://www.theicct.org/sites/default/files/publications/ICCT_EU-pocketbook_2015.pdf)

[http://infobus.pl/polskirynek-nowych-autobusow-w-2016-r-\\_more\\_91169.html](http://infobus.pl/polskirynek-nowych-autobusow-w-2016-r-_more_91169.html)

<http://samochody-specjalne.pl/2017/02/24/rok-2016-nowy-rekord-sprzedazy>

<https://www.tradelineinc.com/file/technology-readiness-levelsjpg>

<https://truckfocus.pl/nawosci/33821/ranking-sprzedazy-pojazdow-ciezarowych-w-2016-r>

[https://www.nasa.gov/directorates/heo/scan/engineering/technology/txt\\_accordion1.html](https://www.nasa.gov/directorates/heo/scan/engineering/technology/txt_accordion1.html)

[https://www.nasa.gov/pdf/458490main\\_TRL\\_Definitions.pdf](https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf)

<http://www.ptmtrade.pl/78-aktualnosci/213-podsumowanie-sprzedazy-2016-roku-na-ryнку-naczep>

<https://www.schompbmw.com>

Kielec, R. "New method for engineering projects management with the use of evolutionary algorithm." 7th International Conference on Research and Practical Issues of Enterprise Information Systems - CONFENIS 2013. Prague, Czech Republic, Trauner Verlag, 2013, p. 89--102 .- ISBN: 9783990330814

Kielec, R. and M. Doligalski. "Control process management by means of evolutionary algorithm." Proceedings of the 2015 Federated Conference on Software Development and Object Technologies. Žilina, Slovakia, Springer International Publishing, 2017 .- Advances in Intelligent Systems and Computing, Vol. 511, s. 133--141 .- ISBN: 9783319465357

Shishkio, R., D.H. Ebbeler, and G. Fox. "Nasa Technology Assessment Using Real Options Valuation." Systems Engineering 7, no. 1 (2003): 1-12.

## Evaluating the Effectiveness of Investment in Educational and Development Activities of Middle Managers

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### Abstract

The company's success in today's rapidly changing and the turbulent environment is determined by its performance and efficiency. The determining factors are employees who move other business factors into motion. Research explores the effectiveness of financial resources invested in educational and development activities. Employees working at the level of middle management participated in this research. The results show that, despite the fact that each rated manager achieves a different level of competence, another shift in competencies, and the resulting level of achievement of the competence maxima; the company spends financial resources on educational and development activities efficiently. Over the monitored period of three years, managers have made a different shift in competence development. This requires different ways of their further development in the form of complementary, supportive, developmental, and training activities and intensive coaching.

**Keywords:** manager, education, human resources development, effectiveness

### Introduction

Under the influence of constant pressure of competition, managers are forced to create an effective strategy that helps them succeed (Mura and Rozsa 2013; Kachanakova and Stachová 2014; Lizbetinova 2014; Nadanyiová 2014; Gejdoš and Danihelová 2015; Kohnová et al 2017; Stacho et al 2015; Stachová et al 2017; Starchon et al 2017; Korauš et al 2018; Kovaľová et al 2018; Papula et al 2018; Rahim et al 2018; Sánchez-Sellero et al 2018). It is fundamental to realize the value and importance of human resources because they vitally important to the company (Sánchez-Sellero and Sánchez-Sellero 2016; Lizbetinova 2017; Musa et al 2017; Vlacseková and Mura 2017; Lepold et al 2018; Vetráková and Smerek 2018). They represent a driving force that moves other resources, such as information, human, material, and financial (Fejfarová and Urbancová 2016; Urbancová and Urbanec 2016; Jankelova et al 2017). Human resources, as the only source, are creators of added value, which provides a competitive advantage (Gubiniova and Bartakova 2014; Gottwald et al 2017). Professional literature (Banasova et al 2010; Hockicko et al 2015; Potkány and Stachová 2015; Grecikova et al 2016; Vondrackova et al 2016; Kampf et al 2017; Lesáková et al 2017; Lizbetinova 2017; Prušková and Nývlt 2017; Kucharčíková and Mičiak 2018) confirms that they are now adding value to the information, knowledge, skills, and experience of people who can re-educate themselves.

Currently, no company can succeed without effective employee training and education (Nývlt 2018). It is a continuous process that not only enhances existing abilities but also leads to the development of skills, knowledge, and attitudes that prepare people for future wider, more demanding and higher level tasks (Armstrong 2007). An employee training program should be set up in all companies, not only in terms of increasing employees' qualifications but also in terms of retraining them (Vetráková et al 2016; Grenčíková et al 2017). The process of educating company employees in individual areas

contributes to the achievement of company goals, performance and profitability, as well as to better results and constant improvement of business processes by investing in human capital (Stacho and Stasiak-Betlejewska 2014; Durisova et al 2015; Lizbetinova et al 2017; Myšková and Hájek 2017; Sánchez-Sellero et al 2017). On the other hand, employee training leads employees to greater independence and gives them more opportunities for self-employment, especially if they are provided with knowledge and skills in the process in terms of their further professional development (careers) in the company (Dul'ova Spisakova et al 2017; Javorčková 2018). Targeted employee training also contributes to the better identification of employees with the company and its values (Krišťák et al 2014). The aim of the research is to evaluate the effectiveness of the invested funds in the educational and development activities at the level of middle management in the selected company.

## Materials and Methods

Employee competencies in marketing skills are reviewed in the company regularly every year through an established rating system. The research was carried out between 2016 and 2018. Twelve mid-level managers, who had completed all forms of education and development, participated in it. The research involved training in marketing skills, product education, coaching, and self-education.

The competency skills listed in Table 1 were included in the assessment system, where each area includes partial competencies. Other competencies such as software skills, work with goods, social and working behavior, and others were not investigated.

**Table 1: Overview of marketing competencies in the managers' rating system**

<b>K2 - Commodity science (general assortment)</b>
K21 - Knowledge and orientation in the company's assortment (sales, benefits)
K22 - Ability to present goods (content and form of presentation)
<b>K3 - Commodity science "games"</b>
K31 - Knowledge and orientation in the assortment "games" (sales, benefits)
K32 - Ability to present "games" (gaming and presentation form)
K33 - Ability to appropriately use information from the "Game Manual"
K34 - Selling with the experience of playing games
<b>K9 - Communication skills</b>
K91 - Verbal communication
K92 - Non-verbal communication
K93 - Ability to adapt in communication to different types of customers
<b>K10 - Contacting the customer</b>
K101 - Icebreaking
K102 - Greeting (timeliness, clarity, reverence)
K103 - Self-confidence in contact
K104 - Positive customer approach
<b>K11 - Finding needs, selling the utility</b>
K111 - Finding out customer needs
K112 - Appropriate presentation of products
K113 - Appropriate presentation of benefits
K114 - Raising customer interest
<b>K12 - Managing objections</b>
K121 - Recognition of customer's common (main) objections
K122 - Applying (managing) response techniques to objections
K123 - Ability to actively listen to the customer
K124 - Contributing to the expansion and replenishment of the argumentation bank
K125 - Adaptation of the argumentation to the character of the objection

<b>K13 - Closing the deal</b>
K131 - Capturing buying signals
K132 - Using adequate trading techniques
K133 - Offering goods in which the customer is interested in
K134 - Gaining customer consent and moving to close the deal

Source: Own (based on research)

Evaluation of the effectiveness of the financial resources spent on educational and development activities was carried out by assessing their contribution, i. e. changes in the increase of managers' competencies in relation to the financial resources spent on their education and development. Quantification of return on investments in the company's educational activities is done by an ROI (Return on Investment) indicator, which is expressed as the ratio of the difference in benefits from educational activities reduced by education costs and ROI (%) = (benefits - costs) / costs.

## Results and Discussion

### *Changing Marketing Competencies of Managers*

In calculating the effectiveness of the financial resources spent on education and development activities, we relied on a change in the managerial competencies between 2016 and 2018. The increase in marketing competencies over three years, the average annual growth, and the need to develop a manager has in order to reach the competency maximum is presented in Table 2.

**Table 2: Changing marketing competencies of evaluated managers**

Competence assessment (in points)	Manager rated number											
	1	2	3	4	5	6	7	8	9	10	11	12
Rating in 2016	131	106	61	68	76	122	107	105	92	103	114	73
Rating in 2017	137	118	86	103	76	130	122	123	109	115	125	78
Rating in 2018	149	132	107	127	134	135	143	134	127	128	128	94
Change of competencies	18	26	46	59	58	13	36	29	35	25	14	21
Average annual increase of competencies	9	13	23	29.5	29	6.5	18	14.5	17.5	12.5	7	10.5
Need for development to achieve competency maximum (182 points)	33	50	75	55	48	47	39	48	55	54	54	88

Source: Own (based on research)

The change of competencies indicates the difference between the maximum and the minimum assessment of competencies over the assessed years. Table 2 shows that each rated manager has made another shift in competence development. The highest increase in competencies was recorded with manager No. 4, from 68 points to 127 points. On the other side, the lowest increase, 13 points, was achieved by manager No. 6, from 122 to 135 points. In this case, however, it is not the least competent manager. In the first year of the year, this manager recorded twice the level of competencies compared to the weakest manager.

Table 2 shows that the average change in competencies is 31.66 points and corresponds to 17.40% of the total maximum of 182 points. The average annual increase in competencies represents 8.70% of the evaluation framework. The results show that the best-rated manager (No. 1) needs 33 points to reach the maximum level of competencies. The worst rated manager needs 88 points. Table 2 also presents great differences between the level of managerial competencies, which requires different needs for their further development, for example through coaching, or self-education.

**Changing the Marketing Competencies of Managers by Competency Areas**

In evaluating the effectiveness of educational activities, we are going to assess in which competency area the smallest and greatest development can be seen. The overview of changes in competency areas in percentage terms for the years 2016 to 2018 is given in Table 3.

**Table 3: Changing the marketing competencies of managers by competency areas**

Competency areas	Year max	2016			2017			2018			Change in 3 years
		max	min	$\bar{X}$	max	min	$\bar{X}$	max	min	$\bar{X}$	
(Numbers in %)											
K2 Commodity science "assortment"	100	79	43	62	79	50	69	93	64	80	18
K3 Commodity science "games"	100	75	39	57	86	39	66	89	57	77	20
K9 Communication skills	100	76	29	55	76	43	63	86	52	74	19
K10 Contacting the customer	100	86	39	61	89	46	70	96	54	78	17
K11 Finding needs, selling utility	100	68	32	50	75	36	58	79	50	67	16
K12 Managing objections	100	63	20	43	66	34	50	77	43	59	15
K13 Closing the deal	100	71	29	50	71	36	55	79	50	68	17
Total	100	73	32	53	77	40	61	85	52	70	17.4

Source: Own (based on research)

Table 3 shows that the lowest level of competence development has been achieved by managers in K12 - Managing objections. Through education and development activities, competence levels have increased from 43% in 2016 to 59% in 2018, representing a 15% increase in incompetencies. In the area of K12 competencies, managers reached the lowest level in sub-competencies K122 - Applying (managing) response techniques to objections - 52% (2018) and K125 - Adaptation of argumentation to the character of the objection - 58% (2018). A low level of competence is also achieved by managers in the area of K11 - Finding out needs, selling utility - 50% (2016), 67% (2018) with an increase in competence level of only 16%. The lowest level of competence development was achieved by managers in sub-competencies K113 - Appropriate presentation of benefits - 43% (2016), 58% (2018) with an increase in competence level of only 15% and K114 - Raising customer interest - 51% (2016) and 58% (2018) with an increase of 17%. Substandard level was achieved by managers in the area of K13 - Closing the deal - K132 - Using adequate trading techniques - 44% (2016), 63% (2018), with an increase in competencies of 19% and in the area K133 - Offering goods in which the customer is interested in - 49% (2016), 64% (2018), with an increase in competencies of 15%. The results presented in Table 3 show that the increase in the level of competencies of the managers surveyed with the least developed competencies increased by at least 15%.



### ***Cost of Training and Development of Managers***

The costs of manager training and development include the costs of delivering education by an external agency, or external lecturers, accommodation and boarding costs of educational participants and other indirect costs, such as transportation costs.

*The costs of delivering education* include the identification of educational needs, the preparation, and production of educational materials, the lecturer's work of external lecturers and the transport of lecturers, the consumption materials for education, such as fixtures, flipchart papers, teaching aids, and the cost of transporting lecturers. Training costs are contracted in the long run with the education provider. Their amount did not change over the monitored period and did not depend on the number of participants in education.

*Accommodation and subsistence costs* for participants include the accommodation of participants in the place of education, subsistence costs in accordance with current legislation, refreshment and relaxation costs, and the cost of renting educational premises and educational equipment, such as data projector, flipchart, blackboard and so on. The cost of accommodation and meals was limited to EUR 4,000 per year.

*The number of education participants* changed in the years under review as the company expanded and set up its branches throughout Slovakia. The number of managers has increased from the original 23 in 2016 to the current 27.

*Costs for manager development* include the costs of manager coaching and self-education costs. The exact amount of these costs could not be accurately determined because this form of education is implemented within the framework of the duties of the managers. That is why we will not consider these costs.

The costs of education are presented in Table 4.

**Table 4: Overview of the costs of education in the years 2016 - 2018 (in EUR)**

<b>Year</b>	<b>Education marketing skills</b>	<b>Education social games</b>	<b>Costs of accommodation and subsistence</b>	<b>Costs total (in EUR)</b>	<b>Average number of participants</b>	<b>Costs of a participant in education</b>
2016	3,500	800	4,000	8,300	23	360.87
2017	3,500	800	4,000	8,300	25	332.00
2018	3,500	800	4,000	8,300	27	307.41
Total	10,500	2,400	12,000	24,900	25	1,000.28

Source: Own (based on research)

The average cost of education for one manager is EUR 333.40 per year.

### ***The Effectiveness of Company Education Activities***

The effectiveness of educational activities is expressed as *a share of the increase in competencies of rated managers* who have completed all educational and development activities for years 2016-2018 in relation to the costs of education. Then, we calculated *costs per 1 point increase in manager competency in monetary terms*, representing the proportion of costs incurred over a three-year period in relation to the observed increase in competencies of the maximum marketing skills (out of 182 points). *Expected costs to reach the maximum level of competency* reflect the costs that would have to be spent to attain the maximum level of competence of the manager at his current level of development and growth. *The number of years required to reach a competence maximum* represents the minimum number of years during which it would be necessary to carry out the training and

development activities so that the manager achieves a competency maximum at his current level of development and growth. Table 5 presents the calculation of the analyzed educational effectiveness indicators.

**Table 5: Calculation of the effectiveness of educational activities**

Effectiveness indicators	Manager rated number												$\bar{x}$
	1	2	3	4	5	6	7	8	9	10	11	12	
Effectiveness of education (in %)	1.80	2.60	4.60	5.90	5.80	1.30	3.60	2.90	3.50	2.50	1.40	2.10	3.17
Manager costs per 1 point increase in competencies (in EUR)	55.6	38.5	21.7	16.9	17.2	76.9	27.8	34.5	28.6	40.0	71.4	47.6	39.73
Estimated costs to reach max. level of competencies (in EUR)	1,833	1,923	1,630	932	828	3,615	1,083	1,655	1,571	2,160	3,857	4,190	2,107
Number of years to reach the competency maximum (years)	3.7	3.8	3.3	1.9	1.7	7.2	2.2	3.3	3.1	4.3	7.7	8.4	4.2

Source: Own (based on research)

*The average effectiveness of educational activities reached 3.17%. The lowest efficiency (1.30%) is achieved by manager No. 6 and the highest (5.90) by employee No. 4.*

*The average manager costs to spend on a 1 point increase in their competencies are 39.73 EUR. The lowest cost (16.95 EUR) is reached by manager No. 4, who showed the highest increase in competencies of 59 points. The highest cost (76.92 EUR) was reached by employee No. 6, who showed the lowest increase in competencies of 13 points. Expected costs to reach the maximum level of marketing competencies, which is 182 points, varies considerably from EUR 828 (Manager 5) to EUR 4,190 (Manager 12).*

The average cost estimate is EUR 2,107.

*The number of years required to reach the competency maximum (182 points) of marketing competencies reflects the time needed for the further education of the manager. Manager No. 4, who recorded the highest change in competencies (59 points), requires almost 2 years (1.9 years) in order to reach the competency maximum at the current individual rate of competency growth. Looking at manager No. 12, who has the lowest rate of development, the company needs to invest the next 8.4 years to reach the competency maximum. The average value of the indicator is 4.2 years.*

### ***Return on Investment in Educational Activities of the Company***

The average annual costs of education for one manager are EUR 333.40. It is assumed that the number of employees involved in education will proportionally increase. Subsequently, the benefits from educational activities can be expressed as the increase in gross profits from the sale of goods that was sold as a result of educational activities aimed at active sales to customers, i. e. sales were

the result of the active work of the manager (addressing the customer, identification of his needs, selection and presentation of goods, customer support in decision making, successful sales and payment). Without educational activities, this sale would not take place.

The return on investments in educational activities was quantified by a qualified estimate, which assumes that 12 managers, over a period of 3 years, each month (12 months) sell 10 additional goods, with an average unit gross profit of EUR 5.

Calculating the benefits of educational activities (BEA):

$$\begin{aligned} \text{BEA} &= 12 \text{ managers} \times 3 \text{ years} \times 12 \text{ months} \times 10 \text{ products} \times 5 \text{ EUR gross profit} \\ \text{BEA} &= \text{EUR } 21,600 \end{aligned}$$

Calculation of costs for educational activities (CEA):

$$\begin{aligned} \text{CEA} &= 12 \text{ managers} \times 3 \text{ years} \times \text{EUR } 333.40 \\ \text{CEA} &= \text{EUR } 12,002.40 \end{aligned}$$

Quantification of the return on educational activities (ROI-EA):

$$\begin{aligned} \text{ROI-EA} &= (\text{BEA} - \text{CEA}) / \text{CEA} \times 100\% \\ \text{ROI-EA} &= (21,600 - 12,002.40) / 12,002.40 \times 100 \\ \text{ROI-EA} &= 79.96\% \end{aligned}$$

These investments are highly efficient (79.96%) - this results from the calculated return on investment in educational activities of 12 managers over a period of three years. The assumption that each manager sells each month 10 pieces of merchandise in addition to the original sale, with an average gross profit of EUR 5, is real. Taking the expected 20-day working fund per month, it is sufficient if the manager sells 1 product in addition within 2 business days.

## Conclusion

The company's success in today's rapidly changing and the turbulent environment is determined by its performance and efficiency (Aydin and Tiryaki 2018; Kiseľáková et al 2018). The determining factors are employees who put other business factors in the move (Kmecová and Smetanová 2018). Human resources are a unique factor by which companies achieve a competitive advantage and thus overall market success as technology can be copied but the potential hidden in the employees is an irreplaceable competitive advantage (Ahmad et al 2012).

Research aimed at evaluating the effectiveness of the invested financial resources in educational and development activities was carried out in a selected company. Mid-level managers participated in this research. The results show that each rated manager achieves a different level of competence. In addition, there were large differences in the level of competence among managers.

Over the monitored period of three years, managers have made a different shift in competence development. This requires different ways of their further development in the form of complementary supportive development and training activities and intensive coaching. The choice of suitable methods of employee training largely determines the effectiveness of education (Hoveskog et al 2018). The manager with the highest change of competencies needs almost two years to reach the competency maximum at the current individual rate of competency growth. The manager with the lowest level of competence development needs more than 8 years to reach the competency maximum. In this respect, it is necessary to consider investing additional financial resources in the training of employees with a low level of competence and a low year-on-year increase incompetencies.

The average annual cost of training for one manager is EUR 333.40. Expected costs to reach the maximum level of marketing competencies differ considerably at individual managers and depend on their current level of competency. They range from about EUR 800 to 4,200. Assuming that, over a period of 3 years, 12 managers sell 10 more items each month, with an average unit gross profit of

EUR 5, investment in education will be effective. It is sufficient if the manager sells one product in addition within two business days. A further increase in the number of products sold leads to better company results.

For these reasons, we suggest investing in employees because human resources are a unique competitive advantage. This will increase business efficiency and company profit.

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## References

Ahmad, MB., Wasay, E. and Malik, SU. (2012), 'Impact of employee motivation on customer satisfaction: Study of airline industry in Pakistan,' *Interdisciplinary Journal of Contemporary Research in Business*, 4(6), 531-539.

Armstrong, M. (2007), *Řízení Lidských Zdrojů*, Grada Publishing, Praha.

Aydin, A. and Tiryaki, S. (2018), 'Impact of performance appraisal on employee motivation and productivity in Turkish forest products industry: A structural equation modeling analysis,' *Drvna Industrija*, 69(2), 101-111.

Banasová, L., Cagánová, D. and Čambál M. (2010), 'The identification of key managerial competencies as a tool for increasing business competitiveness,' Proceedings of the 11th European Conference on Knowledge Management, 2-3 September 2010, Famalicao, Portugal.

Dul'ova Spisakova, E., Mura, L., Gontkovicova, B. and Hajduova, Z. (2017), 'R&D in the Context of Europe 2020 in Selected Countries,' *Economic Computation and Economic Cybernetics Studies and Research*, 51(4), 243-261

Durisova, M., Kucharcikova, A. and Tokarcikova, E. (2015), 'Assessment of higher education teaching outcomes (Quality of higher education),' *Procedia Social and Behavioral Sciences*, 174, 2497-2502.

Fejfarová, M. and Urbancová, H. (2016), 'Human resource management in small and medium-sized enterprises in the Czech Republic,' *Scientific Papers of the University of Pardubice*, 36 79-90.

Gejdoš, M. and Danihelová, Z. (2015), 'Valuation and timber market in the Slovak Republic,' *Procedia Economics and Finance*, 34, 697-703. DOI 10.1016/S2212-5671(15)01688-3

Gottwald, D., Svadlenka, L., Lejskova, P. and Pavlisova, H. (2017), 'Human capital as a tool for predicting development of transport and communications sector: The Czech Republic perspective,' *Communications - Scientific Letters of the University of Zilina*, 19, 50-56.

Grenčíková, A., Guščinskiene, J. and Španková, J. (2017), 'The role of leadership in motivating employees in a trading company,' *Journal of Security and Sustainability*, 7, 67-75.

Grencikova, A., Spankova, J. and Kordos, M. (2016), 'Entry of a new generation "millenians" on the labor market,' Proceedings of the 3rd International Multidisciplinary Scientific Conferences on Social Sciences and Arts, 24-30 August 2016, Albena, Bulgaria.

Gubiniova, K. and Bartakova, G.P. (2014), 'Customer experience management as a new source of competitive advantage for companies,' Proceedings of the 5th International Scientific Conference on Trade, International Business and Tourism: Application of Knowledge in Process of Business Dynamization in Central Europe, 2014, Mojmirovec, Slovakia.

- Hockicko, P., Kristak, L. and Nemec, M. (2015), 'Development of Students' Conceptual Thinking by Means of Video Analysis and Interactive Simulations at Technical Universities,' *European Journal of Engineering Education*, 40, 145-166. DOI 10.1080/03043797.2014.941337
- Hoveskog, M., Halila, F., Mattsson, M., Upward, A. and Karlsson, N. (2018), 'Education for Sustainable Development: Business modeling for flourishing,' *Journal of Cleaner Production*, 172, 4383-4396.
- Jankelova, N., Joniakova, Z., Blstakova, J. and Nemethova, I. (2017), 'Readiness of Human Resource Departments of Agricultural Enterprises for Implementation of the New Roles of Human Resource Professionals,' *Agricultural Economics*, 63, 461-470.
- Javorčíková, J. (2018), 'Motivation, engagement and achievement in the EFL literature class: 21st-century perspectives,' *Teaching literature for the 21st century*, 32.
- Kachanakova, A. and Stachová, K. (2014), 'Present state of organizational culture in Slovakia,' *Economic Annals-XXI*, 3-4(1), 35-38.
- Kampf, R., Lizbetinova, L. and Tislerova, K. (2017), 'Management of Customer Service in Terms of Logistics Information Systems,' *Open Engineering*, 7(1), 26-30.
- Kiselařková, D., Šofranková, B., Čabinová, V. and Šoltésová, J. (2018), 'Analysis of enterprise performance and competitiveness to streamline managerial decisions,' *Polish Journal of Management Studies*, 7(2), 101-111.
- Kmecova, I. and Smetanová, D. (2018), 'Analysis of Entrepreneurial Potential of University Students by Pearson's Chi-squared,' *Proceeding of the 31st International Business Information Management Association Conference Test Innovation Management and Education Excellence through Vision 2020, 25-26 April 2018, Milan, Italy*, 1769-1780.
- Kohnová, L., Papula, J., Papulová, Z. and Suchoba, M. (2017), 'Preparation for smart industry, introduction and the comparative study,' *Proceedings of the 2nd EAI International Summit, Smart City 360 2016, 22-24 November 2016, Bratislava, Slovakia*.
- Korauš, A., Mazák, M. and Dobrovič, J. (2018), 'Quantitative analysis of the competitiveness of Benelux countries,' *Entrepreneurship and Sustainability*, 5, 1069-1083.
- Kovaľová, M., Hvolková, L., Klement, L. and Klementová, V. (2018), 'Innovation strategies in the Slovak enterprises,' *Acta Oeconomica Universitatis Selye*, 7(1), 79-89.
- Krišťák, L., Němec, M., and Danihelová, Z. (2014). 'Interactive methods of teaching physics at technical universities,' *Informatics in Education*, 13(1), 51-71.
- Kucharčíková, A. and Mičiak, M. (2018), 'Human Capital Management in Transport Enterprises with the Acceptance of Sustainable Development in the Slovak Republic,' *Sustainability*, 10.
- Lepold, A., Tanzer, N., Bregenzer, A. and Jiménez, P. (2018), 'The efficient measurement of job satisfaction: Facet-items versus facet scales,' *International Journal of Environmental Research and Public Health*, 15. DOI 10.3390/ijerph15071362
- Lesáková, E., Dubcová, K. and Gundová, P. (2017), 'The knowledge and use of the balanced scorecard method in businesses in the Slovak Republic,' *E a M: Ekonomie a Management*, 20(4), 49-58. DOI: 10.15240/tul/001/2017-4-004

- Lizbetinova, L. (2014), 'The Quality of Communication in the Context of Regional Development,' *Deturope-The Central European Journal of Regional Development and Tourism*, 6(3), 22-38.
- Lizbetinova, L. (2017), 'Attitude college students in the South Bohemian region to opportunities of increasing employability in the labour market,' *Proceedings of the 20th International Colloquium On Regional Sciences*, 296-302.
- Lizbetinova, L., Fabera, P., Jambal, T. and Caha, Z. (2017), 'Road tax as an economic tool of the support for the development of multimodal transport in selected EU States,' *Proceedings of the 18th International Scientific Conference-Logi 2017, MATEC Web of Conferences*.
- Musa, H., Debnárová, L., Musová, Z. and Kruštofík, P. (2017), 'Gender equality and corporate governance in Slovakia,' *E a M: Ekonomie a Management*, 20(1), 98-110.
- Mura, L. and Rozsa, Z. (2013), 'The impact of networking on the innovation performance of SMEs,' *Proceedings of the 7th International Days of Statistics and Economics*, 1036-1042.
- Myšková, R. and Hájek, P. (2017), 'Comprehensive assessment of firm financial performance using financial ratios and linguistic analysis,' *Journal of International Studies*, 10, 96-108.
- Nadanyiová, M. (2014), 'The customer satisfaction with services railway company cargo Slovakia as a factor of competitiveness,' In *Proceedings of the International Conference Transport Means*, 2014.
- Nývlt, V. (2018), 'The role of managing knowledge and information in BIM implementation processes in the Czech Republic,' *Proceedings of the 9th International Conference Building Defects, Building Defects 2017, 2017, Ceske Budejovice, Czech Republic*.
- Papula, J., Kohnova, L. and Papulova, Z. (2018), 'Impact of national culture on innovation activities of companies: A case of Germany, Austria, Switzerland and the Czech Republic,' *Economic Annals-XXI*, 169(1-2), 26-30. DOI: 10.21003/ea.V169-05
- Potkány, M. and Stachová, K. (2015), 'Required skills and abilities of facility manager on strategic level of managing in Slovak companies,' *Economic Annals-XXI*, 3-4(1), 55-59.
- Prušková, K. and Nývlt, V. (2017), 'Issue of Building Information Modelling Implementation into the Czech Republic's Legislation using the Level of Development,' *IOP Conference Series: Materials Science and Engineering*, 245(8).
- Rahim, MKIA., Hassan, Q., Nadarajah, S. and Radzuan, K. (2018), 'A case study of inventory analysis in a healthcare product manufacturing company,' *International Journal of Supply Chain Management*, 7(3), 126-130.
- Sánchez-Sellero, MC. and Sánchez-Sellero, P. (2016), 'Determinants of job satisfaction in Spain before and during the economic crisis of 2008,' *Intangible Capital*, 12, 1192-1220.
- Sánchez-Sellero, MC., Sánchez-Sellero, P., Cruz-Gonzalez, MM. and Sánchez-Sellero, FJ. (2017), 'Stability and satisfaction at work during the Spanish economic crisis,' *Prague Economic Papers*, 26, 72-89.
- Sánchez-Sellero, MC., Sánchez-Sellero, P., Cruz-González, MM. and Sánchez-Sellero, FJ. (2018), 'Determinants of job satisfaction in the Spanish wood and paper industries: A comparative study across Spain,' *Drvna Industrija*, 69, 71-80.
- Stacho, Z. and Stasiak-Betlejewska, R. (2014), 'Approach of organisations operating in Slovakia to employee's performance evaluation,' *Economic Annals-XXI*, 5-6, 82-85.

Stacho, Z., Gubiniova, K. and Bartakova, G.P. (2015), 'Selected components of pricing strategies of organizations and their perception by customers in Slovak Republic,' *Economic Annals-XXI*, 9-10, 78-82.

Stachová, K., Stacho, Z. and Vicen, V. (2017), 'Efficient involvement of human resources in innovations through effective communication,' *Business: Theory and Practice*, 18, 33-42. DOI: 10.3846/btp.2017.004

Starchon, P., Weberova, D. and Lizbetinova, L. (2017), 'Clustering Czech consumers according to their spontaneous awareness of foreign brands,' *Proceedings of the Conference Sustainable Economic Growth, Education Excellence, and Innovation Management Through Vision 2020, VOLS I-VII*, 1719-1732.

Urbancová, H. and Urbanec, J. (2012), 'Internal factors influencing the knowledge continuity ensuring,' *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 60(4), 387-396.

Vetráková, M., Ďurian, J., Seková, M. and Kaščáková, A. (2016), 'Employee retention and development in pulp and paper companies,' *BioResources*, 11, 9231-9243.

Vetráková, M., Smerek, L. and Seková, M. (2018), 'The effectiveness of employees' selection in Slovakia,' *Proceedings of the 5th International Conference Modern Economics*, 2018, Vigo, Spain.

Vlacsekova, D. and Mura, L. (2017), 'Effect of motivational tools on employee satisfaction in small and medium enterprises,' *Oeconomia Copernicana*, 8, 111-130.

Vondrackova, T., Vostova, V. and Nyvlt, V. (2016), 'The human factor as a cause of failures in building structures,' *Proceedings of the 8th International Scientific Conference Building Defects (Building Defects 2016)*, 2016, Ceske Budejovice, Czech Republic.

## **The Influence of Grocery Store's Space Determinants on Impulse Buying Tendency**

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### **Abstract**

Contemporary consumers are very demanding when it comes to shopping habits, spending their precious time, but also when it goes about the design of the stores they visit or experience they had there. Therefore, a successful retailer has to meet the demands of its consumers in order to create a positive image in the consumer's mind, which can be often reflected on the sales level of its stores. Previously emphasizes the importance of visual merchandising, which should leave a pleasant impression on consumers and enable better results for retailers. Although visual merchandising includes many elements, this paper focuses on in-store space elements and their influence on impulse buying tendency of consumers in grocery stores. Store layout, way of exposing the goods on the shelf and store displays are researched as a main store space determinants. The importance of researching in-store space elements as part of visual merchandising and their effects on impulse buying arises from the high costs of store space, both for retailers and manufacturers. Empirical research focuses on consumers of retail grocery stores in the Osijek-Baranja County, Croatia. It was conducted on a sample of 226 respondents, who are involved in shopping in a grocery stores. The main finding of this research suggests a positive influence of store displays on the impulse buying tendency. Store displays as marketing tools directly influence consumers' impulse buying tendency and therefore, they are one of the most powerful tools for sales increase.

**Keywords:** in-store space, store layout, product exposure on shelf, store displays, impulse buying tendency

### **Introduction**

There are many key factors and strategies that guide retailers to constantly think on the improvement of their business. In many cases, these factors include the role and importance of the size of the store, location, product assortment, population, personnel, design and equipment of the store and visual merchandising. Visual merchandising is often defined as the art of presenting goods in the store. Bell and Ternus (2017) refers to it as 'the silent salesperson' and Bhalla and Anuraag (2010) see visual merchandising as a tool that creatively educates consumers, enhances the sales process and thus generates sales, displays the product to consumers in an interesting way, attracts their attention, triggers their interest and helps them to choose the product. Some of the goals of visual merchandising is to provide a pleasant shopping experience for consumers, improve their loyalty, but also to increase their impulse buying tendency.

Impulse buying can be defined as a sudden and immediate purchase of a certain product without the original intent to buy it. Such behaviour occurs spontaneously, without thinking too much, and most often occurs after a certain noticeable or less noticeable incentive to buy (Beatty and Ferrel, 1998). In the model of impulse buying, Dholakia (2000) classifies the influential factors of previously conducted research in three areas: marketing incentives (including product and promotional



activities), situational factors (including the financial condition of consumers and the current mood) and impulse characteristics of consumers. For the retailers, brand managers and category managers, it is very important to understand the occurrence of consumer's impulse behaviour and to understand the incentives that stimulate the aforementioned behaviour.

Determinants of impulse buying are numerous (consumers' tendency to shopping, retailer's marketing efforts, general environment) and can be grouped into store determinants and out-of-store determinants. If considering those occurring directly in the store (design, promotion signage, atmosphere, personnel, product assortment and its presentation), store space determinants supposed to have significant influence. This paper investigates store layout, way of exposing the goods on the shelf and store displays as main store space determinants of consumer impulse buying. The goal of the paper is to reveal influence of main retail store space determinants on impulse buying in grocery retail stores by testing the following three hypothesis:

*H1: Store layout significantly influences the impulse buying tendency of consumers in the retail grocery store.*

*H2: The way of exposing the goods on the shelf significantly influences the impulse buying tendency of consumers in the retail grocery store.*

*H3: Store displays significantly influences the impulse buying tendency of consumers in the retail grocery store.*

The next chapter Literature review gives the base for the research and set hypothesis. Chapters Research methodology and Research results describe conducted research and show the obtained results, which are commented in the Conclusion chapter.

## **Literature Review**

In contemporary retailing, merchandising has a significant role in business development and employee development in that sector. It is an interdisciplinary term that connects procurement, sales and logistics, and to some extent, it encompasses almost all elements of the marketing mix (Prunk, 2007). Furtherly, it represents marketing communication in the store and marks the management of sales space with optimum presentation of products, services or sales personnel (Borota, 2008).

As a marketing communication element, through the proper way of exposing the products / services, it encourages consumer purchasing. According to Blythe (2002; cited in Gigola, 2014), visual merchandising is a way of presenting goods at the point of sale. The importance of merchandising is reflected in the growth of consumer purchasing incentives, which in turn leads to an increase in sales volumes.

Underhill (2009) states that merchandising affects the creation of a picture of the store in the consumer's mind and discusses merchandising as a science of buying which points out the proper ways of using merchandising tools - how to create a signage that users will actually notice, and how to position those signs in the right place, but also how to design a layout, arrangement of all elements in the store that allows consumers quickly and easily access to every part of the store. Maier (2009) emphasizes that visual merchandising should be embedded in a business strategy, pointing to the importance of a visual experience that helps to make decisions about the appearance and layout of a store.

Consumers often plan their purchase during the purchase itself, e.g. in the store. In order to carry out their current purchasing intentions, retailers often provide various stimuli - with the purpose of informative assistance and as well as to remind or motivate consumer to buy certain products. The same stimuli actually trigger a strong desire for a product that ultimately encourages the consumer to make an unplanned decision or impulse buying. Furtherly, the more retailers stimulate consumers and

use visual merchandising elements as a help for purchasing, it will boost the desire, create the needs and therefore the potential for impulse buying will be higher (Thomas et al., 2018).

Research by Zhou and Wong (2008) concludes that incentives in the store, such as point-of-purchase signs, promotional labels and posters, and prevailing atmospheres in the store, have a major influence on impulse buying behaviour. Therefore, it is very important for retailers to find out when impulse buying occurs, how to empower and encourage it and to understand exactly what incentives stimulate impulse buying behaviour. In other words, retailers should know who their consumers are. Research indicates that consumers, who impulsively buy, express their self-identity, emotions, happiness, pleasure and enthusiasm (Sathyanarayana et al., 2017).

Every store, i.e. retailer tries to build and maintain the image of a good retailer, which is why visual merchandising tool is very often used since it affects consumers. Apart from attracting consumers to the store, they are turning them into buyers, enabling them to have a better purchasing experience and thus building their loyalty, and encouraging their purchasing decisions, being spontaneous or impulse (Thomas et al., 2018). In attracting consumers and building their loyalty, the role and the importance of location in the retail sector should not be forgotten. However, the concept of location in retail goes beyond the location of the store itself. Space management is a continuation of location management policy in the so called “brick and mortar” retailing that can be observed on four levels:

- 1) Macro location – represents selection of a region or city/village where the store will be open;
- 2) Micro location – represents selection of an exact address where to build/rent a store;
- 3) Store layout – location of shelves or other displays with product categories in the store (space management on the store level);
- 4) Planogram – location of each SKU on the shelf of certain category (space management on the category/shelf level).

Through category management’s space management, retailers usually cover location problems of layout and planogram, i.e. space management on store level and space management on category/shelf level (exposing goods on the shelf).

### ***Store layout***

The layout of the store as an element of merchandising assumes great importance in the store, as space is the most valuable resource in the store and makes a significant element of the retailer's cost. According to the American Marketing Association (2014) store layout or arrangement of departments or groupings of merchandise, has to be organized to provide for ease of customer movement through the store and to provide for maximum exposure and attractive display of merchandise. One of the most widely used types of retail layouts is a grid layout characterized by parallel rows and long aisles. Grid layout is primarily intended for supermarkets and hypermarkets, and other forms of grocery stores mainly because of its high space utilization (high number of products presented in limited space area). On the other hand, this kind of layout does not provide consumer’s full tour through the store and its whole product assortment. As a result, categories such as meat, dairy or bakery products and beverages (categories that are part of almost any consumer basket) are most often in the background of the store, and in different corners of the store to increase the flow of consumers within the store, where they are exposed to a wider spectrum of various products (Hubrechts and Kokturk, 2012).

From all of the above, the advantages of using a grid layout are as follows: the established direction and familiarity of layout for consumers, the possibility of self-service, low cost, easier exposure of products, easier cleaning and supervision for retailers.

Consumers go through the store on different routes and different speeds and this is why in certain areas is easier to attract the consumers’ attention. Because of the above, retailers and manufacturers should accept the importance of layout design by focusing attention on destinations where impulse buying behaviour is frequently noted (Zentes et al., 2007).

Considering previous research, different outcomes have been recorded. Saad and co-authors (2015) indicate in their research a significant positive correlation between layout and impulse buying tendencies. On the other hand, Nishanov and co-authors (2016) in their research did not find the positive relationship between layout elements and impulse buying.

Storms (2006) also focuses on the role of interior of the store as an element of visual merchandising. Conclusion of research suggests that already the first glance or impression is crucial to making decisions on purchasing habits. Storms concludes that the main goal of interior design is to keep the consumer as long as possible at the point of sale, which affects the possibilities of buying incentives and maintaining consumer satisfaction and loyalty.

### ***Products exposure on the shelf***

Product positioning is an activity of deciding where to put product on the shelf according to its market share, gross margin, target customer's segment, retailers' promotion plans, logistical requirements (volume, temperature, shape, secondary or RRP packaging), influence on sale of other products in category and/or in the rest of the assortment (cross category analysis). Products' positioning will have a crucial impact on its contribution to the retailer – "it can make the difference between profit and loss" (Cox, 2012).

The struggle for a shelf place in the store is constant, and one of main sources of conflicts between manufacturers and retailers. Incorrect location, improper position or lack of space may significantly undermine the potential of product sales. While manufacturers always strive for more space for its brands, retailer analyses whole product category and searches for combination of sale of all products in category that will ensure maximum profit, and all that with scarce resource as space is. Dreze et al. (1994) emphasize number of product facings and product out-of-stock as two key factors in the process of shelf product positioning. Number of facings could suggest the problem of too many products on the shelf, while out-of-stock implies the problem of lost sales due allocating not enough space for certain product.

Segetlija and Dujak (2013) summarized most important principles for successful positioning on a category level, as well as basic rules regarding direction of customer moving in the store and price increase (prices always increase in customer moving direction, respectively from left to right). The most commonly grocery stores have exposure on four levels, and in rare cases can have exposure on three levels. Exposure at the level of four shelves, from the lowest to the highest, can be categorized on the "floor" level, the "height of the hand" level, the "eye" level and "above the eyes" level.

Various researches indicate that different levels of product positioning on the shelf do not attract the same attention of the consumers. According to Chung et al. (2007), vertical change of shelf position is much more effective than horizontal relocation. According to many studies (Chung et al, 2007; Segetlija and Dujak, 2013) eye-level location was the most desirable location, i.e. highest sale location. Hubrechts and Kokturk (2012) state that products positioned at the eye level, as well products with higher number of facings, are more attractive, more visible and more often encourage consumer impulse buying. In addition, when considering several packaging of different manufacturers positioned in multiple rows on the shelf, consumers have the tendency of choosing the product in the middle row, which indicates the level of the eye or the level of the hand (Christenfeld, 1995). Consumers are convinced that retailers place expensive and high-quality brands at higher positions on the shelf, while cheaper brands place on lower-level shelves (Valenzuela and Raghurir, 2015).

Horizontal movements are not so important, but some rules have been noticed - centrally located products were preferred in the smaller retail formats like convenience stores, while an edge location was preferred in the larger formats – e.g. supermarkets, hypermarkets (Chung et al. 2007). Research of consumers' eye movement in the store indicates that most of consumers neglect even one-third of products on the shelf (Young, 1987; cited in Larson, 2006).

Dickson and Sawyer (1999) state that most consumers make their purchasing choices very quickly, with a minimum search and comparison of prices of similar products. Furtherly, consumers believe that products positioned along the passage are cheaper (price promotions) suggesting that consumers use promotional islands and the main passage of the store as a possibility of meeting reduced prices (Inman et al., 1990).

### ***Store Displays***

In order to attract consumers' attention in the store, it is necessary to encourage them to interact and create a cognitive purchasing experience. In the retail industry, display has become the powerful tool to attract consumers' attention.

The way of exposing products in the store has the purpose of directing and coordinating the consumer's choice and gondola shelving is predominantly in grocery stores (Khakimdjanova and Park, 1995). Displays or display areas represent additional exposure of products on specially constructed freestanding fixture displays or on the side shelves/gondola ends, pallets or racks, entrance displays or checkout displays and are based primarily on the excellent location within the store (compared to the usual positioning on the shelf). Such temporary additional exposures within the store are characterized by capturing the most attractive locations, i.e. hot spots, but also the most attractive appearance in the store. Additional exposure presents new products, products on price promotion or existing products in attractive way. The profitability of this type of product exposure arises from the method of presenting a product, which causes the consumer to meet the same product several times, and therefore is additionally exposed to an incentive to purchase the same (Vulić, 2014). Retailers use displays to maximize valuable retail space (Goworek and McGoldrick, 2015) and to design and deliver offer that will stand out (Grewal et al, 2017), but displays are in most occasions financed by manufacturers. Nevertheless, Goworek and McGoldrick (2015) warn of the necessity to establish a balance between exposing the wider range of products in the store and not leaving enough space to move through, resulting in store looking cluttered.

Different types of additional product exposure attract attention, provoke emotions, reveal concealed consumer senses and drive the urge to possess the exposed product. In other words, the task of such additional product exposure is to challenge and persuade the consumer to impulse buying (Ramandeep et al., 2015). Davies and Tilley's (2004) research suggests that about 50% of total purchases made in grocery stores are pre-planned, while the other 50% are influenced by product displays. Sarma (2014) has also focused research on "one of the most powerful marketing tools in the retail – display" and thinks that the display serves as a tool to stimulate and motivate a consumer in the store to make an urgent decision that results in an impulse buying. The results of this research indicate positive relations and influence between display and impulse buying. Hubrechts and Kokturk (2012) have analysed, among other things, the role and the effect of displays at the retail store on the consumers' impulse buying. Their research indicates a significant positive correlation of displays with the impulse buying tendency, but also the significant and direct influence of displays on impulse buying tendency. Finally, Davies and Tilley (2004) state that additional ways of product exposure at a store are one of the most influential tools in driving impulse buying.

### **Research Methodology**

The main goal of primary research was to explore the influence of store space determinants on impulse buying tendency in grocery retail stores. As a research instrument highly structured questionnaire was used, both online version through Google Forms template and paper version. Targeted respondents were household's members (one per household) who are involved in shopping in a retail grocery stores – supermarket or hypermarket. In Croatian context, supermarkets are between 2000 and 2000 m<sup>2</sup> large, while hypermarkets are larger than 2500 m<sup>2</sup>. Six retailers that geographically are present in whole Croatia were included in the questionnaire and respondents chose one retailer in whose supermarket or hypermarket they commonly shop and base their further answers on that retailer's store. The primary research was conducted in June 2018 on a convenient

sample of 226 respondents in one county of eastern Croatia. The obtained data were analysed using the statistical software package IBM SPSS 23.0. The sample description is shown in the table 1.

**Table 1: Sample description**

		N	%
<b>Gender</b>	<b>Total</b>	<b>226</b>	<b>100</b>
	Male	83	36,7
	Female	143	63,3
<b>Age</b>	<b>Total</b>	<b>226</b>	<b>100</b>
	18-24	86	38,1
	25-30	69	30,5
	31-40	34	15,0
	41-50	17	7,5
	51-60	13	5,8
	61-70	7	3,1
<b>Education</b>	<b>Total</b>	<b>226</b>	<b>100</b>
	Primary school	7	3,1
	High school	82	36,3
	Higher education	41	18,1
	Faculty	59	26,1
	Scientific masters or doctoral degree	37	16,4
<b>Employment status</b>	<b>Total</b>	<b>226</b>	<b>100</b>
	Student	80	35,4
	Employed	102	45,1
	Unemployed	35	15,5
	Retired	9	4,0
<b>Members of household</b>	<b>Total</b>	<b>226</b>	<b>100</b>
	1	9	4,0
	2	42	18,6
	3	66	29,2
	4	65	28,8
	5 and more	44	19,5
<b>Household monthly income</b>	<b>Total</b>	<b>226</b>	<b>100</b>
	not answered	1	0,4
	less than 400.00 €	24	10,6
	400.00 – 800.00 €	52	23,0
	800.00 -1,200.00 €	64	28,3
	1,200.00-1,500.00 €	34	15,0
	1,500.00 -1,800.00 €	19	8,4
	1,800.00 € and more	32	14,2

Source: authors' work

The variables were measured by scales consisted of several statements presented in 5-point Likert scales. *Impulsive buying tendency* scale consisted of 13 items combining scales from Hubrechts and Kokturk (2012) and Mehta and Chugan (2013). *Store layout* scale and *store display* scale were combined from Hubrechts and Kokturk (2012) and Henry (2014). Nine-point item scale for *products exposure on the shelf* was combined from Hubrechts and Kokturk (2012), Mehta and Chugan (2013) and Štulec et al. (2016).

**Table 2: Reliability analysis of the constructs and descriptive statistics**

Scale	N of items	Cronbach Alpha	Mean	Variance	Std. deviation
Impulse buying	13	0.809	36.47	69.708	8.349
Store layout	8	0.780	27.77	29.953	5.454
Products exposure on the shelf	9	0.877	31.93	44.039	6.636
Store displays	7	0.901	21.26	37.358	6.112

Source: authors' work

All four constructs have Cronbach's Alpha above 0.7 and therefore acceptable reliability (Nunnally, 1978). Lowest reliability has the construct for variable *store layout* (0.78), but it is still adequate.

### Research Results

In order to find out which store space determinant has the significant influence on consumers' impulse buying tendency, linear regression tests were conducted. Table 3 shows the proportion of the variance in the dependent variable (impulse buying tendency) that is explained by this model. Since the R Square amounts .220, it means that this model explains 22 % of the variance in impulse buying tendency.

**Table 3: Model summary**

Model Summary <sup>b</sup>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.469 <sup>a</sup>	.220	.210	7.42217
a. Predictors: (Constant), Shelf_total, Display_total, Layout_total				
b. Dependent Variable: IB_total				

Source: authors' work

The following table 4 shows ANOVA results. It indicates the statistical significance of the result in the Model summary table considering that significance (p) is lower than .0005, i.e. Sig = .000.

**Table 4: ANOVA**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3454.667	3	1151.556	20.904	.000 <sup>b</sup>
	Residual	12229.673	222	55.089		
	Total	15684.341	225			
a. Dependent Variable: IB_total						
b. Predictors: (Constant), Shelf_total, Display_total, Layout_total						

Source: authors' work

The regression coefficient table (table 5) shows which variable from the model contribute to the prediction of the impulse buying tendency, dependent variable. The Significance column indicates that the only statistically significant variable are *store displays* (p=0.000), which positively influences the impulsive buying tendency.

**Table 5: Regression coefficient**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	21.001	2.830		7.420	.000
	Layout_total	.084	.117	.055	.716	.475
	Shelf_total	.020	.092	.016	.213	.832
	Display_total	,589	,096	,431	6,108	,000

Source: authors' work

From this research arises the result that *store layout* and the *products exposure on the shelf* are not statistically significant variables in predicting the impulse buying behaviour of consumers. However, possible explanations of these results will be discussed as the part of the following conclusion chapter.

### Conclusion

It is very important for retailers to effectively manage their valuable store space, but also both for retailers and manufacturers to encourage impulse buying, not only of products on price promotion.

The obtained research results suggest that hypothesis 1 and 2 should not be accepted, i.e. that store layout and products exposure on the shelf do not significantly influence the impulse buying tendency. Hypothesis 3 can be accepted and it can be concluded that store displays have a significant positive influence on the impulsive buying tendency. In other words, the more of store displays on good locations in the store, the greater will be impulse buying tendency. Due to additional product exposure, consumers are more likely to see the specific products and more likely to buy the products. This paper managed to emphasize the importance of the presence of store displays. As an additional, secondary position of products in the store, they are usually financed by manufacturers, who are already under high financial pressure from the powerful grocery retailers. Research proofs that displays as marketing tools directly influence consumers' impulse buying tendency, and therefore they are most powerful tool for manufacturers to improve sales of their products. Moreover, as manufacturers can not considerably influence on changes of store layout and product positioning on the shelf, they should consider additional investment in displays in retail stores.

Not finding the significant influence of store layout and products exposure on the shelf on impulse buying tendency is in accordance with previous research (e.g. Nishanov et al., 2016). Authors believe that these results mostly can be attributed to the used research method – questionnaires. Limitations of this research mainly arise from own assessment of the respondents, which may differ from the actual behaviour in the store. Another important limitation is the fact that only three independent variables were included in the regression model. Also, focus on large stores, which excludes the convenient stores (often places for quick, fast-made purchasing decisions) and geographically restricted area from which the included respondents come can also be seen as a limitation of this research.

Future research should include more independent variables to achieve the higher explanation of the variance in impulse buying tendency, especially considering the complexity of the impulse buying occurrence. However, more appropriate research would require interviews of the respondents inside the store and usage of eye tracking method (or some other more objective method), in order to capture reactions to the observed elements from the store and to investigate what are the elements that attract attention and prolong the stay of consumers in the store. By comparing different retailers, it is possible to examine whose store space determinants are most effective in encouraging consumers to impulse buying.

## References

- American Marketing Association (2018), Dictionary. Available at: <https://www.ama.org/resources/Pages/Dictionary.aspx?dLetter=S> [Retrieved May, 17 2018]
- Beatty, S. E. and Ferrell, M. E. (1998), 'Impulse Buying: Modelling Its Precursors,' *Journal of Retailing*, 74 (2), 169-191.
- Bell, J. and Ternus, K. (2017), *Silent selling: best practices and effective strategies in visual merchandising*. Bloomsbury Publishing USA.
- Bhalla, S. and Anuraag, S. (2010), *Visual merchandising; Retail Education*; Nagar, New Delhi: Tata McGraw Hill.
- Blythe, J. (2002), *Komunikacja marketingowa*, Polskie Wydawnictwo Ekonomiczne, Warszawa.
- Borota, N.C. (2008), 'Merchandising: Marketinška komunikacija u trgovini', *Poslovni savjetnik*.
- Christenfeld, N. (1995), 'Choices from identical options,' University of California, Research Report: Psychological Science, San Diego. [Retrieved April 25, 2018]. Available at: <https://pdfs.semanticscholar.org/9b27/879a0ce797975a6b1d68e92db521169fe781.pdf>
- Chung, C., Schmit, T.M., Dong, D. and Kaiser, H.M. (2007), 'Economic Evaluation of Shelf-Space Management in Grocery Stores', *Agribusiness*, 23 (4), 583–597.
- Cox, E. (2012), *Retail Analytics*, John Wiley & Sons Inc., Hoboken. New Jersey.
- Davies, J. and Tilley, N. (2004), 'Interior Displays: Using the Management Services Approach in Retail Premises'. *Managing Services* 10, 48 (7), 10-13.
- Dickson, P.R. and Sawyer, A.G. (1999), 'The price knowledge and search of supermarket shoppers,' *Journal of Marketing*, 42-53, [Retrieved April 25, 2018]. Available at: <https://archive.ama.org/archive/ResourceLibrary/JournalofMarketing/Pages/1990/54/3/9102183037.aspx>
- Dholakia, U.M. (2000), 'Temptation and Resistance: An Integrated Model of Consumption Impulse Formation and Enactment,' *Psychology & Marketing*, 17, 955-982.
- Dreze, X., Hoch, S. J. and Purk, M. E. (1994), 'Shelf management and space elasticity'. *Journal of retailing*, 70 (4), 301-326.
- Gigola, M. (2014), 'Impact of Visual Merchandising on Consumers' Behaviour while Buying Apparels,' Akademia Leona Koźmińskiego w Warszawie.
- Goworek, H., McGoldrick, P. J. and McGoldrick, P. J. (2015), *Retail marketing management: Principles and practice*. Harlow, UK: Pearson.
- Grewal, D., Roggeveen, A. L. and Nordfält, J. (2017), 'The future of retailing,' *Journal of Retailing*, 93(1), 1-6.
- Henry, K.A. (2014), *Visual merchandising strategies for small businesses*; Faculty of the North Dakota State University of Agriculture and Applied Science.
- Hubrechts, L. and Kokturk, B. (2012), 'Effects of visual merchandising on young consumers' impulse buying behaviour; Department of Marketing, School of Business and Engineering, Halmstad.



- Inman, J.J, McAlister, L. and Hoyer, W.D. (1990), 'Promotion signal: proxy for a price cut?', *Journal of Consumer Research*; Oxford University Press, 17 (1), 74-81.
- Khakimdjanova, L. and Park, J. (2005), 'Online visual merchandising practice of apparel e-merchants,' *Journal of Retailing and Consumer Services*, 12(5), 307-318.
- Larson, R. (2006), 'Core Principles for Supermarket Aisle Management,' *Journal of Food Distribution Research*, 37 (1), 101.
- Maier, R.D. (2009), 'Boutique Visual Marketing'. [Retrieved May, 28 2018]. Available at: <http://ezinearticles.com/?Boutique-Visual-Marketing&id=2591828>
- Mehta, M.P. and Chugan, P.K. (2013), 'The Impact of Visual Merchandising on Impulse Buying Behaviour of Consumer: A Case from Central Mall of Ahmedabad India,' *Universal Journal of Management* 1, 76-82.
- Nishanov, B. and Ahunjonov, U. (2015), 'The influence of store characteristics on consumers impulse buying behaviour,' *Journal of International business research and marketing*, 1 (3), 20-26.
- Nunnally, J. (1978), *Psychometric theory*. New York: McGraw-Hill.
- Prunk, S. (2007), *Vloga merchandisinga v trženju*; Univerza na primorskem, Fakulteta za management Koper, Koper.
- Ramandeep, B., Sinha, A.K. and Kant, R. (2015), 'Effect of store atmospherics on consumer buying behaviour,' *Asian Journal of Home Science*, 10 (2), 386-394.
- Saad, M. and Metawie, M. (2015), 'Store Environment, Personality Factors and Impulse Buying Behavior in Egypt: The Mediating Roles of Shop Enjoyment and Impulse Buying Tendencies,' *Journal of Business and Management Sciences*, 3 (2), 69-77.
- Sarma, S. (2014), 'A study of Retail Display and Impulse Buying Behavior,' *Journal of Marketing and Consumer Research*, 4, 51 -55.
- Sathyanarayana, S., Harshini, C. S. and Sudhindra, G. (2017), 'An Analytical Study on the Impact of Visual Merchandising on Impulsive Buying Behaviour in Shopper Stop,' *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 36 (5), 112-132, [Retrieved April, 25 2018]. Available at: <http://gssrr.org/index.php?journal=JournalOfBasicAndApplied>
- Segetlija, Z. and Dujak, D. (2013), *Upravljanje kategorijama proizvoda*; Osijek, Ekonomski fakultet u Osijeku, Sveučilište J.J. Strossmayera.
- Storms, R. (2006), 'An outline of Visual Merchandising', [Retrieved April 23, 2018]. Available at: <http://www.articlesbase.com/recruitment-articles/an-outline-of-visual-merchandising-2720346.html>
- Štulec, I., Petljak, K. and Kukor, A. (2016). 'The Role of Store Layout and Visual Merchandising in Food Retailing,' In *9th International Conference on Social Sciences*. Proceedings of the 9th International Conference on Social Sciences, ISBN: 9788890916410, 8-9 April, 2016, Dubrovnik, Croatia, 250-264.
- Thomas, A.K., Louise, R. and Vipinkumar, V.P. (2018), 'The impact of visual merchandising on impulse buying behavior of retail customers,' *International Journal for Research in Applied Science & Engineering Technology*. 6 (3).
- Underhill, P. (2009), *Why We Buy: The Science of Shopping*, Simon & Schuster, New York.

Valenzuela A. and Raghur P. (2015), 'Are top-bottom inferences conscious and left-right inferences automatic? Implications for shelf space position,' *Journal of Experimental Psychology: Applied*, 21(3), 224.

Vulić, B. (2014), 'Pozicioniranje kao element unapređenja prodaje,' *Ja trgovac*, Erste Group Procurement, Zagreb.

Young, E.C. (1987), 'Packaging Research – Evaluating Consumer Reaction'. Presentation given at the Strategic Packaging International Seminar in Toronto.

Zentes, J., Morschett, D. and Schramm-Klein, H. (2007), *Strategic Retail Management: Text and International Cases*. 1st Ed. Wiesbaden: Gabler.

Zhou, L. and Wong, A. (2008), 'Consumer Impulse Buying and IN-Store Stimuli in Chinese Supermarkets,' *Journal of International Consumer Marketing*, 16 (2), 37-53. [Retrieved April 25, 2018]. Available at: [https://www.tandfonline.com/doi/abs/10.1300/J046v16n02\\_03](https://www.tandfonline.com/doi/abs/10.1300/J046v16n02_03)

## **The Core of New Food Products and the Perception of The Products by Final Buyers**

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### **Abstract**

This paper explores the subject of new food products, with particular emphasis on the core of the products and the perception of the products by final buyers. The purpose was to interpret the notion 'new food product.' Moreover, the authors presented a classification for new food products and examined how respondents (final buyers) perceived the products. The paper presents the results of a primary survey covering two regions (Lublin Province and Mazovia Province), which allowed the authors to conduct a comparative analysis of the respondents' opinions about new food products.

The results of the primary survey allow for an observation that the surveyed final buyers of food products identify the notion of a new food product mostly with products that meet new needs. Furthermore, a large group of respondents related the notion to products that have been changed in different ways. Products with greater value for the buyer (such as products categorised as special foods) were chosen the most frequently as products that the respondents perceived in the most positive manner. It seems thus that products whose novelty resulted from modifications to their composition received relatively higher rating from the respondents than food products which were identified as new due to such changes as modifications to their packaging.

**Keywords:** new food products, perception, product innovation.

### **Introduction**

According to the published sources, one of the methods to gain a more or less permanent competitive advantage is to create and offer new products since such action allows an enterprise to differentiate itself in the market. As numerous authors (Ries and Trout 2000, Kotler 2017) suggest, a relatively permanent product differentiation is an effective way to gain advantage in market. This fact points B. Predić (1998) according to clearly place the product in the mind of the customer determines market success. Enterprises that are able to stand out from competition can also use a specific feature to create a positive image of their products in the mind of the buyer; at the same time, the positive image itself is also a differentiating factor for its products and the product is a concrete alternative for potential customers (Lv 2008). This is even more significant regarding the fact that many enterprises offer now products that are perceived by buyers as identical to themselves in terms of their features and properties, and the targeted needs, which is particularly the case in the food product market (Kotler and Tras de Bes 2004, Baruk and Białoskurski 2015).

One may therefore say that it is necessary for enterprises to focus on different methods for generating new ideas (Hamel 2017) that help create innovative products which either meet current needs differently than other products do or meet new needs. Such approach may give birth to new products which other enterprises may find it difficult to imitate and which buyers can perceive as not substitutable and of greater value than the competition's products.

It is worth mentioning at this point that according to some authors (Stewart – Knox and Mitchell 2017) low percentage of new food products and high percentage of market failures of new products shows mistakes made in the process of creating new food products. According to the authors the new food products are those that are new for recipients. They represent 7 – 25% of all food products

launching the market. Studies show, however, that original products have better chances of market success. Regarding to food products is also growing evidence that basing on original ideas is more effective than the use of imitation.

The need to create innovative products is also due to the fact that the food market is saturated, making it difficult to distinction on it. A small number of completely new food products maybe due to concerns enterprise from market failures. In this situations enterprises choose the strategy of developing the old products, which apparently seems to be safer. This choice, however, perpetuates the problem of the large number of failures of food products launching on the market. Therefore, it's not advisable to avoid creating a completely new food products, especially if their core is based on a very good knowledge of the requirements and needs of customers.

Marketing literature relates the notion 'new product' to entirely new products (product innovation) (Armbruster, Bikfalvi, Kinkel and Lay 2008) and to products that have been changed (modified) to some extent. According to J. Altkorn new products can be products meet the new needs or products that meet the needs previously met. In the first instance, a new need can be treated as known before, but not satisfied, or until awakened by marketing activities. These products create new markets. The second group of innovative products make product with expanded functions, resulting from the application of new techniques and technologies of production. These products allow for better or other meet the known needs. That author also distinguishes product that improved and upgraded, which are created in order to improve existing products (2000).

A new product can be defined as a product that is: highly efficient, durable, and aesthetic; up to global standards and economic and technical parameters; entering current markets or creating new markets. The method and degree of a product's acceptance in the market is relates to the decision-making process of a buyer. J. Dietl's (Górska-Warsewicz 2010) definition of a new product seems to take the process into consideration, as it assumes that a product may be regarded as new (meaning that it is different from previous products) only if final buyers who comprise a company's target market perceive the product to be new.

It is worth mentioning at this point that the notion of a new product is frequently associated with broadly understood innovations. Therefore, what merits close attention is the core of innovation. An analysis of the published sources indicates that there are many definitions of innovation and that the definitions frequently differ from each other in terms of their scope and their understanding of the core of innovation. Nonetheless, it can be noticed that the most of the definitions emphasise two features, namely change and novelty (Francis and Bessant 2005). According to the authors of the definition suggested in Task Force Meeting on Oslo Manual Revision (Baruk 2009), innovation occurs when an enterprise implements a new or a significantly improved product, service, process, marketing method, or a significant organisational change leading to the improvement of the enterprise's production and innovation capacity. J. Baruk believes that a major weakness of the definition is that it identifies innovation as any change (2009). It is doubtful whether any change is equal to innovation. It is important then to specify criteria that a change should meet in order for it be recognised as innovation.

J. Baruk states that innovation is a change that has been purposefully developed by man and regards: a product (starting the production of a new product or a significantly improved product and introducing it to the market), a production method (applying new or significantly improved production methods), production and work organisation (new or significantly improved solutions for organisational structures and processes), a management method, or a marketing method that has been used for the first time in a given community (in an enterprise, for instance) in order to achieve specific economic and social advantages and that meets specific technical, economic, and social criteria (2009).

Such understanding of innovation makes it possible to distinguish between several innovation types (Baruk 2009):

- product innovation, which refers to a product or a service that is new or that has been significantly improved in terms of their possibilities or their intended application (significant changes in components, materials, ease of use, technical conditions or other functional parameters);
- process innovation, which refers to the introduction of a new or a significantly improved method for production, delivery, distribution, the intended purpose of which is to significantly improve the quality, effectiveness, flexibility of production, the supply for goods and services, or working environment protection and safety;
- marketing innovation, which refers to the introduction of a new or a significantly improved sales or marketing method, the intended purpose of which is to increase the attractiveness of products in particular market segments, which also includes significant changes to the appearance of a product and its packaging;
- organisational innovation, which refers to changes in business practices, organisation of the workplace and contact with other companies.

Bearing in mind the above specificity of particular innovation types, it may be said that product and marketing innovations are of key importance from the marketing perspective since the types relate to new products and commercial activities. You should also pay attention to the definitions and classification of new products proposed by Ph. Kotler and F. Trias de Bes according to which, by traditional marketing activities create new products (product innovation) with sample characteristics (2004):

- products with modified composition,
- products whose packaging size has been changed,
- products whose packaging type has been changed,
- products whose packaging form has been changed,
- products with enriched composition,
- products with greater value for the buyer.

The purpose of the research was to interpret the notion 'new food product' and to examine how final buyers perceive new food products with different characteristics.

## **Materials and Methods**

A socio-psychological method (survey) was used to conduct the research and a survey questionnaire was used as a research instrument. The survey questionnaire comprised semi-open-ended and close-ended questions. Respondents could give multiple answers to some of the questionnaire's questions. A pilot experiment was carried out before the actual survey research in order to determine the degree of usefulness of the author's research instrument (survey questionnaire). The pilot experiment included 50 respondents. The scope of the conducted research encompassed respondents who were adult final buyers and food product consumers from the Lublin Province and the Mazovia Province. Individuals were included in the research sample on a non-random (quota) basis, and the population list comprised the data from the Local Data Bank, Central Statistical Office of Poland (GUS). The author chose final buyers of food products to be the object of the research because as the buyers make the final evaluation of what food product enterprises offer, they are becoming increasingly important to the activity of the enterprises. Since the respondents were from two Provinces, a comparison analysis was carried out that took into account the opinions and expectations of the respondents as the recipients and participants of marketing activities. 910 fully completed questionnaires were collected in total and used in the further research process stages involving the comparison analysis and a statistical analysis (with particular emphasis on factor and concentration analysis).

Women constituted a majority (62.4%) of the research population. The largest percentage of the respondents (38.3%) indicated that a village is their place of domicile. The smallest percentage comprised respondents from cities with a population between 100,000 and 200,000 (1.5%). A majority of the respondents (41.8%) reported to have a tertiary education. More than a third of the surveyed (34.4%) have a secondary education. A similar percentage of the respondents have completed vocational schools and BA studies (12.1% and 9.8% respectively). The smallest part of the

sample reported to have lower secondary education (0.3%), whereas 1.6% have completed a primary education only. While the largest percentage of the respondents (27.8%) comprised people who were between 26 and 35 years old, the smallest percentage (2.2%) comprised a population of over 65 years old. The largest part of the respondents (27.3%) belonged to 4-person households. The percentage of the respondents from a group of the largest households (comprising 5 people or more) was slightly lower (25.6%). 1-person households constituted the smallest part of the survey (7.1%). In the case of the largest percentage of the surveyed (22.4%), the monthly household net income per capita was between PLN 651 and 900. Every fifth respondent specified the income as between PLN 901 and 1300. 8.9% of the surveyed declared the smallest monthly household net income per capita (PLN 400 and less) and 14.0% declared the highest income (PN 2,000 and more).

## Results and Discussion

The analysis of the perception of new food products will be preceded with the identification and analysis of how the respondents understand the notion of a new product. The conducted research suggests that according to the largest group of respondents, a new food product is a product that meets a new need (23%). Only 2.0% less respondents believe that a new food product is a product whose composition has been modified (in order to meet the current preferences of consumers, for instance). It may be worth adding that these two interpretations of the notion were the only ones that were presented by more than 20.0% of not only all survey participants but also of the respondents from Lubelskie province; what is more, the structure of the interpretations in the Lubelskie Province was the same as the structure of the interpretations by all survey participants.

A relatively smaller percentage of the surveyed regarded that a change in packaging (5.0%), new design (4.0%), and providing the buyer with greater material value (3.5%) are the key factors for interpreting a food product as a new one. The lowest percentage of the respondents (1.0%) whose interpretation was classified as 'other' identified a new food product as one that has been previously unknown or unavailable in the market. Furthermore, some of the respondents answered that a food product can be perceived as new if changes had been introduced both to the product itself and to its packaging.

It is worth mentioning at this point that present innovations based on change of packaging and change the size of the product offered are dominant in the case of certain categories of food products (Trias de Bes and Kotler 2013).

It may be therefore said that almost  $\frac{1}{4}$  of the surveyed, which is the largest part, relates the notion of a new product to entirely new food products (products belonging to a new product category, for instance). The percentage prevalence of persons who interpret a product that meets new needs as a new product may indicate, among other things, that the expectations of the ever-more demanding consumers for food products are rising (Lazaridis and Drichoutis 2017). Besides, it is worth noting that even though the respondents focused on different decisive characteristics for the relative or absolute novelty of a product, most of the respondents interpreted the notion in line with a definition of broadly understood product innovations (Altkorn 2000, Baruk 2009).

In the authors estimation, the analysis of the image of new food products should include the analysis of the perception of new food products that were developed as a result of various modifications (modifications to the packaging, composition, value of a product). Such approach makes it possible to identify a method for creating new products that enables an enterprise to achieve a more positive product image, influencing the purchase decisions of final buyers.

The conducted survey research indicates that most of the respondents (62.6%) positively perceived the products with various modifications; at the same time, only 8.0% perceived the products in a very positive manner. It is worth observing that both of the Provinces shared a similar percentage of respondents who positively perceived modified food products. The group of respondents who positively perceived this type of products featured a slightly higher percentage of women than men; the difference was insignificant (2.5%). Young respondents perceived modified food products more

positively than the older respondents. Actually, a relationship was noticed between the age of the respondents and their perception of modified food products: as the age increased, the percentage of those who perceived the products as new decreased.

The results of the analysis of mean rating values for different groups of modified food products should also be taken into account. The values were calculated on the basis of ratings that the respondents assigned to the perception of the food products using a 0-3 scale, where 0 indicated a strongly negative perception, 1 indicated a negative perception, 2 indicated a rather positive perception, and 3 indicated a strongly positive perception. The survey participants gave the highest rating to food products with greater value for the buyer (the mean rating was 2.4). Products with enriched composition and products with modified composition received slightly lower, similar ratings (2.2 and 2.1 respectively). Products with modified packagings received much lower ratings from the respondents, which resulted in lower mean ratings for this product group; the respondents evaluated a modification to the size of packaging slightly higher than a modification to the type of packaging (1.75% vs 1.7%). The lowest mean rating (1.6%) was given to products whose packaging form was changed through modifications to its colour or shape. One may therefore say that products whose novelty resulted from modifications to their composition were perceived more positively than the products whose novelty resulted from modifications to their marketing attributes, an instance of which is packaging.

This conclusion was subjected to further statistical verification. In order to discover the hidden relationships between different modified food products and their perception regardless of the rating from the respondents, factor analysis was carried out. The analysis served as a basis to identify 2 main factors that influenced the respondents' perception of different modified products. The identification was performed using the Kaiser criterion, according to which analysis should include factors whose eigenvalues exceed 1.

Table 1 shows that the 2 main factors for the perception of modified food products may be linked to particular variables. While the first eigenvalue (2.231) explains 37.19% of the variance, the second eigenvalue (1.055) explains only 17.59% of the variance. The results for particular product modifications that comprise the percentage of the total variance demonstrate how important the identified factors are to the surveyed final buyers.

**Table 1: Eigenvalues identified using the Kaiser criterion**

Factors	Eigenvalues	Total variance (%)
Evident (external) changes	2.231	37.19
Non-evident (internal) changes	1.055	17.59

Source: own work based on the results of the conducted survey

Positive factor loadings with values of 0.7 and more were obtained for the first factor, which was referred to in survey questions as a “product with different packaging form” (0.770) and a “product with different packaging type” (0.842) (Table 2).

**Table 2: Factor analysis regarding the perception of modified food products by the respondents**

Type of a modified food product	Factors	
	Evident (external) changes	Non-evident (internal) changes
Product with changed composition	0.183	0.521
Product with changed size	0.564	0.186
Product with changed packaging type	<b>0.842</b>	0.120
Product with changed packaging form	<b>0.770</b>	0.116
Product with enriched composition	0.265	<b>0.744</b>
Products with greater value for the buyer	-0.007	<b>0.821</b>

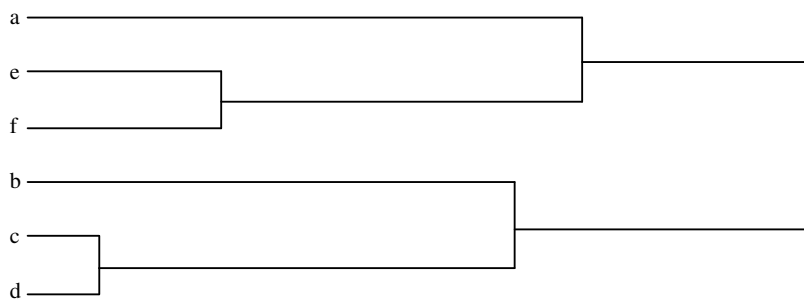
Source: own work based on the results of the conducted survey

Therefore, it may be said that food product modifications involving the change of packaging type or form contributed the most to the positive perception of the products by the respondents. The authors categorised such products as products whose modifications are evident to the final buyer. Positive factor loadings with values of 0.7 and more were obtained for the second factor as well, which was referred to in survey questions as a “product with enriched composition” (0.744) and a “product with greater value for the buyer” (0.821). The author categorised such products as products whose modifications are not evident to the final buyer (internal changes).

It is worth referring at this point to the result of research conducted by B. Słomińska (Słomińska 2000) of 123 production enterprises operating on the domestic food market and offer branded products. The subject of the study were processes and phenomena associated with the creation and development of branded products. In the study group of manufacturers of food as the most important directions of development respondents accepted mainly product innovating (for example by changing the form of packaging) – 77,9%.

There are partial differences between the results for the mean rating value analysis and the factor analysis; this is due to the fact that factor analysis allows for the detection of hidden relationships which are independent of subjective ratings that the analysed elements received from respondents. In this case, low mean rating values for products with changed packaging form or type indicate, along with the observation that the evident (external) changes explain almost 40.0% of the variance, that the respondents perceived these packaging changes in the most positive manner, even though they gave relatively low ratings to the changes.

As regards product pairs that are perceived in a similar manner, the results for the mean rating value analysis are in line with the results for concentration analysis. The concentration analysis indicates that the respondents associate different food products with each other, which is reflected in the similar mean rating values for particular product modifications. Figure 1 presents a tree structure which suggests that the respondents perceived products with changed packaging type (c) similarly to products with changed packaging form (d). The respondents associated both of these modifications with product packaging size (b). What is more, the survey participants associated products with enriched composition (e) with products with greater value for the buyer (f). Both of the product groups were associated with products with changed composition (a).



a: products with changed composition (such as juices with lower or higher sugar content); b: products whose packaging size has been changed (such as snacks in 0.1 kg or 0.3 kg packaging); c: products whose packaging type has been changed (such as chocolates in paper or metal packaging); d: products whose packaging form has been changed (such as products whose packaging colour or shape has been changed); e: products with enriched composition (such as sugar cookies with coconut, or cookies with cinnamon); f: products with greater value for the buyer (such as ecological products).

**Fig. 1: A tree structure reflecting the perception of modified food products.**

Source: own work based on the results of the conducted survey

The respondents’ answers confirm that they positively perceive products whose novelty was due to modifications, which reflects their purchase behaviors regarding the products. Only 2.7% of the



surveyed final buyers declared that they had never bought any modified food products. On the other hand, as little as 0.3% believed that they had always been buying new (modified) food products. The largest percentage of the survey participants (56.2%) reported that they had sometimes been buying such new products.

## Conclusions

1. The surveyed final buyers of food products identified the notion of a new food product mostly with products that meet new needs. Furthermore, a large group of respondents related the notion to products that have been changed in different ways (through modifications to product packaging, design, size, composition).
2. Products with greater value for the buyer (such as products categorised as special foods) were chosen the most frequently as products that the respondents perceived in the most positive manner. It seems thus that products whose novelty resulted from modifications to their composition received relatively higher rating from the respondents than food products which were identified as new due to such changes as modifications to their packaging.
3. The factor analysis suggests that modifications to packaging form or type are perceived by the survey participants in the most positive manner, even though the participants gave them relatively low ratings. Therefore, the surveyed final buyers perceived new products with evident (external) changes more positively than products whose novelty was due to non-evident (internal) changes (such as enriched composition or greater value for the buyer).

## References

- Altkorn, J. (2000), Wprowadzanie na rynek nowych produktów, Podstawy marketingu, Altkorn J. (ed), Wydawnictwo Instytut Marketingu, Kraków.
- Armbruster, H., Bikfalvi, A., Kinkel, S. and Lay, G. (2008), 'Organizational innovation: The challenge of measuring non – technical innovation in large – scale surveys', *Technovation*, 28, 644.
- Baruk, A. I., Białoskurski, S. (2015), 'Wybrane determinanty wizerunku produktu spożywczego', *Żywność. Nauka. Technologia. Jakość*, 3, 205.
- Baruk, J. (2009), 'Istota innowacji. Podatność społeczeństw na innowacje', *Marketing i Rynek*, 3, 13-14.
- Francis, D. and Bessant J. (2005), 'Targeting innovation and implications for capability development', *Technovation*, 25, 171.
- Górska-Warsewicz, H. (2010), 'Kształtowanie marek produktów innowacyjnych z uwzględnieniem czynników kulturowych', *Roczniki Naukowe Seria*, XII, vol. 4, 101.
- Hamel, G., (2017) 'Innovation's New Math', [Online], [Retrieved September 10, 2017], <http://www.google.pl/search?q=innovations%20new%20maths&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:pl:official&client=firefox-a&source=hp&channel=np>
- Kotler, Ph. and Trias de Bes F. (2004), Marketing lateralny, Polskie Wydawnictwo Ekonomiczne, Warszawa.
- Kotler, Ph., (2017), 'How to create, win and dominate markets', [Online], [Retrieved August 4, 2017] <http://www.altfeldinc.com/pdfs/Kotler.pdf>.
- Lazaridis, P. and Drichoutis, A. C., (2017), 'Food consumption issues in the 21<sup>st</sup> century', [Online], [Retrieved September 10, 2017], [http://www.ip.aua.gr/Studies/Lazaridis-Drichoutis\\_final.pdf#search=%22Determinants+of+Polish+consumers%27+food+choices+and+their+implication+for+the+national+food+industry%22](http://www.ip.aua.gr/Studies/Lazaridis-Drichoutis_final.pdf#search=%22Determinants+of+Polish+consumers%27+food+choices+and+their+implication+for+the+national+food+industry%22).
- Lv, H., (2008), 'Research on Corporate Image Orientation', *Asian Social Science*, vol. 4, 5, 19.
- Predić, B., (1998), 'Strategic production management in enterprise', *Economics and Organization*, vol. 1, 6, 31.
- Ries, A. and Trout, J., (2000), 22 niezmiennie prawa marketingu, Polskie Wydawnictwo Ekonomiczne, Warszawa.
- Słomińska, B., (2000), 'Marka w strategiach rozwoju firm produkcyjnych na przykładzie przedsiębiorstw przemysłu spożywczego', *Marketing i Rynek*, 7, 24.

Stewart – Knox, B., and Mitchell P., (2017), ‘What separates the winners from the losers in new food product development?’ [Online], [Retrieved September 1, 2017], [http://www.sciencedirect.com/science?\\_ob=ArticleURL&\\_udi=B6VHY-47RB37X-5&\\_user=3033937&\\_coverDate=02%2F28%2F2003&\\_rdoc=1&\\_fmt=high&\\_orig=gateway&\\_origin=gateway&\\_sort=d&\\_docanchor=&view=c&\\_searchStrId=1678408939&\\_rerunOrigin=scholar.google&\\_acct=C000059495&\\_version=1&\\_urlVersion=0&\\_userid=3033937&md5=cf4c02633b164d1b49f14e7104429cd&searchtype=a](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VHY-47RB37X-5&_user=3033937&_coverDate=02%2F28%2F2003&_rdoc=1&_fmt=high&_orig=gateway&_origin=gateway&_sort=d&_docanchor=&view=c&_searchStrId=1678408939&_rerunOrigin=scholar.google&_acct=C000059495&_version=1&_urlVersion=0&_userid=3033937&md5=cf4c02633b164d1b49f14e7104429cd&searchtype=a)

Trias de Bes, F. and Kotler Ph., (2013), *Innowacyjność. Przepis na sukces, Model “od A do F”*, Dom Wydawniczy Rebis, Poznań.

## The Origin-Based Types of Organizational Trust and The Outcomes of Organization Functioning

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### Abstract

The article raises the issue of organizational trust, which is being recognized in the management of literature. The main aim of this article is to verify if the various origin-based types of trust has the same or different influence on organizational outcomes. Literature analysis allowed for the distinguish three types of trust: based on calculation, knowledge and identification. Research results have shown that trust based on knowledge and identification positively affect organizational outcomes (where the impact of trust based on identification is stronger). On the other hand, trust based on calculation either does not affect the results or its impact is negative. This means, first of all, that the durability of relationships that build trust has an impact on the results achieved by the organization as a whole: The more permanent the relationships between the participants of the organization, the better results the organization achieves. It also proves that not every type of trust always positively affects the organization's results. The research was conducted on a sample of 143 organizations operating in Poland.

**Keywords:** management, trust, type of trust, source of trust, organizational outcomes

### Introduction

The role of trust in the economy is being increasingly recognized in the economics literature at both the macroeconomic level, where there has been debate, e.g., on the relationship especially between the trust and economic growth (see, e.g., Knack and Keefer, 1997, and, more recently, Algan and Cahuc, 2010) and at the microeconomic level, such as in the context of financial decision making (see, e.g., Guiso et al., 2008, who explore the relationship between trust and stock market participation).

Usually in the considerations regarding the impact of trust on the organizational outcomes, they are treated as synthetic construct, which is a kind of resultant of components building them. However, trust as a multi-dimensional term is not easily categorized at all. It is considered depending on the entity, which has trust in someone or is trusted (Bieńkowska et al. 2018; Blomqvist 1997; Ellis, Shockley-Zalabak 2001, Fox 1975; Jiang, Probst 2015). Trust is a kind of social bond (*vinculum societatis* (Locke 1663)), however, it may have different sources understood as the basis for creating these bonds. Therefore, trust can result from, for example, relationships based on a simple calculation of costs and benefits from a given relationship, or be the result of previous experiences and observations of mutual behaviors, reactions or ways of acting (Lewicki, Bunker 1995). Based on that,

there are different types of organizational trust corresponding to different sources of its origin, and therefore to different types of relationships occurring in the organization. A source that is a premise that creates an organizational trust of a certain type determines the durability / strength of that trust. This is the dimension that characterizes the dominant relationships and motivations in the organization.

The literature of the subject proves that general organizational trust has a bearing on the organizational outcomes. However, in the context of the observation that it is necessary to consider the durability of trust in the organization, the following questions arise: Does the durability of different origin-based types of trust have direct significance and can it affect the organization's functioning and outcomes? Which origin-based type of trust is the most conducive to building organizational outcomes and which is counterproductive? And thus, is it possible to have a situation where some kind of trust in the organization is not translating into expected outcomes due to low durability of trust?

The literature lacks comprehensive analyzes referring to the influence of origin-based types of organizational trust on the organizational outcomes. Therefore, the main aim of this article is to verify if the various origin-based types of trust has the same or different influence on organizational outcomes. Also, knowing the reasons why people are willing to trust seems to be important in everyday management practice. That is why it seems that these additional insights can be useful in shaping management solutions based on trust in the organization.

## **Literature review and hypotheses development**

### ***The origin and durability of trust***

Authors researching the subject of trust note that trust may result from various premises and takes different forms in different interpersonal relationships. That is why there are many typologies of organizational trust related to various sources of its origin and the type / durability of the dominant relations, on which this trust is based. In this study the classification of Lewicki and Bunker (1995) was taken, due to the explicit and direct relationship of trust types indicated by the authors with the sources that build this trust (and therefore relationships dominant in the organization) and the strength / durability of the impact of these relationships on general organizational trust. They distinguish three types of trust: based on calculation, knowledge and identification.

Organizational trust based on calculation is concerning transactional relations prevailing in the organization and estimating the risk of decision-making. If such relationships dominate, the overall durability of trust in the organization is considered as "weak". Hence, this type of trust is associated with "weak trust" (Barney and Hansen (1994)) and contractual trust (Sankowska 2015) or deterrence-based trust (Rousseau, et. al., 1998). In the calculation-based trust, the most important is the rationality of decisions enabling interaction through exchange, due to the presence of a deterrent factor, and also due to reliable information on the partner's intentions and competences (diplomas, certificates). There is no doubt that trust based on calculation is based on the least durable type of relationship between people.

Organizational trust based on knowledge, also known as competence-based trust, results from a relationship based on the long-term experience of the organization's participants. It is recognized in the literature as "semi-strong" (Sankowska 2015) and results, in turn, from the previously gathered positive exchange experiences. It grows over time due to a common interaction history that allows to develop generalized expectations for the partner and predict the behavior. Therefore, the durability of such trust should be assessed as medium.

The trust of goodwill is based on long-term relationships based on values shared by the organization's participants. It therefore refers to relationships based on identification. It is considered "strong" and durable and called relational trust (Sankowska 2015, Rousseau, et. al., 1998). Emotions that arise from the more frequent and longer interactions between the parties of exchange take on

special importance in this type of trust. The partners rely on each other, care for each other and focus on common values and needs. It can be assumed that common values cause that even if the behavior does not always correspond to the expected one, the general level of trust does not change quickly (perhaps it results from the more easily obtained possibility of justifying unusual behavior, e.g. with good intentions).

Therefore, it should be emphasized that the three origin-based types of relations indicated above in a radically different way build general organizational trust, which takes three different forms. Although it is assumed that the indicated three types of organizational trust can and even exist in the organization at the same time, and general organizational trust is a kind of resultant of relationships and motivations occurring in the organization. It may also mean that there are relationships between the individual origin-based types of trust. It seems that the predominance of occurrence of relations based on calculations in the organization will dislodge relationships based on experience, and even more on values. The higher trust based on calculation, the lower trust based on knowledge and values. The above statement will constitute the initial (basic) hypothesis considered in the empirical part of this study.

***H0:** There is a relation between the trust based on calculation and the trust based on knowledge (a), the trust based on calculation and trust based on identification (b), as well as there is a relation between the trust based on knowledge and the trust based on identification (c).*

Identified origin-based trust types - as noted earlier - translate into general organizational trust, and finally - one can assume - also into the organizational outcomes. Investigating the relation between the origin-based types of organizational trust and the outcomes of the organization will be the essence of the empirical research.

### ***The origin-based types of organizational trust and organizational outcomes – theoretical view***

The main aim of the paper is to analyze the relations between the specified origin-based types of trust and organizational outcomes. It should be noticed that no universal measure of organizational outcomes has been developed that would suit any organization in all circumstances. In the literature concerning trust, it is emphasized that it affects the costs, speed and quality of the organization's activities (Covey and Merrill 2006), or points out that it directly "shapes the organization's results through seven critical dimensions: efficiency, dexterity, quality, innovation, quality of working life, productivity, profitability" (Sink et al. 1995). In this paper, only measures that relate to the entire organization were considered for the assessment of the organization's performance (the focus was not on, e.g., the quality of professional life of employees). D. Sink et al. (1995) proposal has been slightly modified and supplemented (including the dimensions regarding the competitive position of the organization on the market or internal processes). Therefore, a multi-criteria approach was applied and finally the parameters relating to quality, customers loyalty, internal processes, organization's innovativeness, market share, competitiveness, economic situation and management efficiency were distinguished.

### ***Trust and internal processes (i.e. quality)***

Trust is an important factor influencing the course of processes in the organization. It allows to reduce expenditures on process control, which also increases the commitment to the implementation of various processes (i.e. commitment is recognized a key success factor in achieving supply chain integration and trust is a root in fostering such commitment (Kwon, Suh 2004)). Moreover, one of the underlying features of quality management is its emphasis on employee empowerment. As Raiborn and Payne (1996) claim – employees can only be truly empowered if the following three factors are present: the employees are involved in organizational planning, have the abilities and tools - and/or are trained - to perform tasks well, and can trust and be trusted by management. Given these factors, employees will be able to commit themselves to the pursuit of organizational goals and objectives (Tworek, 2018). Lau (2001) and Budgol (2013) are similarly

indicating trust as one of the important factors affecting quality management in organizations. High commitment to work and low resistance to new processes and standards is associated with trust resulting from shared experience, common values if it is to have long-term effects (what is definitely true for quality management). Therefore, organizations, in which relationships are based on calculations will have rather lower results of measuring the quality of products / services. However, Brown et al. (2015) indicate that trust between employees and supervisors has a special importance for the quality.

### ***Trust and customer loyalty/market share***

One of the forces that supports the increase in the importance of trust in business relations is the bargaining power of the modern consumer and the progressing democratization of information. Customers have more and more access to information on products and services, more choice alternatives, and also benefit from more personalized communication with organizations. Under these conditions, the role of trust in relations with them increases. The same applies to the growing importance of trust in the organization itself (Grudzewski et al. 2007). Trust based on knowledge and experience as well as on identification brings benefits in such areas as building a network for cooperation or launching creative thinking, encouraging participation in transactions and promoting knowledge exchange (Grudzewski et al. 2007) and thus can contribute to the change of position on the market. Intra-organizational trust builds the image of a trustworthy organization. However, it can be assumed that this concerns trust, which arises as a result of shared experience, knowledge and shared values. This is especially evident in the long run, because values shared by employees support the organization's identity and its image integrity. It seems that organizations with a predominance of relationships based on the calculation of what is more profitable at the moment, are not as reliable in the eyes of customers as those whose employees have an identification-based trust. Golin (2003) indicates that customers also declare that they would end the relationship with the organization, that would not be trustworthy. Moreover, customer trust affects the cost of market access for potential competitors of the organization (more money to break customer loyalty and build a competitive reputation).

### ***Trust and innovativeness***

Trust creates a climate conducive to information exchange, sharing ideas, and therefore innovation. It can also be a factor that will be crucial for implementing innovations (e.g. organizational innovations – Semler (2004) sees success in reorganizing Semco in information exchange and trust). Research indicates a positive relation between trust and innovation (Barney and Hansen 1995, Herting 2002, Sankowska 2010, Walecka-Jankowska 2015). Herting (2002) points out that this impact is especially noticeable in the case of product innovations. Research of Walecka-Jankowska (2012) indicate the highest impact of trust based on identification. It can be noticed that trust based on a deterrent factor and risk calculation results from formal security measures, and therefore limiting the freedom of employees will not be conducive to innovation. Trust based on knowledge and identification allows for faster adaptation to changing conditions, increases flexibility of action, and limits the freedom to a lesser extent. At the same time, it reduces control, which allows the flow of information that is necessary to integrate different points of view and create new ideas. Sankowska (2010) emphasizes that trust that is not based on calculation means that the organization is credible, adheres to the rules and norms of operation, which results in better innovation results.

### ***Trust and competitiveness***

Trust has its practical, real, economic value. In practice, being a pioneer in the field of trust provides the organization with an additional source of competitive advantage and attracts more talented employees (Handy 1995, Kumar 1996, Barney and Hansen 1995). Thus, it can be noticed that, in particular, trust based on experience and knowledge as well as identification – as more durable – may contribute to increasing competitive advantage because it is difficult to obtain and imitate. Moreover, trust that does not require "contracting" reduces operating costs, based on a low level of security. It

also means that trust based on the deterrent factor (which has a low durability) will not be conducive to competitiveness (Herting 2002) – it appears in situations where the chances for opportunistic behavior and the risk are small. Trust based on behavior prediction results from reputation and different protections (medium trust) and according to Barney and Hansen this type of trust, apart from strong trust, contributes to competitiveness.

### ***Trust and cost/profits***

There are views in the literature that trust affects the volume of transaction costs, reducing them (Dyer, Chu 2003, Grudzewski et al. 2007), among others because people feel safe, have less worries, they perceive others as partners rather than rivals (Wilkinson, Pickett). Trust reduces especially ex-post transaction costs (monitoring and enforcement) acting as a substitute for costly formal control. At the same time, it can be assumed that trust based on calculations, often requiring formal agreements, procedures and regulations, will reduce transaction costs to the smallest extent. Trust is a factor that allows transaction parties to protect themselves against the temptations of opportunism. Although in the literature there are also views confirming that trust is irrelevant to business relationships (Williamson 1993). Simson (2003) also noted that intra-organizational trust results in an increase in annual profits in organizations.

### ***Trust and management efficiency***

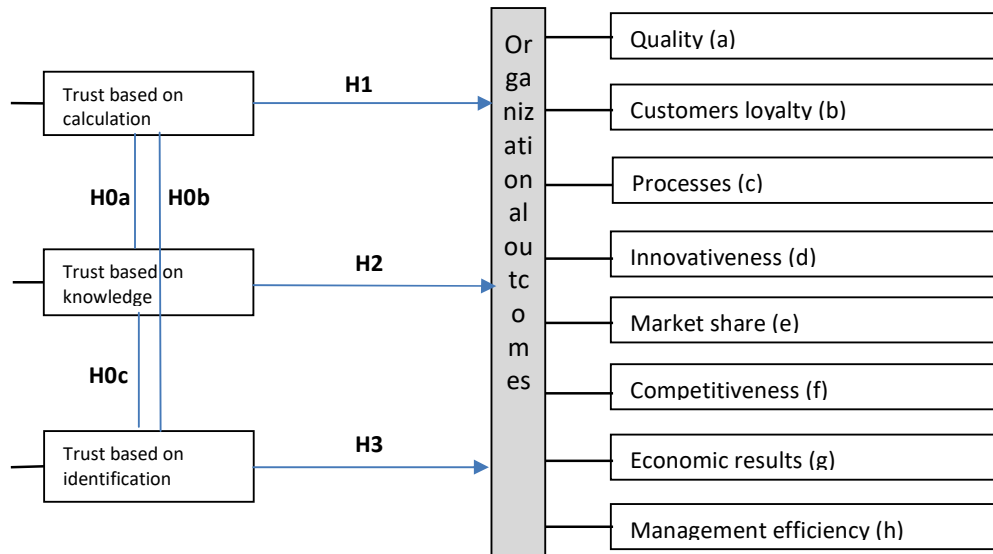
Trust is also increasingly recognized in the context of management effectiveness. For a modern organization, trust orientation is essential. Intra-organizational trust, conditions and translates into inter-organizational trust, increasing organization's attractiveness on the labor market and attracting new employees. Thus, it determines the effectiveness of the organization's activities in conditions of growing competition and uncertainty of the environment (Małysa-Kaleta 2015). Many organizations focusing on management effectiveness apply control mechanisms, internal regulations and agreements that regulate decision-making processes, management methods or incentive systems (Mayer et al., 1995), i.e. trust based on calculation. In addition, excessive use of legislative mechanisms may result in employees feeling lack of trust for their superiors. Organizations, in which high formalization (perceived by employees as centralized) is necessary, seem to be an exception due to the need to maintain rigor and discipline of processes in the organization for meeting external requirements (e.g. compliance with certain standards) (Bieńkowska, Zabłocka-Kluczka, 2017). At the same time, the increase of diversity in employment requires the development of trust towards shared values based on trust resulting from knowledge and common experiences. Employees with more trust in their superiors and each other are more involved in sharing influences and knowledge, participatory decision making, tasks completion or consultations (Morgan, Zaffane, 2010).

To the above, as it was previously pointed, the literature, looking for factors influenced by trust, usually treats trust as a one construct. Hence, to find description of pointed type of trust in the context of particular organizational outcomes was extremely difficult. Especially relation of trust based on calculation with particular components of organizational outcomes seems to be ambiguous. In some cases that relation is described as negative (like in case of organizational innovativeness or competitiveness), whereas when it comes to management efficiency it is perceived rather as positive, in other cases it was difficult to find a logical justification for connections of that type of trust with components of organizational outcomes, which does not mean, that they do not exist. Hence, in such situation, based on that, the following hypotheses were formulated:

***H1: There is a strong, negative relation between the trust based on calculation and organizational outcomes (in particular: quality (a), customers loyalty (b), processes (c), innovation (d), market share (e), competitiveness (f), economic situation (g) and management efficiency (h)), and***

**H2-3:** There is a strong, positive relation between the trust based on knowledge (2), trust based on identification (3) and organizational outcomes (in particular: quality (a), customers loyalty (b), processes (c), innovation (d), market share (e), competitiveness (f), economic situation (g) and management efficiency (h)).

An overview of all formulated hypotheses is presented in Figure 1 and is aligned with the main aim of this article: the verification if the various types of trust has the same influence on different kinds of organizational outcomes.



**Fig. 1: Influence of various types of trust on organizational outcomes - the general research model. Source: own research.**

## Research methodology and results description

### *Data gathering process and characteristics of the research sample*

The study was conducted using a questionnaire technique. The survey was intended for all organizations regardless of size, activity profile or affiliation to a branch of the economy. Employees of surveyed organizations (each respondent represented different organization) were asked to complete the survey regardless of the position they held. The research was carried out in the period of October - November 2017. In order to obtain the largest possible sample at the lowest possible cost a database prepared for the purposes of other research, carried out by the Authors, was used (among entities operating in Poland and registered in the REGON system, the Central Statistical Office unit drew 1960 of medium and large organizations). Limiting the size of the organization in this draw forced the sample to be supplemented with small organizations. For this purpose the snowball sampling was used. As a result of those actions, 143 correctly completed surveys were obtained. The characteristics of the research sample are presented in tab. 1.



**Table 1: The profile of respondents**

		Frequency	Percent
Size of the organization	Below 9 people	14	9,8
	10 – 49 people	31	21,7
	50 – 249 people	55	38,5
	Over 249 people	39	27,3
	Total	139	97,2
No data		4	2,8
Total		143	100,0
Employee's role in the organizational structure	senior managerial position	50	35,0
	mid-level or lower-level managerial positions	41	28,7
	does not take a managerial position	46	32,2
	Total	137	95,8
No data		6	4,2
Total		143	100,0

Source: own work.

### ***Variables measurement***

In order to examine the relation between the types of trust (taken after Lewicki and Bunker (1995)) and the organizational outcomes, key variables were defined: *trust based on calculation*, *trust based on knowledge*, *trust based on identification* (their names mean saturation with features building a given type of trust), as well as detailed variables referring to the organizational outcomes in areas such as: *quality*, *customers loyalty*, *processes*, *innovation*, *market share*, *competitiveness*, *economic situation* and *management efficiency*.

All variables were measured, basing on the list of statements according to defined types of trust or organizational outcomes and using a Likert scale (from *I fully agree* to *I fully disagree* with the middle point: *I have no opinion*). While constructing scales referring to the types of trust and organizational outcomes, efforts have been made to define particular questions in a simple, understandable and general way, so that every employee could provide the most competent answer without the help of an interviewer. The results of the analysis of the reliability of the measurement scales are presented in tab. 2. The results of Cronbach's  $\alpha$  coefficient measurements indicate rather high internal consistency of the scale and reliability of measurement of particular variables.

**Table 2: Defined variables along with the results of the reliability analysis of scales**

Variable	Items in the questionnaire corresponding to a given variable	Reliability of scales Cronbach's $\alpha$
Trust based on calculation	<ol style="list-style-type: none"> <li>1. Employees more often undertake activities that are more profitable from their perspective than the whole group (reversed).</li> <li>2. Employees undertake to cooperate with the fear that in the future they may not have such a chance (reversed).</li> <li>3. Employees calculate the risk of cooperation with others and enter into relationships that are less risky.</li> </ol>	0,695
Trust based on knowledge	<ol style="list-style-type: none"> <li>1. Common experiences are an important factor in predicting the behavior of colleagues.</li> <li>2. Knowledge about the behavior of other employees is the basis for making decisions about cooperation.</li> </ol>	0,611
Trust based on identification	<ol style="list-style-type: none"> <li>1. Employees take care of each other (they show empathy in interpersonal relations).</li> <li>2. The common goal (common tasks) is more important than the individual goals of employees.</li> <li>3. Employees appreciate the efforts, successes and knowledge of their colleagues.</li> <li>4. Employees take into account the individual needs of all members of the</li> </ol>	0,842

	group with whom they cooperate.	
quality	1. The quality of products / services in our organization is high. 2. The quality of products / services in our organization is constantly growing.	0,732
customers loyalty	1. We have a permanent group of loyal customers. 2. We manage to win new clients every year.	0,599
process	1. All processes in our organization run without major disturbances. 2. Processes in our organization are being constantly improved.	0,745
innovativeness	1. The company's innovativeness is higher than in case of the most important competitor.	-
market share	1. The position of the company on the market is strong. 2. The company is constantly increasing its market shares.	0,653
competitiveness	1. The level of our competitiveness is constantly growing. 2. Our company is growing faster than the competition. 3. Our company is more successful than the competition.	0,817
economic situation	1. The economic situation of the company is good. 2. The economic situation of the company is improving.	0,760
management efficiency	1. Company's management is efficient. 2. The assumed strategic goals are implemented.	0,837

Source: own work.

### The Research Results

At the beginning, the relation between particular, defined types of trust were considered. The r-Spearman correlation was used to verify the H0a-c hypotheses, since analyzed variables do not have normal distribution. The results are presented in tab. 3.

**Table 3: Relations between types of trust**

Types of trust	Trust based on knowledge	Trust based on identification
Trust based on calculation	$r(141) = 0,051$ ; $p = 0,548$	$r(140) = -0,361^{**}$ ; $p < 0,001$
Trust based on knowledge	1	$r(140) = 0,342^{**}$ ; $p < 0,001$
*) correlation of r-Spearman is significant at the level of 0.05 (two-sided)		
**) correlation of r-Spearman is significant at the level of 0.01 (two-sided)		

Source: own work.

The analyzes showed interesting relation between the particular types of trust. Trust based on identification is correlated with two other distinguished types of trust. One can observe moderate, but statistically significant, negative correlation between the trust based on identification and trust based on calculation and moderate, but positive and statistically significant correlation between trust based on identification and trust based on knowledge. The hypothesis H0a must be rejected as no relation between analyzed variables were identified.

In order to verify hypotheses H1-H3 relating to the relation between types of trust and particular components of organizational outcomes, an analysis was carried out using the r-Spearman correlation, as the studied variables do not have normal distribution. The results are presented in table 4.

**Table 4: Relation between the types of trust and particular components of the organizational outcomes**

organizational trust components	Quality (a)	Customers loyalty (b)	Processes (c)	Innovative -ness (d)	Market share (e)	Competitiv e-ness (f)	Economic situation (g)	Management efficiency (h)
Trust based on calculation	r(142) = -0,119; p = 0,159	r(142) = -0,237**; p = 0,005	r(143) = -0,079; p = 0,350	r(141) = 0,064; p = 0,450	r(142) = -0,109; p = 0,196	r(142) = -0,025; p = 0,769	r(142) = -0,078; p = 0,358	r(143) = 0,013; p = 0,873
Trust based on knowledge	r(142) = 0,306**; p < 0,001	r(142) = 0,264**; p = 0,002	r(143) = 0,359**; p < 0,001	r(141) = 0,190*; p = 0,024	r(142) = 0,196*; p = 0,019	r(142) = 0,282**; p = 0,001	r(142) = 0,216**; p = 0,010	r(143) = 0,347**; p < 0,001
Trust based on identifica-tion	r(139) = 0,512**; p < 0,001	r(139) = 0,369**; p < 0,001	r(140) = 0,483**; p < 0,001	r(138) = 0,327**; p < 0,001	r(139) = 0,355**; p < 0,001	r(139) = 0,410**; p < 0,001	r(139) = 0,326**; p < 0,000	r(140) = 0,436**; p < 0,000
*) correlation of r-Spearman is significant at the level of 0.05 (two-sided)								
**) correlation of r-Spearman is significant at the level of 0.01 (two-sided)								

Source: own work.

The results of the analyzes showed a weak, negative relation between the trust based on calculation and customers loyalty. In the remaining cases concerning the H1 hypothesis, there is no relation between the analyzed variables. The H1a and H1c-h hypotheses should therefore be rejected.

Considering trust based on knowledge, conducted analysis confirmed in almost all cases, that there is a positive relation between the analyzed variables, although it must be emphasized that the identified correlations are statistically important, but weak. The strongest (although still moderate) correlations were obtained between the trust based on knowledge and variables: *processes* and *quality*. According to obtained results the hypotheses H2a-h should be accepted.

Also according to the trust based on identification in each case, the relation between this type of trust and the organizational outcomes is positive and statistically significant. Likewise in this case the strongest (although still moderate) correlations were obtained between the trust based on identification and variables: *quality* and *processes*. Based on obtained results, the hypotheses H3a-h should be accepted.

## Discussion

The main aim of this article was to verify if the various types of origin-based trust has the same influence on organizational outcomes. The starting point for these analyzes was the observation that the various types of trust, depending on the source of their origin, differ in the durability of relationships building them. Trust based on calculation is the expression of a specific contract between the parties, which defines what each receives and gives in mutual interactions and how much each side can gain and lose. The level of this trust can be temporarily very high, if the benefits significantly outweigh the costs, but with the disappearance of benefits from a given relationship, or the perception of disproportions (surplus of costs over benefits), it quickly disappears. The study results has shown that this type of trust, as expected, is negatively correlated with trust based on identification. This leads to the conclusion that trust based on identification specifically suppresses trust based on calculation. Where the basis for building trust is in shared values, norms and principles, calculation and mercenary seem unnecessary. Moreover, because trust based on identification develops gradually, along with the acquisition of experience and observations made by exchange partners, it is unique and more durable. It is much more difficult to lose it, and individual incidents are not able to easily shake the foundations on which it is built. Moreover, because trust based on identification is in fact developing on the basis of knowledge, i.e. prediction of behaviors resulting from the experience gained during cooperation in the past, it is - as research has shown - positively correlated with trust based on knowledge. Therefore, it would seem that the logical closure of this triangle is the negative correlation between trust based on knowledge and trust based on calculation. However, the study results did not confirm this. In fact, knowledge-based trust does not necessarily have to be a homogeneous category - previous experiences may concern both situations in

which trust is built on the basis of a common interest (measurable benefits and costs), as well as those in which the partners are convinced that their mutual credibility results not only from a pure economic interest, but also, and perhaps above all, from shared values. Hence, knowledge-based trust seems to penetrate the remaining types of trust. Therefore, the classification of trust adopted after Lewicki and Bunker based on its origin requires some modification. The subtypes distinguished within it are not in fact disjointed categories.

The obtained results show that not every type of trust always positively affect the outcomes of the organization. In the case of transactional trust (i.e., small strength, easily torn depending on whether the cause of the transaction appears and continues or disappears), the expected relation with the organizational outcomes is not observed. Moreover, analyzes showed a weak, negative relation between the trust based on calculation and the customers loyalty. It means that customers noticing in contacts with representatives of an organization that their activities and mutual relations are based on calculation, evaluate the organization itself as not really trustworthy and do not trust it. This lack of trust is reflected in low loyalty towards the organization (the Golin and Harris study (2003) confirmed that there is a positive correlation between customer loyalty preferences and their trust for the organization), which in turn directly affects the stability of the sales and organizational outcomes. At the same time, this variable (customer loyalty) is positively correlated with trust based on knowledge and identification. Therefore, it can be concluded that relationships within the organization, being the result of managerial actions aimed at building a climate of trust, are reflected in the process of creating value for the client, and thus in his loyalty and outcomes of the organization.

Research has also shown that trust components that are positively correlated with organizational outcomes are primarily trust based on identification (more strongly) and, to a lesser extent, trust based on knowledge. Both types of trust are based on long-term relationships and long-term experience of the organization's participants. This observation leads to the conclusion that the organization's market success is dependent on the ability to create the right climate of trust, what in the literature was previously identified (Jiang and Probst 2015). Building of the culture of trust in an organization seems to be hence an important challenge for managers, especially since it is usually a long lasting and costly process. It requires not only time, but also thought-out and coordinated actions, starting from the recruitment and selection of employees. Already at this stage, it should be verified whether individual standards are consistent with the norms and values shared by the organization and respected by its members.

As already mentioned (see Table 4), trust based on identification and knowledge-based trust positively correlate with all outcomes components. Obtained results showed that the strongest correlations were obtained between these types of trust and variables: quality and processes and it is not accidental. The issues of quality creation are perceived holistically in contemporary organizations. According to the TQM philosophy, it cannot be controlled, but it must be created by every employee and every workplace. Moreover, the quality (and therefore the value) offered to the customers is not created in isolation, but is the result of cooperation of all members of the organization. Employees at various levels of management must trust that they all "are making decisions based on shared goals and in line with the corporate strategy" (Alpenberg, Scarbrough 2017). Otherwise effective implementation of the organization's goals (including those regarding quality) seems impossible. The same assumptions and dependencies underlie the process approach.

Summarizing, it appeared that the source of trust has a meaning and one can observe that the durability of trust expressed in various origin-based types of trust has a direct meaning and impact on the functioning of the organization and the results it achieves. Therefore, the most desirable type of trust seems to be the one that is based on "observed culture and the way of communication in relations with stakeholders and determines whether an organization is characterized by competence, openness, honesty, reliability and whether it identifies with similar goals, norms and values" (Adamik (ed.) 2010, pp. 156-157).

## Conclusion

This study is based on the criterion of origin of relationships, which determines the durability of relationships between individual participants in the organization. In this context, the main research problem outlined in this article was the search for the origin-based type of trust (characterizing by specific durability of the relationship), which would be most conducive to building the organizational outcomes. The results of the conducted research show the different impact of particular types of trust on the organizational results. Trust based on knowledge and trust based on identification are positively correlated with the outcomes of the organization, while trust based on calculation does not affect or negatively influence the outcomes. This means that not every type of trust always positively influences the outcomes of the organization, which is contrary to the majority of publications referring to general organizational trust. This means that the durability of relationships that build trust has an impact on the outcomes achieved by the organization as a whole. The more lasting the relationships between the participants of the organization, the better outcomes the organization achieves. So the question is whether the so-called trust based on calculation or transactions is still a trust. There is a need for in-depth research in the above field. If we accept the definitions of trust as the probability that a given person will behave in a certain way, then of course such a relation can be applied to trust. If the payment or penalty is large enough, it can be assumed that a person for fear of punishment or loss of reward will do what is expected. But can it really be said to be trustworthy?

However, it is important to underline that the research has some limitations. The above-mentioned hypotheses were verified based on only one research sample and only in one business context. In order to obtain the largest possible sample at the lowest possible cost the snowball sampling was used, which obviously has some limitations e.g. it is impossible to determine the sampling error and it sometimes makes impossible reasoning about population based on the obtained sample. Hence, the further verification of conclusions presented in this paper is needed. However, the obtained results seem to be an interesting first step in the analysis of origin of trust role in shaping organizational outcomes and establish directions for further research.

## References

- Adamik A., (2010), Zarządzanie relacjami międzyorganizacyjnymi, Wydawnictwo Politechniki Łódzkiej, Łódź.
- Algan, Y., Cahuc, P. (2010). Inherited trust and growth. *American Economic Review*, 100(5), 2060-92.
- Alpenberg J., Scarbrough J.D., Trust and control in changing production environments, *Journal of Business Review*, in press, <https://doi.org/10.1016/j.jbusres.2017.12.003>, access date 01.2018.
- Bieńkowska A., Walecka-Jankowska K., Zabłocka-Kluczka A., Zimmer J., Influence of intra-organizational trust on organizational outcomes, 2018/Vol. 28/No. 4 (in press).
- Blomqvist K., The many faces of trust, *Scandinavian Journal of Management*, 13 (3), 1997, 271-286.
- Brown, S., Gray, D., McHardy, J., Taylor, K., (2015) Employee trust and workplace performance. *Journal of Economic Behavior and Organization*, 116. pp. 361-378.
- Bugdol, M. (2013). Selected proposals and possibilities of trust development within the TQM concept. *The TQM Journal*, 25(1), 75-88.
- Covey S., Merrill R., *The Speed of Trust – The One Thing That Changes Everything*, Free Press, N.Y., 2006.
- Dyer, J. H., Chu, W. (2003). The role of trustworthiness in reducing transaction costs and improving performance: Empirical evidence from the United States, Japan, and Korea. *Organization science*, 14(1), 57-68.
- Ellis K., Shockley-Zalabak P., Trust in top management and immediate supervisor: The relationship to satisfaction, perceived organizational effectiveness, and information receiving, *Communication Quarterly*, 2001, 49 (4), 328-398.

- Fox, A. (1975) *Beyond Contract: Work, Power and Trust Relations*. Faber and Faber, London.
- Golin, A. (2003). *Trust or Consequences: Build trust today or lose your market tomorrow*. Amacom.
- Grudzewski W.M., Hejduk I.K., Sankowska A., Wańtuchowicz M., Zarządzanie zaufaniem w organizacjach wirtualnych, Difin, Warszawa 2007.
- Guiso, L., Sapienza, P., Zingales, L. (2008). Alfred marshall lecture social capital as good culture. *Journal of the European Economic Association*, 6(2-3), 295-320.
- Handy C., Trust and the virtual organization, *Harvard Business Review*, 1995, 73 (3) 40-50.
- Herting, S. (2002). Trust correlated with innovation adoption in hospital organizations. *Proceedings of the 63rd American Society of Public Administration*.
- Jiang L., Probst T.M., Do your employees (collectively) trust you? The importance of trust climate beyond individual trust, *Scandinavian Journal of Management*, 2015, 31, 526-535.
- Knack and P. Keefer, Does social capital have an economic payoff? A cross country investigation, *The Quarterly Journal of Economics* 112(4), 1252e1288 (1997)
- Kumar, N. (1996). The power of trust in manufacturer-retailer relationships. *Harvard business review*, 74(6), 92.
- Kwon, I. W. G., Suh, T. (2004). Factors affecting the level of trust and commitment in supply chain relationships. *Journal of supply chain management*, 40(1), 4-14.
- Lau, H. C., Idris, M. A. (2001). The soft foundation of the critical success factors on TQM implementation in Malaysia. *The TQM magazine*, 13(1), 51-62.
- Lewicki R.J., Bunker B.B. (1995), Trust in relationships: a model of trust development and decline, [w:] B.B. Bunker, J.Z. Rubin (red.), *Conflict, cooperation and justice*, Jossey-Bass, San Francisco, CA.
- Locke J., *Essays on the Law of Nature. The Latin Text with a Translation, Introduction and Notes, Together with Transcripts of Locke's Shorthand in his Journal for 1676*, Wolfgang von Leyden, Oxford University Press, 1954, 118.
- Małysa-Kaleta, A. (2015). Zaufanie w relacjach rynkowych na współczesnym rynku. *Studia Ekonomiczne*, (233), 160-169.
- Mayer, R.C., Davis, J.H. and Schoorman, D. (1995) 'An Integrative Model of Organizational Trust', *Academy of Management Review*, 20: 709–34.
- Morgan, D. E., Zeffane, R. (2003). Employee involvement, organizational change and trust in management. *The International Journal of Human Resource Management*, 14(1), 55-75.
- Raiborn, C., Payne, D. (1996). TQM: Just what the ethicist ordered. *Journal of Business Ethics*, 15(9), 963-972. <https://doi.org/10.1007/BF00705576>
- Rousseau, D.M., Sitkin, S.B., Burt, R.S. and Camerer, C. (1998) 'Not so Different after All: A Cross Discipline View of Trust', *Academy of Management Review*, 23: 393–404.
- Sankowska A. (2015), Zaufanie w łańcuchu dostaw – determinanty, typy i konsekwencje. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, nr 217.
- SANKOWSKA A., Zaufanie a innowacyjność przedsiębiorstwa, *Współczesne zarządzanie*, 2010, 3, 10-15.
- Semler, R. (2004), Na przekór stereotypom. Tajemnica sukcesu najbardziej niezwykłego przedsiębiorstwa na świecie, Dom Wydawniczy ABC, Warszawa
- Simson T., Wysokie koszty utraty zaufania,,*Harvard Business Review Polska*”, maj 2003 r
- Sink D.S., Morris W.T., Johnston C.S., *By What Method?*, IIE Engineering and Management Press, Norcross 1995.

Szulczewski, G. (2003). Zaufanie z perspektywy pragmatyczno-transcendentalnej koncepcji porozumienia.

Tworek K., Reliability of information systems in organization as a factor shaping organizational culture, *Argumenta Oeconomica* 2018, in press.

Walecka-Jankowska K., Zaufanie a innowacyjność organizacji, *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*. 2013, 300, 131-140.

Walecka-Jankowska, K. (2015). Relationship between knowledge management and innovation. *Social Sciences*, 90(4), 55-66.

Wilkinson, R., Pickett, K. (2011). *The spirit level: Why greater equality makes societies stronger*. Bloomsbury Publishing USA.

Williamson, O.E. 1993. Calculativeness, trust, and economic organization. *Journal of Law and Economics*, 36: 453-486.

## Using Chaos Theory in Analysis of Dynamics of Economic Information Systems

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### Abstract

Under reasonable assumptions about the way speculators process information, chaotic behavior is possible. The model developed allows us to formulate an alternative view concerning the role of news in the foreign exchange market to the view which today prevails among exchange rate theorists. However, the chaotic dynamics was obtained only for certain parameter configurations. For many other parameter values we obtained periodic solutions and limit cycles. Intuitively, a dynamical system exhibits chaos if in one sense there is unpredictability because it is sensitive dependent on initial values, but in another sense there is predictability, because it will be at a point, but we don't know when.

**Keywords:** chaos, exchange rate, changes management, random events

### Introduction

Dynamics of current economic events, rapid changes, high degrees of uncertainty, not always rational behaviors of economic agents, not always rational behaviors of economic agents, strong interdependence between economic events and microstructures of economic systems, determines strong fluctuations and irregularities that can't be studied only from classical economic theory and from the analysis of rational behaviors of economic agents. [Livio, M., (2002)]

### Results from Previous Researches

The basic principles characterizing systems with chaotically dynamic behavior are essentially systems with chaotically dynamic behavior are essentially the following [Gandolfo G., (1996)]:

- The inherent complexity principle - the simple processes described by the deterministic laws generate complex behaviors;
- Principle of dandelion effect - small changes in the system induce, in the long run, major changes;
- Principle of order in the disorder - the short-term specific behavior of a chaotic system is predictable;
- The principle of the state away from equilibrium - the transition from one state to another occurs only by passing a state far from equilibrium;
- The inherent stability principle - a new state of stability or order occurs only after the chaotic state has been fully traveled;
- The principle of random choice - the shift from a chaotic state to a new order is made through unpredictable choices in critical points;
- The principle of spontaneous self-organization - the elements of a chaotic system cooperate, reach consensus and organize themselves into a new structure;



- The principle of the dissipative structure - the new stable state of the system is the preamble of a new transition to chaos.

### Basic Equation for Determining the Exchange Rate

If we follow, for example, stock quotes, exchange rate developments or the dynamics of demand for products or services in different markets, we can see periods with clear trends and dynamics, alternating with fluctuating, turbulent developments even though there are no obvious significant changes in the external and internal economic environment and the behavior of the overwhelming majority of economic agents. In such situations, the notion of chaos is increasingly used.

Using the chaos concept to characterize a dynamic system requires observing it and highlighting whether or not there is a dynamic dominated by unpredictable variations. [Hasselblatt, B., (2002)] Frequently, the term chaos is used precisely to characterize a system whose evolution does not show regularity or order. We will start from the assumption that economic agents use a limited set of information and that, in addition, their sets of information are different. Contrary to the traditional model, we will assume different economic agents that use certain sections of the information. It should be added that the use of these sections of information is strictly dependent on market conditions.

Let's start, for example, from the basic equation for determining the exchange rate:

$$\bullet S_t = X_t E_t (S_{t+1})^{10} \quad (1)$$

There are two types of theories, depending on the two groups of speculators. A group called the "The Cartists" (merchants, technical analysts) and the other group "Fundamentalists".

- "The Cartists" use the previous exchange rate to find the model they will extrapolate in the future. This means that they do not use the embedded information in the exchange rate model.
- "Fundamentals" calculates the equilibrium exchange rate value as given by the model. "Cartists use past changes in the rate of exchange as indicators of market sensitivity and extrapolate in the future. Their attitude generates a "positive feedback" within the model. "Fundamentalists" have a regressive attitude; when the exchange rate deviates from the equilibrium value they expect to return to balance. The behavior of "Fundamentalists" adds a "negative feedback" to the model as a source of stability.

Changing the exchange rate is based on two theories: a prediction made by "Cartists" and a forecast made by "Fundamentalists":

$$\bullet E_t (S_{t+1}) / S_{t-1} = (E_{ct} (S_{t+1}) / S_{t-1}) + E_{ft} ((S_{t+1}) / S_{t-1})^{1-m_t} \quad (2)$$

Where:

- $E_t (S_t + 1)$  - market forecast in period t of the exchange rate over the t + 1 period
- $E_{ct} (S_t + 1)$  and  $E_{ft} (S_t + 1)$  are predictions made by "Cartists" and "fundamentalists"
- $m_t$  is the size given by "chartists"
- $1-m_t$  is the size given by "fundamentalists" in period t

"Cartists" and "Fundamentalists" make market decisions in the t period, based on their forecasts for the t + 1 period.

They made these forecasts using information available in the t-1 period. This is why  $S_{t-1}$  appears in equation (2). We need these hypotheses because  $S_t$  is the solution of the model we obtain from the

analysis of the foreign market. We assume that "the authors" extrapolate exchange rates recently analyzed in the future, using a model of univariate series in time:

$$\bullet E_{ct} ( S_{t+1} ) / S_{t-1} = f ( S_{t-1} , \dots , S_{t-N} ) \quad (3)$$

Equation (3) is a general description of the patterns used by "Cartists". "Fundamentalists" have proposed to calculate the exchange rate balance as follows:

$$\bullet E_{ft} S_{t+1} = S_t = S_{t-1}$$

This implies:

$$\bullet S_t^* = (X_t)^{1/(1-b)} \quad (4)$$

"Fundamentalists" take the market rate to determine this fundamental rate  $S^*$

$$\bullet E_{ft} ( S_{t+1} ) / S_{t-1} = ( S_{t-1}^* / S_{t-1} )^a \quad (5)$$

### Analyze the evolution of the values in the market

To simplify the analysis we will consider a constant  $X_t$  and assign it a value of 1.

When the exchange rate on the market is equal to the equilibrium exchange rate (fundamental), the fundamentalists do not influence the market. It is as if they are absent from the market. The evolution of the market will be determined by the theories of the engineers.

If the exchange rate on the market starts to vary from the equilibrium value, the "Fundamentalists" would come to the fore again. When the market rate is diverted to  $S_{t-1}$ , some fundamentalists believe that its value is too low compared to their real estimates of equilibrium rates; as a result their proposals become more important in the market.

This allows us to postulate the function defined as follows:

$$\bullet M_t = 1 / (1 + \beta (S_{t-1} - S_{t-1}^*)^2) \quad (6)$$

When the exchange rate is equal to the fundamental rate, the size given by the bookmakers reaches the maximum value. It's like there are no fundamentalists in the market. When the exchange rate deviates from the fundamental rate, the theory of musicians tends to decline.

Parameter  $\beta$  determines the rate of decrease, decline of the theories of the chemists. It also measures the degree of divergence of fundamentalists estimated at the value of the equilibrium exchange rate.

Estimates of the real equilibrium rate made by fundamentalists are very accurate. As a result, a relatively small number of exchange rate deviations from the real value of the equilibrium rate lead to a penetration of strong market fundamentals.

The opposite is true when  $\beta$  takes very small values. In this case, there are a lot of uncertainties in the market regarding the equilibrium rate. As a result, a change back from the equilibrium rate induces new reactions from the fundamentalists.

By substituting equations (3) and (5) in (2) and (2) in (1) we can solve the model. After some rearrangements we get the following model:

$$\bullet S_t = [ S_{t-1} f ( S_{t-1} , \dots , S_{t-N} )^{m_t} ( S_{t-1}^* / S_{t-1} )^{a(1-m_t)} ]^b \quad (7)$$

$$\bullet m_t = 1 / [ 1 + \beta ( S_{t-1} - S_{t-1}^* )^2 ] \quad (8)$$

This is the system of basic equations that will be used to determine chaos. Recognizing its non-linear nature, this system of large order of different equations can't be solved analytically. The most popular models used by craftsmen and technical analysts are the evolutionary average model, the static model, and the "rule" model.

### The evolution of the average model

The evolving average model can be symbolized in the following way:

$$\bullet E_{ct} ( S_{t+1} ) / S_{t-1} = \left( \frac{SMA(S_{t-1})}{LMA(S_{t-1})} \right)^{2\gamma} \quad (9)$$

According to equation (9), when the average of the exchange rate in progress exceeds that of the long-term one, the capitalists expect a future increase in the exchange rate, as compared to the most recently observed exchange rate.

When the short-term average is below the long-term average, the workers expect a further fall in the exchange rate. The extrapolation factor is represented by the  $\gamma$  parameter.

In particular, short-term media will be attributed to a change over a specified period:

$$\bullet SMA ( S_{t-1} ) = S_{t-1} / S_{t-2} \quad (10)$$

Similarly, we assign the second simple period to represent the long-term evolution:

$$\bullet LMA ( S_{t-1} ) = ( S_{t-1} / S_{t-2} )^{0.5} ( S_{t-2} / S_{t-3} )^{0.5} \quad (11)$$

By maneuvering the equation (9) and using the equations (10) and (11) the following relation follows:

$$\bullet E_{ct} ( S_{t+1} ) / S_{t-1} = ( S_{t-1} / S_{t-2} )^\gamma ( S_{t-3} / S_{t-2} )^\gamma \quad (12)$$

In static models, the engineer calculates a future increase in the exchange rate:

$$\bullet E_{ct} ( S_{t+1} ) / ( S_{t-1} ) = \left( \frac{S_{t-1} / S_{t-n}}{S_{t-2} / S_{t-n-1}} \right)^{2\gamma} \quad (14)$$

The equation can be rewritten so that it becomes a particular case of representing the average value of the exchange rate in evolution:

$$\bullet E_{ct} ( S_{t+1} ) / S_{t-1} = ( S_{t-1} / S_{t-n} )^{2\gamma} ( S_{t-2} / S_{t-n-1} )^{-2\gamma} \quad (15)$$

In this model, the craftsman expects a further increase in the exchange rate when the market rate is rising declining by  $x$  percent above the previous low.

$$\bullet E_{ct}(S_{t+1}) / S_{t-1} = \left( \frac{S_{t-1}}{S'(1+x)} \right)^{2\gamma} \quad (16)$$

if  $S_{t-1} > S'(1+x)$  and  $S'$  is the minimum point or  $S_{t-1} < S'(1+x)$  and  $S'$  is the maximum point otherwise  $E_{ct}(S_{t+1}) / S_{t-1} = 1$

It can be noticed immediately that this rule can be interpreted as an advanced average of the previous exchange rate. The system can be solved by replacing  $f(S_{t-1}, \dots)$  in (12). The solution is given by 7' and 8':

$$S_t = S_{t-1}^{\phi_1} S_{t-2}^{\phi_2} S_{t-3}^{\phi_3} \quad (7')$$

$$m_t = 1 / \left[ 1 + \beta(S_{t-1} - 1)^2 \right] \quad (8')$$

$$\phi_1 = b \left[ 1 + \gamma m_t - \alpha(1 - m_t) \right]$$

$$\phi_2 = -2b\gamma m_t$$

$$\phi_3 = b\gamma m_t$$

You can simulate performance models that lead to analogue results, as long as a parameter is kept at a low value. The results are perfectly comparable to the results obtained with a limited cyclical model. Spectral representation of the simulated exchange rate allows us to discover the fractal dimension of the model.

## Conclusions

The model presented allows us to formulate another solution regarding the role of information on the external market. Most observed changes in the exchange rate can be the results of a dynamic internal analysis. Chaotic dynamics do not refer to random events, but to deterministic processes that produce chaotic results. So systems with chaotic evolution are deterministic systems, systems in which the current state depends on the previous state.

In a future research we want to develop a model for individual decision making based on the results of presented model.

## References

Anosov, D.V., (2006), "Dynamical systems in the 1960s: the hyperbolic revolution", in *Mathematical events of the twentieth century*, 1-17, Springer, Berlin.

Backer G.L., Gollub J.P., (1993), "Chaotic Dynamics – an introduction", London.

Bonatti, C., Diaz, L., & Viana. M. (2005). "Dynamics beyond uniform hyperbolicity. A global geometric and probabilistic perspective", *Encyclopaedia of Mathematical Sciences*, (102). Mathematical Physics, III. Springer-Verlag, Berlin.

Gandolfo G., (1996), "Economic Dynamics", Springer-Verlag Berlin.

Gatlin, L.L., (1972), "Information Theory and the Living System", Columbia University Press.

Hasselblatt, B., (2002), "Hyperbolic dynamical systems", Handbook of dynamical systems, Vol. 1A, 239-319, North-Holland, Amsterdam.

Jensen, M.H.; Bak, P. and Bohr, T., (1984), "Transition to chaos by interaction of resonances in dissipative systems", I. Circle maps. Physical Review A 30(4), 1960-1969.

Jones, D. and Culliney, J., (1998), "Confucian Order at the Edge of Chaos: The Science of Complexity and Ancient Wisdom", Zygon 33(3), 395-404.

] Kronz, F.M.: Nonseparability and Quantum Chaos. (1998), "Philosophy of Science" 65(1), 50-75.

Livio, M., (2002), "The Golden Ratio: The Story of Phi, the World's Most Astonishing Number", Broadway Books.

Palis, J., (2008), "Open questions leading to a global perspective in dynamics", Nonlinearity, 21(4), T37-T43.

Sandefur J.T., (1990), "Discret Dynamical Systems", Clarendon Press.

## **Institutions and Instruments for Financing Environmental Projects in the Context of Sustainable Development**

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### **Abstract**

The research is based on the hypothesis that the role and function of financial institutions and instruments, as well as approaches to project financing, have changed in the context of sustainable development. The analysis of the global financial market empirical data highlights innovative financial instruments and the specific ways they are used in the framework of responsible finance.

**Keywords:** sustainable development, responsible financing, financial institutions, financial instruments.

### **Introduction**

The concept of financing in the context of sustainable development involves the formation of a new specific infrastructure that comprises international, regional and national development institutions. The present research focuses on the work of development institutions, the principles of their functioning, financial instruments and operations used in responsible financing as one of the factors of sustainable development. The research is based on publicly available statistical reports and methods of statistical data processing (analytical grouping, statistical series, graphical methods).

### **The concept of sustainable development: objective basis and history**

The idea of sustainable development is based on a reasonable need to preserve the economic, social and environmental systems as a unified foundation for a balanced and stable development of the society.

The issue of sustainable development, especially its financial side, has always been a major focus of interest for Russian and foreign researchers; it is represented in many spheres of study, including criticism of financial capitalism, the issues of climate, green, social and, of course, responsible finance.

The beginning of the modern stage of research on sustainable development is generally associated with the publication of *Silent Spring* by R. Carson (1962) and the first reports of the Club of Rome founded in 1968. Thus, under the aegis of the Club of

Rome, which promotes balanced relations between people and the nature, a number of keynote reports were made that shaped a new vision of economic, social and environmental development goals highly essential for the planet and humanity. Since the early 1970's, the UN has played a leading role in the formation of the concept of sustainable development and actively supported researches in the sphere.

The analysis of the main problems and actors of responsible finance is provided by Berensmann and Lindenberg (2016) and Bello (2005). The methods of state participation and international cooperation in the field of responsible finance are discussed in the works of Paul Krugman (2010), Mariana Mazzucato (2015) and Carlota Perez (2002 and other works). The issues of green economy in the context of responsible finance are thoroughly covered by Richard Lawson (2006).

There are a few names of sustainable finance researchers from Russia that should be mentioned, these include S. M. Nikonov (2017), who has introduced the concept of sustainable financial market segmentation; B. B. Rubtsov (2016), who, together with other researchers, has systematized green financial instruments and institutions; A. L. Smirnov and I. I. Rodionov (2016), who have been studying the issues of social responsibility capitalization; T. N. Savina (2014), and M. V. Sigova (2016).

The practical aspect of sustainable development was initially discussed at the United Nations Conference on the Human Environment (Declaration of the United Nations Conference on the Human Environment, Stockholm, 16 June 1972). On the initiative of the conference, the UN Environment Programme was established, its motto being "Environment for Development" (United Nations Environment Programme, 1972). The final and complete version of the Sustainable Development Goals (SDGs) was presented in the Global Strategic Programme *Transforming our world: the 2030 Agenda for Sustainable Development* approved by the UN on 25 September 2015 (Technical report by UNSC, 2015). The main aim of the programme is to combat all aspects of inequality, deal with climate change issues and "heal" the planet.

All the ideas of and approaches towards sustainable development and responsible finance have been embraced by a number of voluntary international initiatives.

The most important of them were mainly launched under the aegis of the UN: The United Nations Global Compact (The Ten Principles of the UN Global Compact); the UN Principles of Responsible Investment (PRI); the Financial Initiative of the UN Environment Programme (UNEP FI). The Equator Principles play a special role among international initiatives as a set of voluntary principles aimed at managing social and environmental risks in project financing (The Equator Principles). All of these international agreements have led to a functional transformation of the existing financial institutions, as well as creation of specialised development institutions.

## **Development institutions in the system of responsible finance**

In the world, development institutions comprise different types of investment and credit companies: funds, financial corporations, agencies, development banks etc. There are currently about 750 development institutions worldwide, with development banks constituting the majority (Vnesheconombank. 85 years, 2009).

A development bank is a special structure designed for financing projects of a great social and economic value on an international and state level that, due to various reasons (the scale of the project or lack of an apparent economic benefit), cannot be carried out by a private company. Development banks are set up by international organizations, a group of states or a state and serve the strategic interests of their founders. This implies that forming financial resources of those banks involves using public resources, as well as special state and international funds. The type of cooperation between the state and the business reflects the status and aim of development banks, as well as their main functioning principles: a rigidly defined procedure for choosing spheres and projects to be financed; social and environmental responsibility; promotion of relevant principles and successful methods in the business community; government support; the openness and transparency of investment and financial activities.

Development banks are generally multilateral institutions or groups of banks with diversified activities. They are categorized as international, regional or national according to their area of operation and cooperatively implement the policy of sustainable development and responsible finance.

## **Instruments and operations of development banks. Green bonds.**

Development banks use various instruments and operations in their activities: direct investments in partner companies; medium and long-term loans (lines of credit, syndicated loans, etc.); issues of debt instruments; loan guarantees provided by other lending institutions, including the guarantee of coverage for losses related to political risks, etc.

Among modern popular instruments for financing environmental projects, green bonds, as it has been demonstrated globally, play a special role. Their specific feature is that the issuer agrees to use the raised funds only for relevant projects and provide necessary reports.

Among development banks, the World Bank has been the most proactive participant of the green bonds market. In 2008, two of its member institutions — the International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC) — launched *Development and Climate Change: A Strategic Framework for The World Bank Group* programme to stimulate and coordinate activities of public and private sectors on mitigating the effects of climate change. Since



2008, the World Bank has issued green bonds 130 times in 18 currencies, with a total worth of \$10.2 bn (About World Bank Green Bonds). The bonds have the following maturity periods: less than 3 years (41%), 3-5 years (23%), 5-10 years (35%), more than 10 years (1%) (Green Bond Impact Report, 2016).

Regional and national financial institutions have also become involved in the issue of green bonds, participating actively in it in 2013 and onwards. The main features of green bonds issued by leading financial institutions of different levels are presented in Table 1.

**Table 1: The features of green bonds issuance as seen from the cases of leading development institutions of international, regional and national levels**

<b>Development Institution</b>	<b>Application of the Funds</b>	<b>The Location of the Projects</b>	<b>Currencies Involved</b>
(1) the International Finance Corporation (IFC)	Renewable energy (32%); Energy efficiency (54%); Other (14%)	Europe and Central Asia (30%); East Asia/the Pacific Region (24%); South Asia (21%); the Middle East and North Africa (12%); Latin America (9%); Sub-Saharan Africa (4%)	the US dollar (79%); the Brazilian real (6%); the Turkish lira (4%); the Australian dollar (3%); the South African rand (3%); the Swiss franc (2%); the Indian rupee (1%); Other (2%)
(2) the Asian Development Bank (ADB)	Renewable energy and energy efficiency (46%); Transport (54%)	China (20%); India (20%); Bangladesh (18%); Vietnam (15%); Indonesia (6%); Thailand (6%); Pakistan (6%); Philippines (5%); Turkmenistan (2%); Other (2%)	the US dollar (100%)
(3) the KfW	Wind power (86%); Solar energy (13%); Other (1%)	Germany (79%); France (12%); Denmark (3%); the United Kingdom (1%);	Euro (43.3%); the US dollar (100%); the pound sterling (8.1%);

		Other (5%)	the Australian dollar (6.2%); the Swiss Krona (1.9%)
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Prepared by the authors.

The sources used: Green bond impact report, 2016; ADB Green Bonds Newsletter and Impact Report 2016; Green Bonds – Made by KfW, 2017; Climate Bond Initiative.

In terms of main areas of the raised funds application, alternative energy sources and infrastructure projects take the top positions, which falls in line with the common objectives of the world — the search for a new development model and the global focus on a green economy. Location of the project mainly depends on the location of the development institution.

In recent years, the green bonds market has become very active and experienced a significant growth in terms of number of shares issued and the number of issues. Thus, the total amount of shares issued in 2017 reached 155.5 bn USD, which exceeded the amount of 2016 (87.2 bn USD) by 78.3%, and the number of issues crossed the level of 1500 (Green Bond Highlights, 2017). The number of issuers and countries involved in this activity grew as well. By the end of 2017, there were 239 issuers from 37 countries. In 2017, Nigeria, Fiji, Malaysia, Argentina, the UAE, Lithuania and Switzerland joined the list of countries who issue green bonds (ibid).

One of the new green instruments that reflects modern trends in market development is asset-backed securities (ABS) issued in the process of securitization. Thus, the amount of green ABS issued in 2016 was less than 10 bn USD, but as early as 2017 it passed the point of 30 bn USD, which amounts to more than 20% of the whole market. A leading role in the process is played by Fannie Mae; the corporation has issued 24.9 bn USD worth of green mortgage-backed securities (MBS). Bills of sale on certified low carbon buildings are used as a collateral for green MBS; moreover, the raised funds are channelled to finance programmes for increasing thermal and water efficiency of housing.

Another new green instrument is Green Sukuk issued in Malaysia — the first green Islamic finance.

As for funds obtained through green bonds, most of them are spend on the projects in the field of renewable energy, low carbon buildings and energy efficiency, as well as clean transport. The three spheres accumulate more than 70% of proceeds from green bonds (see Table 2).

**Table 2: The use of funds obtained from green bonds issue (billion USD)**

<b>The Application of Funds</b>	<b>2016</b>	<b>2017</b>	<b>Dynamics</b>
Renewable Energy	33	51	+55%
Low Carbon Buildings and Energy Efficiency	19	45	+137%
Clean Transport	13	24	+85%
Sustainable Water Management	12	20	+67%
Sustainable Waste Management	5	6	+20%
Sustainable Land Use and Forestry	2	5	+150%
Adaptation	4	4	0%
<b>TOTAL</b>	<b>88</b>	<b>155</b>	<b>+76%</b>

Prepared by the authors.

The sources used: Green Bond Highlights, 2017.

As we can see, there is a growth in all spheres of funds application. It should be mentioned that the increase in green financing of construction and energy efficiency is considered to be of primary importance from the perspective of market relations development.

## **Conclusion**

As it has been shown, development institutions play a special part in the context of sustainable development and responsible finance. Their unique mission is to participate in financing strategically significant social and environmental projects; promote the principles of sustainable development, social and environmental responsibility in business community; assist in development of new flexible financial instruments focused on green economy; create the base for a balanced development of society.

It should be noticed that green financial instruments market has become dynamic and undergone essential structural changes, which is reflected in (1) an increasing amount of green bonds and number of their issues; (2) a growing number of issuers and countries where green bonds are issued; (3) the emergence of new types of financial instruments on the market and diversification of green economy financing.

In general, changes in green finance market contribute to enhancing the opportunities of responsible finance both for financial institutions and investors.

## **References**

About World Bank Green Bonds. The World Bank, [Online], [Retrieved September 22, 2018], <http://treasury.worldbank.org/cmd/htm/WorldBankGreenBonds.html>

- ADB Green Bonds Newsletter and Impact Report 2016. Published: April 2017. [Online], [Retrieved September 22, 2018], <https://www.adb.org/sites/default/files/publication/297141/td-adb-green-bonds-2017-web-18-july-2017.pdf>
- Bello, Z.Y. (2005), 'Socially responsible investing and portfolio diversification,' *The Journal of Financial Research* 28(1).
- Berensmann, K. and Lindenberg, N. (2016), 'Green finance: actors, challenges and policy recommendations (November 2016),' German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) Briefing Paper 23, [Online], [Retrieved September 22, 2018], <https://www.die-gdi.de/briefing-paper/article/green-finance-actors-challenges-and-policy-recommendations/>
- Carson, R. (1962). *Silent Spring*, Houghton Mifflin Company, Boston.
- Climate Bond Initiative. [Online], [Retrieved September 22, 2018], <https://www.climatebonds.net/cbi/pub/data/bonds>
- Green Bond Highlights (2017). [Online], [Retrieved September 22, 2018], <https://www.climatebonds.net/files/reports/cbi-green-bonds-highlights-2017.pdf>
- Green Bond Impact Report (2016). The World Bank Treasury [Online], [Retrieved September 22, 2018], <http://treasury.worldbank.org/cmd/pdf/WorldBankGreenBondImpactReport.pdf>
- Green Bonds – Made by KfW. September 2017: [Online], [Retrieved September 22, 2018], <https://www.kfw.de/PDF/Investor-Relations/Pdf-Dokumente-Investor-Relations/Green-Bond-Presentation-US-Filing.pdf>
- Krugman, P. (2010), 'Building a green economy,' *New York Times Magazine*, [Online], [Retrieved September 22, 2018], <https://www.nytimes.com/2010/04/11/magazine/11Economy-t.html>
- Lawson, R. (2006), 'An overview of green economics,' *International Journal of Green Economics* 23.
- Mazzucato, M. (2015). *What Will It Take to Get Us a Green Revolution?* University of Sussex.
- Nikonorov S. M. (2017) 'K "zelenoy" ekonomike tcherez "zeleniye" finansy, bioekonomiku i ustoytchivoye razvitiye [Towards Green Economy through Green Finance, Bioeconomy and Sustainable Development],' *Russkaya politologiya* No 3 [in Russian]

Perez, Carlota. (2002). *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*, Elgar, London.

Rubtsov, B. B. (2016). *Zeleniye finansy v mire i Rossii: monografiya* [Green Finance in the World and in Russia: a Monograph], Ruscience, Moscow. [in Russian]

Savina, T. N. (2014), 'Otvettstvennoye finansirovaniye kak klutchevaya initsiyativa finansovogo sektora v praktike realizatsyi sotsyalnoy otvetstvennosti i ustoytchivogo razvitiya [Responsible finance as a key initiative of the financial sector in the practical implementation of social responsibility and sustainable development],' *Finansovaya systema* No 30. [in Russian]

Sigova, M. V. (2016), 'Printsipy otvetstvennogo finansirovaniya kak osnova institutsionalnoy struktury upravleniya proyektami v strategicheskoy planirovaniyi Rossii [Responsible finance principles as the basis of the project management institutional structure in the strategic development of Russia],' *Ekonomika i upravleniye*. No 5 (127). [in Russian]

Smirnov, A. L. and Rodionov, I. I. (2016), 'Printsipy ekvatora kak faktor obespecheniya konkurentosposobnosti kreditnykh institutov na globalnom rynke [The equator principles as factors of competitiveness of credit institutions in the global financial market],' *Vestnik VGU* No 1. [in Russian]

Technical report by UNSC (2015). Technical report by the Bureau of the United Nations Statistical Commission (UNSC) on the process of the development of an indicator framework for the goals and targets of the post-2015 development agenda, , [Online], [Retrieved September 22, 2018], <https://sustainabledevelopment.un.org/>

The Equator Principles, [Online], [Retrieved September 22, 2018], <http://www.equator-principles.com/>

The Ten Principles of the UN Global Compact, [Online], [Retrieved September 22, 2018], <https://www.unglobalcompact.org/what-is-gc/mission/principles>

United Nations Environment Programme (1972). United Nations Environment Programme, [Online], [Retrieved September 22, 2018], <https://www.unenvironment.org/>

United Nations Financial Initiative, [Online], [Retrieved September 22, 2018], <https://firstforsustainability.org/ru/sustainability-in-action/external-initiatives/sustainability-frameworks/united-nations-financial-initiative/>

Vnesheconombank. 85 years (2009), 'Vnesheconombank. 85 let: istoriya banka. razvitiye strany [Vnesheconombank. 85 years: the history of the country's development bank],' *Bank razvitiya* No 5.

## Towards a Network Strategy: Economic Rent Perspectives

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### Abstract

The article presents an attempt to systematise strategic management strategies based on inter-organisational networks. The authors present the organisation's network strategies from the perspective of economic rent. The first part of the article presents the evolution of the approach to enterprise strategy from the point of view of various approaches to the strategy: planning, positioning, resource, innovative-entrepreneurial and network approach. The second part presents the definition of the network strategy in terms of economic rent. In the last part of the article, the authors present approaches to the network strategy from the point of view of rent, levels of network development and network combination strategy.

**Keywords:** network, economic rent, network strategy, planning approach, position approach, resource approach, innovative and entrepreneurial approach, ricardian rent, chamberlin rent, schumpeterian rent, austrian rent

### Introduction

Over the decades of the development of the strategic management theory, there have been numerous different approaches to the definition of the strategy category, as well as the definition of strategic management. In a natural way, a number of researchers have attempted to find a certain logic in these ways of defining strategies. Many of these ideas can be found in the work on the theory of strategic management. An interesting way to present the diversity of strategy approaches are the results of research conducted by G.A. Ronda-Pupo and L.Á. Guerras-Martin within 25 years divided into three periods: 1962-1977, 1978-1992, 1993-2008, in which 91 strategy definitions were analysed using semantic analysis and social networks. The matrix (table 1) contains a presentation of the development of the main categories, including the definition of the concept of strategy in three research periods. Differences in the colour in the matrix are related to the position of the strategy in the studied space: light grey means core, darker grey means semi-peripheries, the darkest grey means peripheries<sup>1</sup>.

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<sup>1</sup>Ronda-Pupo, GA and Guerras-Martin, LÁ (2012), 'Dynamics of the evolution of the strategy concept 1962–2008: a co-word analysis,' *Strategic Management Journal*, t. 33, no. 2.

**Table 1: Development of the position in the main categories containing the definition of the concept of strategy in the three stages of the study**

Position according to the degree of centralisation	Periphery (0,00-0,31)	<ul style="list-style-type: none"> <li>• Making decisions (0.25)</li> <li>• Productivity (0.177)</li> <li>• Competition (0.15)</li> <li>• Behaviour (0.10)</li> <li>• Change (0.10)</li> <li>• Industry/market (0.00)</li> <li>• Business (0.00)</li> <li>• Internal organisation (0.00)</li> <li>• Manager/owner/stakeholders (0.00)</li> <li>• Control (0.00)</li> <li>• Time frame (0.00)</li> <li>• Methods (0.00)</li> </ul>	<ul style="list-style-type: none"> <li>• Manager/owner/stakeholders (0.25)</li> <li>• Business (0.25)</li> <li>• Industry/market (0.25)</li> <li>• Internal organisation (0.20)</li> <li>• Change (0.15)</li> <li>• Control (0.10)</li> <li>• Making decisions (0.10)</li> <li>• Time frame (0.10)</li> <li>• Behaviour (0.00)</li> <li>• Methods (0.00)</li> </ul>	<ul style="list-style-type: none"> <li>• Control (0,15)</li> <li>• Behaviour (0,15)</li> <li>• Change (0,10)</li> <li>• Internal organisation (0,00)</li> <li>• Time frame (0,00)</li> <li>• Methods (0,00)</li> </ul>
	Semi-periphery (0,32-0,63)	<ul style="list-style-type: none"> <li>• Resources (0.55)</li> <li>• Planning (0.47)</li> <li>• Characteristics (0.41)</li> <li>• Goals (0.41)</li> <li>• Process (0.39)</li> </ul>	<ul style="list-style-type: none"> <li>• Planning (0,62)</li> <li>• Process (0,61)</li> <li>• Goals (0,49)</li> <li>• Efficiency (0,47)</li> <li>• Competition (0,36)</li> </ul>	<ul style="list-style-type: none"> <li>• Planning (0,62)</li> <li>• Process (0,61)</li> <li>• Efficiency (0,51)</li> <li>• Goals (0,49)</li> <li>• Competition (0,36)</li> <li>• Business (0,36)</li> <li>• Manager/owner/stakeholders (0,35)</li> <li>• Making decisions (0,35)</li> <li>• Industry/market (0,32)</li> </ul>
	Core (0,64-0,95)	<ul style="list-style-type: none"> <li>• Company (0,72)</li> <li>• Environment (0,67)</li> <li>• Operations (0,65)</li> </ul>	<ul style="list-style-type: none"> <li>• Company (0,95)</li> <li>• Environment (0,90)</li> <li>• Characteristic (0,75)</li> <li>• Resources (0,73)</li> <li>• Operations (0,72)</li> </ul>	<ul style="list-style-type: none"> <li>• Company (0,95)</li> <li>• Resources (0,85)</li> <li>• Characteristic (0,75)</li> <li>• Environment (0,74)</li> <li>• Operations (0,72)</li> </ul>
	1962-1977	1978-1992	1993-2008	
	Period			

Source: Ronda-Pupo, GA and Guerras-Martin, LÁ (2012), 'Dynamics of the evolution of the strategy concept 1962–2008: a co-word analysis,' *Strategic Management Journal*, t. 33, no. 2, 162-188.

The analysis of the matrix indicates some shifts in individual periods. As the authors of the study remark, on the basis of matrices, one can attempt to formulate a definition of strategy – the strategy is the dynamics of the company’s relations with its environment, where necessary actions are taken to achieve its goals and/or to increase efficiency through the rational use of resources<sup>2</sup>. In this context, if we assume that the environment will still require strategic adjustment and the strategy itself will also

<sup>2</sup>*Ibidem.*

force the development of the environment, we will come to the conclusion that the relationship between the strategy and the environment, and thus the strategy itself, is a constant desire to adapt to changes in the environment.

The purpose of this article is to propose an approach to the evolution of the strategy and its developmental logic in the dimension of economic rent, and in this context, to indicate the network strategy as a logical phase of the continuation of such an evolution. The scientific method will be mainly the deductive approach supported by the analysis of the literature in the field of strategic management.

### **The evolution of strategy in the context of strategic adjustment**

One of the emerging concepts of ordering the economic reality is the use of the category of economic rent as a canvas to indicate changes in the logic of achieving economic success in a changing environment. The economic rent is the surplus of income from resources remaining in limited supply<sup>3</sup>; the rent can also be considered as the difference between revenues from the production factor and the minimum fee necessary to purchase this factor<sup>4</sup>, as well as the additional payment received by the factor of production, over the transfer income necessary to induce it to provide its services in this application<sup>5</sup>. In modern enterprise management, an economic rent is interpreted as a surplus in excess of the opportunity costs of using the enterprise's resources<sup>6</sup>, or **as a positive difference between the expected value and the present value generated by the organisation**<sup>7</sup>. Thus, rent is a "transfer income" as a payment or price "necessary to leave the unit of a given factor in a given industry."<sup>8</sup> It is also possible to discuss the existence of a quasi-rent, which includes all income obtained by the enterprise in excess of the income of the marginal enterprise from resources whose supply is temporarily fixed<sup>9</sup>.

In the opinion of the authors of the article, in every period of historical development of world economies all possible strategies, all possible pensions are allowed. However, the most common types of corporate behaviours best suited to the dynamics of the environment are the winning ones. In various historical periods, entrepreneurs preferred various ways of acting and they hierarchized the factors responsible for their success in various manners. At one point rare resources were responsible for this, sometimes it was a special location in the environment, some other time it was difficult to imitate competence, innovation or network connections. In this way also took place the evolution of success factors.

Assuming the abovementioned concept, this article has divided the historical period of management into the following approaches (due to the type of dominant economic rent):

- planning approach using the Ricardian rent,
- position approach using the Chamberlin rent,
- resource approach using the Ricardian rent,
- an innovative and entrepreneurial approach using the Schumpeterian and Austrian rent<sup>10</sup>.

The aforementioned approaches to the strategy are presented in Table 2. There was also made an attempt to define the period of development of a given way of thinking about the strategy, the basic

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<sup>3</sup>Schoemaker, PJH, (1990), 'Strategy, Complexity and Economic Rent,' *Management Science*, t. 36

<sup>4</sup>Varian, H.R. (2002), *Mikroekonomia. Kurs średni – ujęcie nowoczesne*, PWN, Warszawa

<sup>5</sup>Begg D., Fischer S., Dornbusch R.(2007), *Mikroekonomia*, PWE, Warszawa

<sup>6</sup>Mahoney, JT (1995), 'The Management of Resource and Resource of Management,' *Journal of Business Research*, t.33

<sup>7</sup>Rokita, J. (2005), *Zarządzanie strategiczne. Tworzenie i utrzymywanie przewagi konkurencyjnej*, PWE, Warszawa

<sup>8</sup>Lipman, SA and Rumelt RP (2003), 'The Payments Perspective: Micro-foundations of Resource Analysis,' *Strategic Management Journal*, t. 24

<sup>9</sup>Blaug, M. (1994), *Teoria ekonomii. Ujęcie retrospektywne*, PWN, Warszawa

<sup>10</sup>Niemczyk, J. (2013), *Strategia: od planu do sieci*, Publishing House of the Wrocław University of Economics, Wrocław, p. 160.



logic of the strategy, its creators, assumptions about human nature, the basic unit of analysis and its key attributes as well as acceptable strategies.

**Table 2: Approaches to strategy in the historical periods**

<b>Approach</b>	<b>Period</b>	<b>Basic logic of the strategy</b>	<b>Author</b>	<b>Principles</b>	<b>Human nature</b>	<b>The basic unit of analysis and its key attributes</b>	<b>Acceptable strategies</b>
<b>Planning</b>	1945 - 1974	Ricardian rent	Penrose (1956), Chandler (1962), Ansoff (1965)	<ul style="list-style-type: none"> <li>- long-term planning and goals,</li> <li>- emphasis on the mission,</li> <li>- action planning,</li> <li>- short-term goals,</li> <li>- policies directing the managers' activities,</li> <li>- operation based on guidelines</li> </ul>	<ul style="list-style-type: none"> <li>- humans are guided by their own interest in terms of maximising benefits (principle of rationality),</li> <li>- there is low risk understood as lack of the managers' knowledge</li> </ul>	<ul style="list-style-type: none"> <li>- the basic unit of analysis is a company defined as a set of human, material and financial resources,</li> <li>- the main goal is to maximise the economic profit, defined as the difference between the income and all economic costs,</li> <li>- the real purpose was to deliver the product to the market,</li> <li>- the organisation's interior is considered</li> </ul>	<ul style="list-style-type: none"> <li>- searching for possibilities of operation on the existing market with the existing product,</li> <li>- searching for new products on the existing market,</li> <li>- seeking geographically new markets for existing products,</li> <li>- vertical and horizontal diversification</li> </ul>
<b>Position</b>	1974 - 1984	Chamberlin's rent	Porter (1980)	<ul style="list-style-type: none"> <li>- companies can increase efficiency not only through extensive or even intensive mechanisms of</li> </ul>	<ul style="list-style-type: none"> <li>- humans make decisions based on the principles of rationality and limited rationality,</li> <li>- the goal is to implement the</li> </ul>	<ul style="list-style-type: none"> <li>- the basic unit of analysis is the enterprise (Strategic Business Unit - SBU),</li> <li>- the main goal is to maximise</li> </ul>	<ul style="list-style-type: none"> <li>- a low-cost strategy oriented towards taking a privileged place in the sector,</li> <li>- a strategy of distinguishing, oriented</li> </ul>

Approach	Period	Basic logic of the strategy	Author	Principles	Human nature	The basic unit of analysis and its key attributes	Acceptable strategies
				productivity growth and savings based on cost reduction - impact of the forces of suppliers, customers, competitors, new bidders and substitute manufacturers	intentions of managers in imperfect markets, - there is an increased risk, there is required effective risk analysis and skilful risk management	economic profit, - the real objective is to increase the value of the enterprise in the long run, - the organisation's environment is considered	towards taking a privileged place in the sector
<b>Resource</b>	1983 - 2008 ?	Ricardian rent	Wernerfelt (1984), Barney (1989), Peters, Waterman (1980), Stewart III (1991), Grant (1991)	- explains how a company operating in a competitive environment acquires and maintains its market position, - organisation as a combination of resources where their type, skills, experience of managers and unused resources determine or limit its growth,	- there is adopted a perspective of limited rationality and opportunism, - there is a problem of transaction costs, - factors such as organisational culture, employee relations, organisational learning become a source of competitive advantage, - there is a growing risk and uncertainty for people and organisations	- the basic unit of analysis is an organisation conducting a specific activity, understood as a set of competences selected and combined in such a way as to maximise economic profit, - the most important category of approach is competence and value increase through <i>value</i>	- the strategy is a specific set of key competences compiled in such a way as to effectively influence the competitive advantage and thus increase the value for key stakeholders (value drivers) - strategies described in the layout: competence - market.

Approach	Period	Basic logic of the strategy	Author	Principles	Human nature	The basic unit of analysis and its key attributes	Acceptable strategies
						creation process, - the organisation's interior is considered	
<b>Innovative-entrepreneurial</b>	ok. 2005 - ok. 2013	Rent: schumpeterine and Austrian	Drucker (1985), Kim, Mauborgne (2005), Epstein (2006), Chesbrough (2003), Christensen (2010)	<ul style="list-style-type: none"> <li>- enterprises "earn" as a result of: value innovation, creation of new markets, being first in the markets, vitality and market sensitivity of entrepreneurs and entrepreneurial managers,</li> <li>- companies derive income from above-average activity of people, directed primarily at the search for new solutions in business</li> </ul>	<ul style="list-style-type: none"> <li>- <i>open mind</i> attitude, which in practice means rewarding experimentation,</li> <li>- mechanism of continuous innovation</li> <li>- high risk propensity,</li> <li>- the expected action is to focus on anticipating and the occurrence of risky and uncertain situations,</li> <li>- rationality prevails, but opportunistic attitudes are already emerging</li> </ul>	<ul style="list-style-type: none"> <li>- the basic unit of analysis is an enterprise understood as an instrument enabling creation and support of changes verified by the entrepreneurial innovation filter,</li> <li>- innovations do not have to be created only on the basis of own resources, bought and created together, in a simple or networked cooperation system or appropriated as a result of natural or intentional appropriation</li> </ul>	<ul style="list-style-type: none"> <li>- a set of activities enabling continuous creation of innovative changes that generate value from the perspective of stakeholders,</li> <li>- the enterprise is an instrument of creating and provoking changes,</li> <li>- strategies are described in the dimension of innovation and entrepreneurship (red ocean, blue ocean, "Austrian" entrepreneurship based on activity, entrepreneurship based on results),</li> </ul>

Approach	Period	Basic logic of the strategy	Author	Principles	Human nature	The basic unit of analysis and its key attributes	Acceptable strategies
						on processes	

Source: Niemczyk J. (2013), *Strategia. Od planu do sieci*, Publishing House of the Wrocław University of Economics, Wrocław, p. 81-151.

The concepts of approaching strategies in the historical periods presented in Table 2 through the prism of economic rent, in the opinion of the authors meet the requirements of the system with its inherent logic. If in addition to these characteristics (table 2) we additionally impose macroeconomic and microeconomic data on the development of the environment, then practically all approaches will find their logical explanation in the context of strategic alignment.

### Network strategy

In table no. 2, there was not enough space for the period after 2013. In the authors' opinion, this is the place for a new approach to strategy – the network approach. This is not a completely new theoretical proposal. In the literature on the subject, many attempts can be found to indicate the need to address networks in strategic management, as well as numerous attempts to build a network management framework<sup>11</sup>.

In the paper *Sieci międzyorganizacyjne* by J. Niemczyk, E. Stańczyk-Hugiet and B. Jasiński, there are presented the possibilities of using different types of rent to describe the ways of obtaining surplus value by networks and within networks. The results of these tests are presented in Table 3. There are 19 types of rents that differ in the generated value and thus relate to different areas of management science. In the description of rent, there was first and foremost indicated the possibility of generating surplus in the inter-organisational network. The classification itself, which presented 19 types of rent, underlines the essence of rent in the enterprise environment, as well as the variety of approaches and possibilities for creating strategies.

**Table 3: Classification of selected rent types in network strategies**

Type of rent	Value due to	Description
Ricardian rent	rarity, restrictions on mobility and resource productivity	The network gains value from possessing valuable and scarce resources, or more specifically a combination of these resources. In the network, resources are inflexible due to the path of development, unclear relationships and social complexity
Monopolistic rent	restriction of competition	Rent refers to the product market and essentially does not include entrepreneurial or managerial skills. The inter-organisational network appropriates the rent due to having a more solid competitive position in a given market
Penrose's rent	opportunities for a better use of the full set of resources	Rent is a result of internal synergy, and this synergy itself is a resource that cannot be bought on the strategic resources market. In this case the network is treated holistically and only as a whole has the possibility of appropriating the economic rent

<sup>11</sup> Möller, KK. and Halinen, A (1999), 'Business Relationships and Networks: Managerial Challenge of Network Era,' *Industrial Marketing Management*, Volume 28, Issue 5, 1999, Pages 413-427, ISSN 0019-8501

Type of rent	Value due to	Description
Organisational rent	appropriation of value	The source of the organisational rent are the different features of the organisation and management systems. It is an economic rent derived from resources and skills
Managerial rent	quality of resources	Managers are the source of rent generation, but they can also be the main shareholders in the breakdown of a rent (the issue of ownership supervision). Only those managerial resources that cannot be quickly imitated or which have imperfect substitutes can generate a rent
Entrepreneurial rent	the use of features belonging to entrepreneurial activities	The identifiable resource of the organisation are entrepreneurial initiatives (recognising opportunities), which are the result of resource configuration (combinational skills). In this approach, the resource for which a company benefits from a pension is an entrepreneur who mobilises these resources, not entrepreneurship itself. Entrepreneurship, however, is a flywheel that causes resources to be used
Schumpeter's rent	organisational skills of creative destruction	Dynamic abilities play an important role in generating this type of rent. They are the source of permanent, difficult to imitate differences between enterprises. In the case of the network, greater flexibility and speed of action are emphasized, which becomes a premise to claim the existence of dynamic capabilities within the network
Relational rent	relations between participants	Relational rent is, in a number of studies, the basic source of advantage of inter-organisational networks over other forms of organised activities. It is created thanks to the cooperation of network participants.
Incoming rent	exchanges of network participants	In practice, this means that, as a participant in the network, on the one hand, the entity may obtain a special type of rent, and on the other hand, there is a phenomenon of appropriation of rent by other network entities and as a result one can obtain relatively smaller benefits from participation in the network
Outgoing rent		
Internal rent	internal resources	Internal rent can be drawn from the company's own resources and is dependent on positive and negative relationships with business partners
Outgoing rent from the diffusion of resources	company resources	Rent from resource diffusion occurs when, without intention, the network partners use the resources of a given company
Incoming rent from the diffusion of resources	relations between participants	The income coming from the diffusion of resources is derived from establishing relationships with competitors

Source: own, based on: Niemczyk, J. and Stańczyk-Hugiet, E. and Jasiński B. (2011), Sieci międzyorganizacyjne. Współczesne wyzwania dla teorii i praktyki zarządzania, C.H. Beck Publishing House, Warsaw 2011, p. 88-92.

The presented summary proves that there are numerous types of generated value within the network through rent. This is due to the fact that in the enterprise environment, especially in the new space – in the network, there are various areas that allow generating value not only in monetary terms, but also in the immeasurable benefits that translate in the long run into an increase in the company's value.

It is worth citing, for example, the division of network rents proposed by J. Światowiec-Szczepeńska, which presents the competitive advantage of the company as a combination of four types of rent: internal rent, relationship rent, rent for belonging to the network, and rent for partners in the network. The author states that the first three types of rent increase the overall enterprise potential, while the last one decreases it. The internal rent refers to the combination of Ricardo's rent and quasi-rent. Relational rent is a common benefit obtained by partners through the combination, exchange and joint development of idiosyncratic resources<sup>12</sup>.

In this paper, the classification in the economic rent system was adopted as the basis for analysing the effectiveness of the network. It seems to be fully consistent and covers virtually all ways of creating surplus over the network and within the network. These are the following forms of the rent:

- Williamson rent for the reduction of transaction costs,
- rent for the appropriation of value,
- rent for the diffusion of knowledge,
- rent for value creation within the value network,
- rent for the network effect<sup>13</sup>.

The rent for the reduction of transaction costs arises as a result of a simple replacement of hierarchical systems with long-term contracts with service providers. Progress in managing the organisation in areas such as information processing has made collecting, processing, updating, sharing and destroying information much easier and cheaper, and thus more effective. Thanks to this, the access time, number and quality of information necessary in contracting became more friendly for the parties to the contracts. In such a situation, transaction costs fell to the level of the hierarchy. The rent from transaction costs became a kind of icon of the network economy and, unfortunately, it dominated this thinking in the long run. Although it appealed to economic models (New Institutional Economy) formulated, among others by O. Williamson, it was in its utilitarian applications that the cost-optimisation rent was sought in this form, leaving in the background a synergy effect, diffusion of knowledge and similar ways of increasing efficiency.

The adoption of such a network interpretation becomes a solution whichc minimises transaction costs. However, there is a lack of thinking about what is expected from the network: dynamics and quality of management that can cope with changes at the civilisational level, as well as flexible and optimised operation.

Another type of economic rent that can be obtained in the network is the value-based rent. The authors of this type of rent mention a cycle of development concerning the ways of creating value, starting from a linear, sequential and deterministic chain of value, through a value workshop also rewarding the interaction between the parties to the contract, to the interactive, parallel and simultaneous concept of the value network<sup>14</sup>. In rents oriented on value, a value workshop and a value network of the company<sup>15</sup>, entrepreneurs choose the network in order to make greater use of expert knowledge and the possibility of seeking additional value-creation opportunities. The value chain generates value by connecting customers, exchanging values through mediation through

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<sup>12</sup>Światowiec-Szczepeńska J. (2012), 'Renta ekonomiczna a przewaga konkurencyjna przedsiębiorstwa,' *Ekonomista*, no. 2; Lavie, D. (2006), 'The competitive advantage of interconnected firms: an extension of the resource-based view,' *The Academy of Management Review*, t. 31, no. 3.

<sup>13</sup> Niemczyk J. (2013), *Strategia. Od planu do sieci*, Publishing House of the Wrocław University of Economics, Wrocław, p. 141-146.

<sup>14</sup>Niemczyk, J. (2015), 'Poziomy rozwoju sieci międzyorganizacyjnej,' *Prace Naukowe Wałbrzyskiej Wyższej Szkoły Zarządzania i Przedsiębiorczości*, t. 32(2)

<sup>15</sup> Stabell, CB and Fjeldstad, ØD (1998), 'Configuring value for competitive advantage: on chains, shops, and networks,' *Strategic Management Journal*, t. 19, no. 5.

network promotion and contract management, provisioning services, and network infrastructure operations<sup>16</sup>. In this case, the scale of costs and values is the use of production capacities<sup>17</sup>.

Basic activities in the value network can be divided into activities related to network promotion and contract management, which include activities related to the invitation of potential customers to the network, selection of customers admitted to the network, and then contract management, provisioning services, i.e. establishing activities, service, solution of connections between customers, network infrastructure operations, i.e. activities related to the launch and maintenance of IT infrastructure. On the other hand, the value creation process may be based on activities such as: identification and adaptation of the customer's issue, problem solutions and evaluation of alternative solutions, selection of solutions; all activities related to the choice of alternatives, project implementation; activities related to communication, organisation and implementation of the selected solutions, control and evaluation; activities related to measurement and evaluation, to what extent the initial customer problem was solved<sup>18</sup>.

Another rent proposal, characteristic of the network strategy approach, is the rent due to appropriation. It means the appropriation, in this case, of a part of the rent or even its entirety generated by other participants of the network. "The appropriation of value includes the takeover by a given entity of a portion of the value created equal to or greater than one's own contribution."<sup>19</sup> "Appropriation is practically a passive use of network relations to take over the generated value assigned to other network nodes. The appropriation of values may take the form of cost arbitrage, the appropriation of a brand or the value of relational resources, or an unqualified appropriation of knowledge. This happens both in the case of formal and informal contracting. It is possible to present "several factors determining the size of the rent being intercepted, thus the value of the relationship being intercepted, i.e.: relative absorption capacities, relative scale and scope of resources, relative opportunistic behaviour, contractual agreement, relative bargaining power."<sup>20</sup> The mere management of appropriation processes can be reduced to making decisions in the area of: building a valuation model of stakeholder values, determining stakeholder migration and management, managing the life cycle of stakeholders and their life value, building a stakeholder map. It is worth adding that the sources of value which can be subject to interception by the network (network node) may be the following groups of stakeholders: suppliers (their relational resources, know-how, brand, values, certificates), competitors (as benchmarks), clients (their relational resources, brand, know-how), other shareholders (their relational resources), other stakeholders (capital market institutions, including capital and commodity exchanges, financial institutions, rating institutions, professional associations, state and local government institutions, media and their relational resources, brand, image, values, the possibility of legitimisation, lobbying institutions).<sup>21</sup>

Another rent proposal is a rent for the creation and diffusion of knowledge. The main idea here is to have the ability to create tacit knowledge for the integrator company, and then to diffuse this knowledge to co-operators and other network participants. Network and diffusion of knowledge within the network is often indicated in the context of the network as initiating, supporting and sustaining the diffusion of knowledge. Rent due to knowledge diffusion is a fairly well-recognised phenomenon. As an example, we can cite network dissemination of knowledge in the field of technology, where the rate of dissemination depends on the maturity of the network, its size and its structuring. Dissemination is not accidental, the speed of technology dissemination depends on the

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<sup>16</sup> Liu, H and Yang, H (2018), 'Managing Network Resource and Organizational Capabilities to Create Competitive Advantage for SMEs in a Volatile Environment,' *Journal of Small Business Management*, doi:10.1111/jsbm.12449

<sup>17</sup>Stabell CB and Fjeldstad ØD (1998), 'Configuring value for competitive advantage: on chains, shops, and networks,' *Strategic Management Journal*, t. 19, no. 5.

<sup>18</sup>*Ibidem.*, p. 429-432.

<sup>19</sup>Czakoń W (2012), 'Sieci w zarządzaniu strategicznym,' *Wolters Kluwer Polska*, p. 91.

<sup>20</sup> Lavie D (2006), 'The competitive advantage of interconnected firms: an extension of the resource-based view,' *The Academy of Management Review*, t. 31, no. 3, p. 645.

<sup>21</sup>Blyler, M. and Coff, RW. (2003), 'Dynamic capabilities, social capital, and rent appropriation: ties that split pies,' *Strategic Management Journal*, 24: 677-686. doi:10.1002/smj.327



communication channel, the spill-over effect – the external diffusion effects, and the appearance of natural convergence processes<sup>22</sup>.

The final proposition for a network rent is the rent for the network effect. This is “an effect manifested in the increase in usability that the consumer will experience when joining another user’s network. From the perspective of the added value of the network, using this interpretation of the network effect, it can be concluded that the attractiveness of the network in some sectors in which such an effect occurs will increase as the number of participants increases. Thus, there is a high probability of a higher valuation of such a company by the market.”<sup>23</sup> Rent for the network effect can be perceived, among others, through the prism of the tools and laws defining the value of network goods.<sup>24</sup>

The current popularity of the topic of economic rents, and especially rents related to networks, results from the fact that only now the environment in which business is conducted has fully matured into a contractual approach to organising economic activities. There are also surpluses from diffusion of knowledge or simple expropriation already exploited. They, too, have now gained a completely different perspective for the networks. Some of these types of rent are possible only within the network. These are, for example, surplus characteristic for the network of rents related to the creation of value in the network of values (concurrency, parallelism and holism in action) or rent for adding more nodes and relationships to the network in order to increase its attractiveness not only for investors but also for other network partners. The most interesting feature of the network is that the network can change dynamically depending on the need, dynamically adapting to the ambient conditions.

In this view of the network strategy from the perspective of rent, the network strategy gains new properties, creates a new ecosystem, in which it turns out that only it can be effective. Table 4 below presents the complement to the detailed characteristics of the network strategy presented in Table 2.

**Table 4: Characteristics of the network strategy<sup>25</sup>**

Approach	Period	Basic logic of the strategy	Author	Principles	Human nature	The basic unit of analysis and its key attributes	Acceptable strategies
Network	about 2010	Network rent	Barabasi (2002), Anderson, Hakanson(1994), Borgatti(2003), Järvensivu(2009)	- focus on large communities in order to find regularity in the processes of communication, building, functioning	- when it comes to the choice of goals and ways, people will behave opportunistically, - high risk and uncertainty in the	- a company in a network approach is a specific bundle of contracts between interested parties,	- the strategy in the network approach is a set of actions aimed at optimal management of contracts

<sup>22</sup>Sun Y and Liu F. (2012), 'Measuring international trade-related technology spillover: a composite approach of network analysis and information theory,' *Scientometrics*

<sup>23</sup> Niemczyk J. (2013), *Strategia. Od planu do sieci*, Publishing House of the Wrocław University of Economics, Wrocław, p 32.

<sup>24</sup> Zhang Si and Li N and Li J (2017), 'Redefining relational rent,' *Technological Forecasting and Social Change*, Volume 17, 2017, pages 315-326,

<sup>25</sup> Niemczyk J. (2013), *Strategia. Od planu do sieci*, Publishing House of the Wrocław University of Economics, Wrocław

				<p>and the process of dysfunction of communities, teams and groups from the point of view of the features of efficient management,</p> <ul style="list-style-type: none"> <li>- theory of transaction costs,</li> <li>- theory of agency,</li> <li>- perception of the environment in a network environment as a set of entities (points) with which the subject in question establishes relationships</li> </ul>	<p>decision-making processes,</p> <ul style="list-style-type: none"> <li>- joint activities, in a specific ecosystem, increase trust,</li> <li>- building trust as a basis for risk neutralisation,</li> <li>- tendency to transfer risk,</li> <li>- the role of the manager, the entrepreneur takes on an additional dimension as an entrepreneur, manager acting mainly as a coordinator and conductor, a participant in the network who is a specialist hired to perform partial activities under the supervision of the coordinator for the benefit of the entrepreneur</li> </ul>	<p>network rents and stakeholders</p> <ul style="list-style-type: none"> <li>- the organisation ceases to have the characteristics of a hierarchical institution and becomes heterarchic,</li> <li>- relational resources are an important resource of organisational networks</li> </ul>	<p>from the point of view of stakeholders</p> <ul style="list-style-type: none"> <li>- strategies are the choice of network nodes that more or less voluntarily decide to operate using network systems,</li> <li>- the network can be defined as a whole and can independently make strategic choices and implement strategies of action,</li> <li>- there is a dichotomy : from cooperation to competition</li> <li>- network strategy of costs, transaction,</li> <li>- network strategy of competition,</li> <li>- network value workshop strategy,</li> <li>- network strategy of appropriation</li> </ul>
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## Types of network strategies

Some suggestions for classifying network strategies can be found in the literature on the subject, but comprehensive approaches are still missing here.

The first classification of network strategies is **a simple attempt to translate five network rents into five types of network strategies**. This way, we receive the following:

- network appropriation strategy,
- network knowledge diffusion strategy,
- network strategy of using the value network,
- network effect strategy.

Another suggestion is **to search for network strategies from the perspective of the so-called levels of network development**. Table 5 presents the development levels of the network in which “the first level of network development is communicated when only one of the features appearing in the first column turns out to be a feature of the assessed network. The highest level (in this case the fifth level) refers to the systems in which all four types of rent occur simultaneously (except for appropriation). This best quality network strategy is considered a co-opting system, optimised around the value network idea, otherwise it is a kind of ecosystem that diffuses knowledge from the logic of complexity theory and continues to grow according to the rule of the emergent network effect. The simplest networks, in turn, are organisations which use simple outsourcing, simple open systems based on limited feedback loops between the parties to the contracts.”<sup>26</sup>

**Table 5: The level of network development and the type of network rent used**

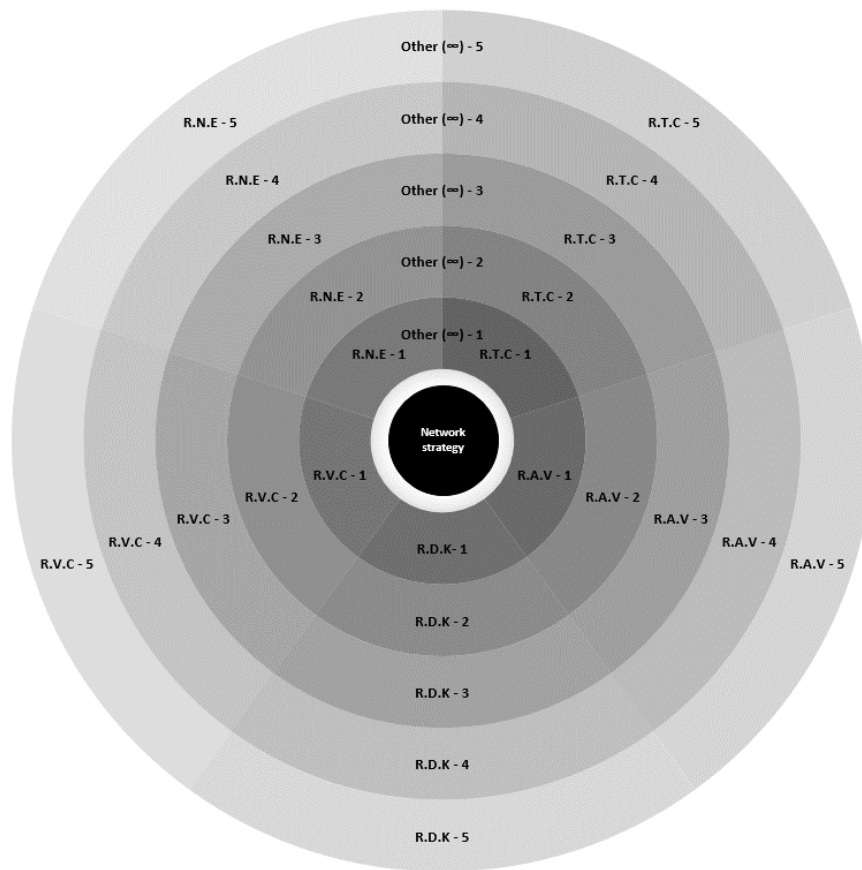
		The level of network development				
		The first level of network development	The second level of network development	The third level of network development	The fourth level of network development	The fifth level of network development
Type of network rent	Rent for appropriation	Arbitration based on the analysis of the cost of material resources at contractors	Arbitration based on the analysis of labour costs at contractors	Arbitration based on the analysis of intangible assets at contractors	The level does not occur	The level does not occur
	Williamsian rent	Simple relations between the parties of the contract (classic outsourcing)	Relations between the parties to the contract extended by a wider use of outsourcing resources	Enhanced relations between the parties to the contract for elements of strategic outsourcing	Complex cooperation networks optimised around the contract	Co-operation networks based on co-opting solutions
	Rent for the value network	A network built along the value	A network built along value chains	A value workshop network built	A network composed of at least two	A network built of all contract

<sup>26</sup>Niemczyk, J. (2015), 'Poziomy rozwoju sieci międzyorganizacyjnej,' *Prace Naukowe Wałbrzyskiej Wyższej Szkoły Zarządzania i Przedsiębiorczości*, t. 32(2)

		chain		around a company-customer feedback loop	different groups of contract stakeholders	stakeholders (a solution close to the idea of an ecosystem)
	<b>Rent for the diffusion of knowledge</b>	The hierarchical process of diffusion of knowledge	Diffusion of knowledge resulting from the use of the systemic approach instrumentation	Diffusion of knowledge arising as a result of using the systemic approach instrumentation and electronic communication tools	Diffusion of knowledge resulting from the use of the instruments for holistic perception of systems	Diffusion of knowledge arising as a result of the use of the complexity theory
	<b>Rent for the network effect</b>	The level does not occur	The level does not occur	The level does not occur	Network effect understood as multiplication of connections	Network effect understood as an emergent being

Source: Niemczyk, J. (2015), 'Poziomy rozwoju sieci międzyorganizacyjnej,' *Prace Naukowe Wałbrzyskiej Wyższej Szkoły Zarządzania i Przedsiębiorczości*, t. 32(2)

**Network combination strategies (5!)**, which should be treated as a dynamic combination of five network rents and network development levels. This approach to the strategy allows dynamic strategy building, its interpretation and operationalisation of the company's activities as well as dynamic response to emerging opportunities and market challenges. Building strategies based on network combination strategies provides the necessary information about the organisation's operations, translating information into knowledge about the potential network capital (rent), generated and accumulated in the organisation. On the other hand, the defined rent in the strategic model allows to talk about the potential level of the organisation's network development, and thus to define and select the appropriate strategic actions characteristic of the network approach to generate even more surplus.



**Figure 1: Ideogram of building a network combination strategy.**  
Source: *own*.

Figure 1 presents the possibilities of combining network rents and levels of development. The RTC designation depicts rent due to transaction costs, the RAV designation represents rent for the assignment of value, the RDK designation represents rent for the diffusion of knowledge, the RVC designation means rent for value creation in the value network, the RNE designation represents rent for the network effect. The combination of rents and network development levels allows to present potentially 120 possible strategy combinations (Figure 1).

The position of the rings allows to illustrate the combination of the network approach. This results in the possibility of all rents to occur at the same time and affect all levels of network development. On the other hand, it is possible to select some rents at selected levels of network development. Such an approach to interpreting strategies and building a network strategy gives the company the flexibility to operate in dynamically changing conditions. Additional parameterisation of the strategy allows to adjust actions and action plans. At the same time, it should be remembered that a specific network strategy for the proposed approach will be targeted at the implementation of at least one network rent.

## Conclusion

The changing environment enforces legal, economic, technological and managerial changes also in enterprises. The challenges faced by strategic management are challenges related to constant adaptation to such changes. Of course, changes are also possible in the environment caused by enterprises that are leaders in the areas of management, business models or technologies. The second

part of the 1920s forced economic organisations to act primarily in the network environment. What used to be the main paradigm of management, that is, separation from the environment to provide stability to the organisation, has now changed in the direction of the paradigm of fusion with the environment in order to reduce the risk which management carries with it. The article presents the logic of the evolution of strategy towards a network strategy appropriate for such an environment. For this purpose, the category of economic rent was used, common in economics, less frequently used in management. The way of thinking used in the article is the original idea of the authors, referring to attempts to operate the rent category. The authors proposed five types of such a rent, omitting classic rents: Ricardian and Chamberlin. Admittedly, in some publications one can find explanations of a network strategy using a relational rent, close to the logic of a Ricardian rent, also known as the resource rent, but in the opinion of the authors, the use of relationships possesses the features of a Resource Based View rather than network theories. Networks are completely different challenges and completely different possibilities of generating surplus, absent or rarely present in previous management theories. It allowed to indicate five main network rents, from the simplest one related to transaction costs to the most difficult to obtain rent for the network effect. Extracting these rents was the basis for indicating the original definition of the network strategy and pointing to three basic classifications of network strategies. The directions of the network strategy research indicated in the paper may be, and in the case of the authors of the article, already are the basis for further research of networks, network strategies, types of strategies, or conditions of effective management in the network environment.

## Literature

1. Begg, D and Fischer, S and Dornbusch, R (2007), *Mikroekonomia*, PWE, Warsaw 2007.
2. Blaug M (1994), *Teoria ekonomii. Ujęcie retrospektywne*, PWN, Warsaw 1994.
3. Blyler, M and Coff, RW (2003), 'Dynamic capabilities, social capital, and rent appropriation: ties that split pies,' *Strategic Management Journal*, 24: 677-686. doi:10.1002/smj.327
4. Czakon W (2012), *Sieci w zarządzaniu strategicznym*, Wolters Kluwer Polska 2012,
5. Lavie D (2006), 'The competitive advantage of interconnected firms: an extension of the resource-based view,' *The Academy of Management Review*, t. 31, no. 3, p. 645
6. Lipman, SA and Rumelt, RP (2003), 'The Payments Perspective: Micro-foundations of Resource Analysis,' *Strategic Management Journal*, t. 24.
7. Liu, H and Yang, H (2018), 'Managing Network Resource and Organizational Capabilities to Create Competitive Advantage for SMEs in a Volatile Environment,' *Journal of Small Business Management*, doi:10.1111/jsbm.12449
8. Mahoney, J.T. (1995), 'The Management of Resource and Resource of Management,' *Journal of Business Research*, t.33
9. Möller, KK and Halinen A (1999), 'Business Relationships and Networks: Managerial Challenge of Network Era,' *Industrial Marketing Management*, Volume 28, Issue 5, Pages 413-427, ISSN 0019-8501,
10. Niemczyk, J (2015), 'Poziomy rozwoju sieci międzyorganizacyjnej,' *Prace Naukowe Wałbrzyskiej Wyższej Szkoły Zarządzania i Przedsiębiorczości*, t. 32(2).
11. Niemczyk, J and Stańczyk-Hugiet, E and Jasiński, B (2011), 'Sieci międzyorganizacyjne. Współczesne wyzwanie dla teorii i praktyki zarządzania,' Wydawnictwo C.H. Beck, Warszawa
12. Niemczyk, J. (2013), *Strategia. Od planu do sieci*, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław,
13. Rokita, J. (2005), *Zarządzanie strategiczne. Tworzenie i utrzymywanie przewagi konkurencyjnej*, PWE, Warsaw
14. Ronda-Pupo, GA and Guerras-Martin, LÁ (2012), 'Dynamics of the evolution of the strategy concept 1962–2008: a co-word analysis,' *Strategic Management Journal*, t. 33, no. 2.
15. Schoemaker, PJH (1990), 'Strategy, Complexity and Economic Rent,' *Management Science*, t. 36.
16. Stabell, CB and Fjeldstad ØD (1998), 'Configuring value for competitive advantage: on chains, shops, and networks,' *Strategic Management Journal*, t. 19, no. 5.

17. Sun, Y and Liu, F., 'Measuring international trade-related technology spillover: a composite approach of network analysis and information theory,' *Scientometrics*
18. Światowiec-Szczepańska J. (2012), 'Renta ekonomiczna a przewaga konkurencyjna przedsiębiorstwa,' *Ekonomista*, nr 2; Lavie D., 'The competitive advantage of interconnected firms: an extension of the resource-based view,' *The Academy of Management Review*, t. 31, no. 3.
19. Varian, H.R., *Mikroekonomia. Kurs średni – ujęcie nowoczesne*, WN PWN, Warszawa 2002.
20. Zhang, Si and Li, N and Li, J. (2017), 'Redefining relational rent, Technological Forecasting and Social Change,' Volume 17, pages 315-326.

## **Cybersecurity & Hactivism - Practical Aspects about Human Resources Management Systems**

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### **Abstract**

This paper attempts to capture this dual aspect and the connections made, from general to individual and vice versa, but also the complex processes involved in their performance, namely professional management of human resources, based on databases provide effective IT support for timely obtaining of information and an effective continuous training system based on the most modern methods.

From these needs an important component of all these processes derives, the real protection of the computerized databases available, a component that will occupy an important space of this work.

In order to support the human resources management professionals, in the content of the paper we will propose in the future research a viable platform for the deployment of distance learning processes, a modern system, generalized, necessary and efficient especially at the level of large organizations.

**Keywords:** cybersecurity, hactivism, remote exploit, ethical hacker.

### **Introduction**

Human resources management and its component, individual career management, is the best instrument for harmonizing organizational objectives with those of the employee. Its principles, methods and techniques derive from those of human resources management in general, but it can't be conceived of a modern human resource management that does not include and rely on individual career management, individual actors within the strongly established organizations, being the key to their success. (Morgan, S., 2017)

The alert rhythm in which changes occur in all areas of contemporary life, the rapid evolution of the level of knowledge acquired by people, the progress made by modern science, and the increasing degree of all the activities currently carried out have a huge impact on both the individual and the organizations they are part of.

### **Results from Previous Researches**

The transition from societies mainly based on physical, agricultural and / or industrial activities to services based on services and subsequently on information and knowledge has generated a complex phenomenon of quantitative but, above all, qualitative changes in the structure of the organizations that form the society contemporary. It became aware that as more and more organizations had access to the same information, technologies and resources, the role of those who made them grow. Gradually, the emphasis on material and financial resources has shifted towards the quality of the staff employed. Thus, human resources have become a strategic resource and a prerequisite for increasing the efficiency and effectiveness of organizations. Achieving the proposed objectives could no longer be achieved without the particularly important contribution of those who know what, when and how to do it. (Marks, J., 2017)



The primary factor of any organization is the effort made by people to achieve the objectives set, their behavior depending on the effectiveness and efficiency of that organization. This also results from the definition of Gary Johns' organizations. According to him, "organizations are social inventions designed to achieve common goals through common effort, and have as their essential feature the coordinated presence of people and not necessarily things."

## Terms and Definitions

A security threat is a situation that could lead to a security policy violation. Ethical hackers seek and prioritize security threats following a security analysis. (Johnston, R., 2017)

Exploit is a suite of instructions that take advantage of a programming error, abnormal operation, or a computer system vulnerability that leads to unauthorized access. There are two ways to classify exploits:

- Remote exploit - runs on a network and exploits security vulnerabilities without having previously accessed the vulnerable system;
- Local exploitation - requires prior access to the vulnerable system to increase privileges.

Vulnerability is a software, design, or implementation error that can lead to a security event.

Target system is a system, program or network that is under security or attack.

## Technologies used to identify vulnerabilities

There are many methods and tools used to identify vulnerabilities, running exploits and compromised systems. Trojans, backdoor, sniffer, rootkits, exploits, buffer overload, and SQL injection are all techniques that can be used to attack a system or network.

Most hacking tools exploit the vulnerabilities of computer systems in one of the following four categories:

- Operating systems - Many system administrators install operating systems with default settings, resulting in vulnerabilities that remain unresolved;
- Applications - generally they are not tested for developmental vulnerabilities. Because of this, there can be many programming mistakes that a hacker can exploit;
- Shrink-wrap code - Many programs come with additional features that a common user is unaware of, which features can be used to exploit the system. For example, macros in Microsoft Word can allow a hacker to execute code snippets in an application;
- Wrong Configurations - Administrators can misconfigure systems or leave them with a minor security policy set to facilitate regular user access. These decisions can expose the system to a potential attack.

From the point of view of the source of the attack, they can be internal and external.

An attack within an organization's security perimeter is an internal attack and is usually caused by an "insider" (an in-person) who gains access to more resources than he is entitled to. An external attack comes from a source outside the security perimeter, such as the internet or a remote access connection.

## Steps of an attack

An ethical hacker follows similar processes to a malicious hacker. (Good, L., & Zanville, H., 2017) The steps to win and maintain access to a computer system are similar regardless of the hacker's intentions. Steps generally followed by a hacker in attacking a system are shown in the figure below:

**Step 1: Recognition** Depending on how it is executed, the recognition stage is divided into two subcategories:

- Active Recognition;
- Passive recognition.

Passive recognition involves collecting information about a potential target, without becoming aware of it. Passive recognition can be as simple as looking at a building to identify when employees enter the building and when they leave. However, usually searches on the Internet or on search engines about individuals or organizations to get information. This process is called information gathering. Social engineering is also considered a passive method of collecting information.

Network sniffing is another means of passive recognition that can provide useful information such as IP address ranges, name conventions, hidden servers or networks, and other services available on the system or network. A hacker follows the data stream to see when certain transactions take place and traffic occurs.

Active recognition requires network testing to discover individual hosts, IP addresses, and network services. This usually involves a higher detection risk than passive recognition and is sometimes called "door slamming." Active recognition can give a hacker an indication of existing security measures, but the process increases the chance that the hacker is caught or aroused suspicions.

Both passive and active recognition can lead to the discovery of useful information used in an attack. For example, it's easy to find the type of web server and the operating system version that a company uses. This information may allow a hacker to find vulnerability in the operating system version and exploit the vulnerability to gain access to it.

**Step 2: Scanning** - Scanning involves synthesizing the information discovered in the reconnaissance step and using it to examine the network. Techniques that a hacker can use during the scanning phase can include port scanning, network mappers, sweepers, and vulnerability scanning. Hackers look for any information that can help them commit the attack, such as computer name, IP address, and user accounts.

**Stage 3: Getting access** - This stage is where the attack on the computer system really takes place. Vulnerabilities discovered during the reconnaissance and scanning phases are now being exploited to gain access. The method of connecting to a hacker system for an exploit can be a local network, local access to a PC, Internet, or offline.

**Stage 4: Maintain access** - Once a hacker has gained access, he wants to keep access for exploits and future attacks. Sometimes attackers reinforce the system against other attackers securing exclusive access only to them using backdoors, rootkits and Trojans. Once the hacker has access to the system, he can use it as a basis for launching additional attacks. In this case, the hacker system is called a zombie system.

**Stage 5: Trace coverage** - Once hackers have been able to gain and maintain access, they track their tracks to avoid detection by security staff, continue to use the winning system, eliminate hacking evidence or avoid legal action. Hackers get rid of all the traces of the attack, such as log files or intrusion detection system (IDS) alarms. Examples of activities during this attack phase include steganography, use of tunneling protocols, and alteration of log files.

## **Hactivism and the activity of an Ethical Hacker**

Hactivism means attacking systems for a particular cause. These hackers usually have social and political reasons. Their intent is to send a message through their hacking activity so that their cause becomes visible to the entire society.

Many of these hackers participate in activities such as deleting websites, creating viruses, DoS, or other destructive attacks to promote their own cause. Hactivism usually targets government agencies, political groups, and any other entities that these groups or individuals consider "bad" or "wrong."

Ethical hackers are motivated by different causes, but their purpose is usually the same as crackers: they try to determine what intruder can see a target network or system and what a hacker can do with this information. This process of testing a system or network security is known as a penetration test. Hackers break the computer systems. Contrary to myths around the world, this activity does not necessarily imply extraordinary knowledge in the field but, on the contrary, persistent in the use of general systems of security of target systems. Consequently, most crackers are just average hackers.

Many ethical hackers detect malicious activity by a hacker when they are part of an organization's security team, being charged with defending the system against malicious hacker activities. When hired, an ethical hacker asks the employer to be protected, who and what resources the organization is willing to spend for the purpose of obtaining protection.

## **Objectives of an attacker**

Security consists of four basic elements:

- Confidentiality;
- Authenticity;
- Integrity;
- Availability.

The purpose of a hacker is to exploit vulnerabilities in a system or network to find a weakness in one or more of the four security elements. During a DoS attack, a hacker attacks the available system and network elements. Although a DoS attack can take many forms, the main purpose is to use the resources or the bandwidth of the system. A large flow of messages sent to the target system forces them to no longer provide services to legitimate users. Theft of information, such as stealing passwords or other data that is transmitted in clear text into a trusted network, is an attack on privacy because it allows someone other than the legitimate recipient to access the data. This theft is not limited to data on network servers. Laptops, discs, and backup tapes are all at risk. These devices are loaded with confidential information and can give to hacker information about an organization's current security measures.

Bit-flipping attacks are considered integrity attacks because data may be altered during transmission or when stored in the system; therefore, system administrators are not in a position to verify that the data is those that the broadcaster wishes to send. A bit-flipping attack is a cryptographic attack. The attacker modifies the encrypted text in such a way that it seems a predictable change of text in clear, although the attacker does not find the text clearly. This type of attack is not directly against the cipher but against the message.

Going to the extreme, this can become a DoS attack against all messages on a particular channel using that cipher. The attack is particularly dangerous when the attacker knows the format of the message.

When a bit-flipping attack is applied to digital signatures, the attacker may be able to change an order note stating "I owe you 10.00 RON" to one that says "I owe you 10,000 RON." MAC address spoofing is an authentication attack because it allows an unauthorized device to connect to the network when filtering is based on MAC. Through this process an intruder can benefit from the identity of the station that has stolen its MAC address for use on the network.

For a security professional, it is difficult to find a balance between adding security barriers to prevent an attack and allowing the system to remain functional for users. Generally, once security increases, system functionality and ease of use decrease for users.

In an ideal world, security professionals would like to have the highest level of security on all systems. However, sometimes this is not possible. Too many security barriers make it difficult for users to use the system and prevent it from functioning properly.

## **Vulnerability Research**

Vulnerability research is the process of detecting vulnerabilities and design deficiencies that could lead to an attack on the system. There are numerous websites and tools that can help the ethical hacker maintain a list of system and network vulnerabilities.

It is essential that the system administrator be aware of the latest viruses, Trojans, or other common abuses to properly protect the system or network.

Also, to become familiar with the latest threats, an administrator can learn how to detect, prevent, or recover the system from an attack. Ethical hacking is typically done in a structured and organized manner as part of a penetration test or security audit. The level of testing on the systems and applications to be verified is usually determined by the needs and concerns of the client.

Steps to Perform an Organization Security Audit:

1. Discuss the needs to be addressed during testing;
2. The confidentiality agreement is prepared and signed with the client;
3. A team is organized and a testing program is being prepared;
4. Perform the test;
5. Test results are analyzed and a report is prepared;
6. Report to client.

## **Conclusions**

Many ethical hackers acting as security professionals use their skills to conduct security assessments or penetration tests. These tests and assessments generally have three stages, ordered as follows: training, security evaluation, conclusions.

The preparation stage involves a formal agreement between the testing team and the organization. This agreement should include the full purpose of the test, the types of attacks used (inside or outside) and the test types: white, black, or gray box. (These types are defined below in the "Test Types" section).

During the security assessment phase, the tests are carried out, after which the person who carried out the tests prepares an official report on the vulnerabilities and other findings. The findings are presented to the organization at the conclusion stage together with any recommendations to improve security.

## References

- Eichensehr, M. (2017). Baltimore Cyber Range training facility opens at Power Plant Live. Retrieved from <https://www.bizjournals.com/baltimore/news/2017/08/03/baltimore-cyber-range-training-facility-opens-at.html>
- Elsy, B., Lanier, L., Jessie, S. (2015). Career Pathways Toolkit: A Guide for System Development [PDF]. Retrieved from [https://wdr.doleta.gov/directives/attach/TEN/TEN\\_17-15\\_Attachment\\_Acc.pdf](https://wdr.doleta.gov/directives/attach/TEN/TEN_17-15_Attachment_Acc.pdf)
- George Mason University. (2015). From Our Partners - Nanokrieg Beyond Blitzkrieg: Mindset to Fight the War on Terrorism by James Carlini. Retrieved from <https://cip.gmu.edu/2015/09/21/from-our-partners-nanokrieg-beyond-blitzkrieg-mindset-to-fight-the-war-on-terrorism-by-james-carlini/>
- Goldhammer, J., Weber, S., Cooper, B., Center for Long-Term Cybersecurity: UC Berkeley. (2016). CLTC Occasional White Paper Series Cyber Workforce Incubator. Retrieved from <https://cltc.berkeley.edu/2017/04/06/cyber-workforce-incubator/>
- Good, L., & Zanville, H. (2017). Four Lessons Learned from the National Connecting Credentials Campaign [Web log post]. Retrieved from <http://connectingcredentials.org/four-lessons-learned-national-connecting-credentials-campaign/>
- Goodman, M. (2016). How to Attract More Diversity in Cybersecurity Hiring [Blog]. RSAConference Where the world talks security. Retrieved from <https://www.rsaconference.com/blogs/how-to-attract-more-diversity-in-cybersecurity-hiring>
- Herrmann, A., Rehm, K., Carlini, J., Schkeeper, P., Loken, L., Swanson, J., ... Maltby, J. (2009). The CIP Report Center for Infrastructure Protection volume 8 number 4 [PDF]. Retrieved from [https://cip.gmu.edu/homepage\\_slider/the-cip-report-2/](https://cip.gmu.edu/homepage_slider/the-cip-report-2/)
- Hernandez, P. (2016). Commission on Enhancing National Cybersecurity. Retrieved from <https://www.nist.gov/cybercommission>
- Hoffman, L. J. (2010). Building the Cyber Security Workforce of the 21 Century: Report of a Workshop on Cyber Security Education and Workforce Development. Retrieved from [https://cspri.seas.gwu.edu/sites/cspri.seas.gwu.edu/files/downloads/2010-3a\\_building\\_the\\_cyber\\_security\\_workforce\\_of\\_the\\_21st\\_century\\_1.pdf](https://cspri.seas.gwu.edu/sites/cspri.seas.gwu.edu/files/downloads/2010-3a_building_the_cyber_security_workforce_of_the_21st_century_1.pdf)
- Johnston, R. (2017). California groups collaborate on cybersecurity education program. Retrieved from <http://edscoop.com/california-government-industry-and-educators-collaborate-on-new-cybersecurity-education-program>
- Jones, E. (2016). UK Government gets serious on developing security skills in 2016. ITProPortal. Retrieved from <http://www.itproportal.com/2016/01/14/uk-government-gets-serious-developing-security-skills-in-2016/>
- Larson, R., Xue, Y. (2015). STEM crisis or STEM surplus? Yes and yes. Monthly Labor Review Bureau of Labor Statistics. Retrieved from <https://www.bls.gov/opub/mlr/2015/article/stem-crisis-or-stem-surplus-yes-and-yes.htm>
- Linthicum, S. (2017). Driving an effective cybersecurity apprentice program (Part 1). Certification Magazine. Retrieved from <http://certmag.com/driving-effective-cybersecurity-apprentice-program-part-1/>

Marks, J. (2017). Shoddy U.S. Cyber Deterrence Policy Emboldens Adversaries, Lawmakers Say. Retrieved from <http://www.nextgov.com/cybersecurity/2017/03/shoddy-us-cyber-deterrence-policy-emboldens-adversaries-lawmakers-say/135853/>

Morgan, S. (2017). Great big list of cybersecurity resources. Retrieved from <http://www.csoonline.com/article/3209670/it-careers/great-big-list-of-cybersecurity-resources.html>

Petrella, E. (2017). NICE Interagency Coordinating Council (ICC). Retrieved from <https://www.nist.gov/itl/applied-cybersecurity/nice/about/interagency-coordinating-council>

Snell, E. (2017). Addressing the Cybersecurity Skills Gap with Improved Training. Retrieved from <https://healthitsecurity.com/news/addressing-the-cybersecurity-skills-gap-with-improved-training>

Waterman, S. (2017). Recruitment and retention of 'cyber ninjas' doesn't have to be a dark art, report says. Retrieved from <https://www.cyberscoop.com/systems-integrators-top-cybersecurity-recruitment-talent-sans-institute-report-workforce/>

Watson, E. (2015). Black Colleges at the Forefront of Cybersecurity Issues. Retrieved from [http://www.huffingtonpost.com/elwood-d-watson/black-colleges-at-the-forefront-of-cybersecurity-issues\\_b\\_6852334.html](http://www.huffingtonpost.com/elwood-d-watson/black-colleges-at-the-forefront-of-cybersecurity-issues_b_6852334.html)

## Analysis of Sukuk Market Development in OIC Countries

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### Abstract

The objective of this research is to determine the effect of macroeconomic factors on sukuk market development in the Organization of Islamic Cooperation (OIC) countries, which is the largest issuer of sukuk market globally. Using Panel data from 10 OIC countries for the period 2006-2016. The size of the sukuk market is measured by the amount of outstanding sukuk to gross domestic product (GDP). The results showed that macroeconomic factors that affecting the development of sukuk market in OIC countries are the size of economic, the stage of economic development, openness of economic, and exchange rate variability. When the macroeconomic conditions are stable then this will affect the issuers' decision to issue sukuk. A well-developed sukuk market can be an alternative source of financing while at the same time enhancing a country's financial resilience by balancing high dependence on the banking sector with fixed income sector.

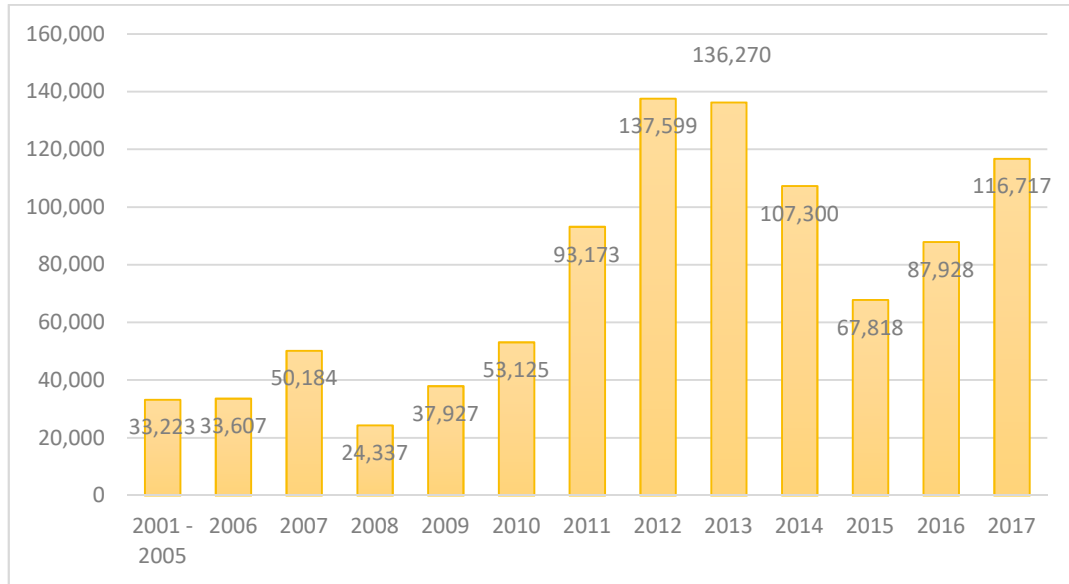
**Keywords:** Sukuk Market Development, Macroeconomic factors, Organization of Islamic Cooperation, Panel Data.

### Introduction

Nowadays Islamic capital markets has become an integral part of economic activity in various countries. According to Deloitte's data in The International Islamic financial market (2018), in recent years the Islamic capital market has attracted a number of multinational financial institutions in various countries including in western countries to offering Islamic financial products. Because the instruments in the Islamic capital market are considered to have better performance in a crisis state compared to other instruments. According to research by Chapra (2008) and Hasan and Dridi (2010) the Islamic finance industry showed less risk, better performance and better stability compared to conventional instruments during the global financial crisis that occurred in 2008. According to Abubakar & Handayani (2017), one of the Islamic capital market instruments that has great potential in absorbing public funds after the crisis is sukuk. Sukuk has evolved into one of the most important Islamic financial instruments. Currently, companies, governments, state-owned companies, and financial institutions used sukuk as an alternative financing.

The sukuk market in recent years has become the fastest growing Islamic financial services industry sector (COMCEC, 2018). The main issuers in the sukuk market are countries that incorporated in the Islamic Cooperation Organization (OIC). In addition, OIC countries, especially the Asian region, are the main engines of global sukuk market growth (Smaoui, H., & Khawaja, M. 2017). Figure 1.1 shows that after reaching the peak of global sukuk market growth in 2012 that is 139.577 billion USD, the sukuk market had experienced a decline for three consecutive years. But in 2016, the global sukuk market rose again with an increase of around 33% from 2016 emissions of 87.9 billion USD to 116.7 billion USD during 2017.

Despite showing a positive trend, the sukuk market also fall of like other financial sectors during the crisis in 2008. However, this did not make the sukuk market slumped as it seen in 2009 the issuance of sukuk increased to 37.927 billion USD which was previously at the position of 24.333 billion USD. This condition occured due to the market sukuk which following the economic cycle where the market behavior will determine the issuance of sukuk.



**Figure 1.1 : Global sukuk issuance (in millions of dollars)**

*Source: IIFM Sukuk Report, 7th edition.*

Despite the fact that sukuk has a positive growth trend and has been issued in many countries around the world, some countries are still working to build and develop their sukuk market. According to SESRIC (Islamic, Economic and Social Research and Training Center for Islamic Countries) current Islamic finance represents only about 1% of the total global financial system. On the other hand, Muslim countries contribute around 7.6% of global nominal gross domestic product and currently 57 Muslim countries have much higher growth than the rest of the world. This shows the great potential possessed by Islamic finance to continue to grow.

According to Hariyanto (2017) the creation of an efficient, active, and liquid capital market is highly dependent on macroeconomic conditions, as well as the fiscal and monetary policies of a country. Good macroeconomic conditions in a country will encourage the creation of economic growth that will encourage the creation of supply and demand various goods services. Next, it will affect the creation of savings in financial institutions. It will also encourage the growth of individual investors and institutions who want to develop their assets through the capital market. As part of the capital market instruments, the issuance of sukuk is also strongly affected by macroeconomic conditions, fiscal and monetary policies. Information about a country's macroeconomic conditions and economic policies taken by the government will greatly affect the sukuk market.

Research on macroeconomic factors that can support the sukuk market to develop and optimize it potential has become important to do. The availability of information will stimulate the creation of an efficient sukuk market. Because the rapid development of sukuk is not followed with the development of science or studies on sukuk itself. It shown by the lack of studies on sukuk and the development of the



sukuk market and what can be done to optimize its potentials. This study attempts to identify macroeconomic factors that can affect the development of sukuk markets in the OIC countries which based on the IIFM report on International Islamic Financial Market Sukuk Report are the countries with the largest sukuk market. Therefore, the development of the sukuk market cannot be separated from the macroeconomic conditions in these countries. When the macroeconomic conditions are stable then this will affect the decisions of issuers and investors in the sukuk market.

Said & Grassa (2013) and Smaoui & Khawaja (2016) have also studied about factors affecting the development of sukuk market, but there is no specific study of macroeconomic factors in the OIC sukuk market. This study attempts to identify the effect of macroeconomic factors which based on the results of previous studies Rajan and Zingales (2003), Adelegan & Radzewicz-Bak (2009), and Bhattacharyay (2013) has affect the development of bond market. Such as the size of the economy, the stage of economic development, openness of economic, the size of banking sector, exchange rates variability, and inflation. This study would like to analyze the effect of these macroeconomic variables on the development of sukuk markets in OIC countries as the largest sukuk issuers, namely: Malaysia, Indonesia, Saudi Arabia, United Arab Emirates, Qatar, Gambia, Bahrain, Pakistan, Bangladesh, Turkey. Which development of sukuk in these countries will have a huge impact on the development of sukuk globally.

## Literature Review

Lipsey (1997) investment is the expenditure of goods that are not consumed at the time. Based on period, the investment can be divided into three, short-term, medium-term, and long-term investment. The purpose of an individual or company that invests is to obtain welfare for himself or the company.

According to Keynes in *The General Theory*, investment (I) is a factor that can determine national expenditure (Mankiw, 2012) The total amount of expenditure (aggregate demand) is the sum of the four expenses.

Where:

$$Y^{ad} = C + I + G + NX$$

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Yad : Total aggregate demand  
C : Consumption  
I : Investment  
G : Government expenses  
NX : net exports

The Keynesian investment theory is concerned with whether an investment is feasible to undertake or not. The technique for knowing whether a project is profitable or not is by comparing the relative profitability of projects with discontinuing future results. The main purpose of someone who invests is to receive a larger amount of money in the future. This means someone who decides to lend his money expect to earn a profit. (Soediyono, 1992: 173).

In the long term, the growth of investment has an effect on increasing stock of capital and further, raising productivity. Sukuk is an investment instrument in the real sector, when the issuance of sukuk is multiplied, it will increase investment (I), which in turn will increase the national output. Then, it will be transmitted to equilibrium of the money market and goods market. So that the main factor in the development of sukuk market is formed on the balance between sukuk demand and supply that is the relationship between the quantity of bond requested by the price itself.

## ***Demand and Supply Theory***

According to Mishkin (2016) the factors affecting demand in the primary bond market are welfare levels, ie the total resources held by individuals, including all of their assets. Changes in the level of welfare will have a positive effect on changes in the quantity of bonds requested. The next is expected return, is the expected rate of return by someone in the future relative to other asset. Changes in the expected rate of return will have a positive effect on the change in the quantity of bonds requested. Then risk, is how much uncertainty is the rate of return of a bond relative to other alternatives bond. Changes to risk will negatively affect the changes in the quantity of bonds demanded. The last, liquidity is described by how easy and quick is a bond converted into cash relative to other alternatives. Changes in the level of liquidity will have a positive effect on changes in the demand of bonds.

Bond market supply shows the relationship between the quantity of bonds offered with the bond price itself. According to Mishkin (2016) the factors that affect changes in the bond market are first, the expectations of profit from investment opportunities. The more profits a company gets from its investment activity the more money it will need to finance its investments. Changes in profitability investment have a positive effect on changes in the quantity of bonds offered. Next is the expected inflation, when it increases, the actual borrowing costs will decrease meanwhile the nominal borrowing costs are fixed. Changes in inflation expectations have a positive effect on changes in the quantity of bonds offered. The third factor is the government budget, financing the state budget deficit is usually done through the issuance of bonds. The greater the budget deficit, the more bonds are issued. Changes to the government budget have a positive effect on changes in the quantity of bonds offered.

Supply and demand in the bond market are affected by macroeconomic factors that reflect the country's economic condition. When the economic condition of a country that is in recession it will certainly assessed by investors as a signal of increased risk. This has an impact on investor demand to get higher yields than when conditions are in normal economic conditions (Chen et al., 2011). In Islamic finance, strategies to minimize and manage risk are done by involving the integration of risks with real economic activity (Al-Bashir & Al-Amine, 2011).

## ***Sukuk***

Sukuk comes from Arabic, namely sak (single) and sukuk (plural) which has meaning of a certificate or note. In its practical, sukuk is proof of ownership. According to the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) sukuk is a certificate of equal value representing an undivided part in the ownership of tangible assets, goods and services or capital of a particular project or capital of a particular investment activity.

## **Hypothesis**

The relationship between financial development and economic growth has been widely analyzed in various literature.

A study by Fink et al. (2003) for 13 developed countries concluded that bi-directional causality exists between economic growth and the development of bond market in Japan, Finland and Italy and the unidirectional causality of bond market development to real sector growth for Austria, United Kingdom, Germany, the Netherlands, Spain, Switzerland and the United States.

**H1: Economic size has a significant positive relationship with the size of the sukuk market capitalization**

Research by Deegan and Radzewicz-Bak (2009), Bhattacharyay (2013), Kapingura, F., & Makhetha-Kosi, P. (2014). suggests that the stage of economic development (GDP per capita PPP) has a positive effect with all types of bonds. In particular, the GLS model shows that it is significant for the total bond market, both government and corporate bond markets. The results of Said & Grassa (2013) show that economic growth as measured by GDP per capita has a significant effect on the development of sukuk markets in GCC countries.

**H2: The stage of economic development has a significant positive relationship with sukuk market capitalization.**

Trade openness in an economy is associated with a large bond market. Study by Rajan and Zingales (2003) and Eichengreen and Leungaruemitchai (2004) found that openness of economic has a positive relationship with the development of the bond market. Eichengreen et al. (2008) explain this result with the fact that a growing export industry reflects that it is a developed economy, which is attractive to investors, so that the bond issuance will be well responded. Bhattacharyay (2013) states that openness of economic as measured by exports of goods and services of a country has a significant positive effect on corporate bonds.

**H3: Economic openness has a significant positive relationship with sukuk market capitalization**

Using Bhattacharyay's GLS model (2013), the size of the banking system has a positive effect on bond market capitalization. However, the Asian economy needs to strengthen, modernize and expand the banking system because credit size can positively affect the development of the bond market.

**H4: Banking size has a positive effect on sukuk market capitalization.**

Exchange rate variability shows a significant negative relationship with total bond capitalization under the GLE model with correction for heteroscedasticity. In order to develop well-functioning domestic and regional bond markets, the economies of Asia and other regions as a whole need to reduce exchange rate variability within and throughout the economy through more flexible and market-oriented exchange rate management.

**H5: Exchange Rate Variability has a negative effect on sukuk market capitalization.**

According to Mishkin (2016) the increase in inflation will reduce the real interest rate on bonds, and thus caused decline in the expected yields on bonds then the demand will fall. Their results support the findings of Mundell (1963) and Tobin (1965) which state that the expected real returns on bills and expectations of inflation rates are negatively correlated.

**H6: Inflation has a negative effect on sukuk market capitalization**

## **Research Method**

The analysis used in this study is quantitative descriptive. Descriptive analysis was carried out to get an overview of macroeconomic influences related to the sukuk market development. The sample selection method used is purposive judgment sampling method, which is to determine the country to be used as the research sample. the researcher will establish criteria for obtaining a representative sample. The criteria that must be met by the sample in this study are included in the OIC (Organization of Islamic Conference) and the country included in the top 10 sukuk markets. The time span from 2006 to 2016 was taken because at that time the vulnerable sukuk market experienced a very rapid development. Where both the state and corporation make sukuk as an alternative financing.

### ***Variable Operations***

The variable used in this study is the total number of sukuk outstanding issued by the corporation and sovereign sukuk. The total value of corporate sukuk emissions and sovereign sukuk emissions (SBSN) consists of the total sukuk that is still outstanding in the market. The merger of government sukuk and government sukuk is done because of limited data, where there are countries whose sukuk markets are only nominated by government markets and there are countries whose sukuk markets are dominated by corporate sukuk markets.

Economic Size (Economic Size) is measured by GDP Current in dollar terms, namely the calculation of GDP which is affected by the effect of price inflation. Stage of Economic Development, Measured by GDP per capita purchasing power parity that used to measure the stage of economic development of an economy. Then Openess of economy, The data used is the total export data of a country, namely the ratio between the total number of exports of goods and services to gross domestic product. The size of the Banking System is measured by the ratio of domestic credit provided by the banking sector to the private sector to GDP. Exchange Rate Variability, is the currency exchange rate of countries that are used as objects of research on US dollars. Last Inflation, measured by the consumer price index reflects the percentage change in the average annual cost of a consumer basket of goods and services that can be changed at certain intervals, such as annual. Use the Laspeyres Formula which is commonly used.

### ***Best Model Selection***

This study uses panel regression method. Where the data panel is a combination of time series data and cross section data. Unbalanced panel is a regression method that will be used in this study. This is because the issuance period and maturity of each sukuk are different, so the observation period of sukuk becomes different. Balanced panels cannot be used in this study because the sukuk population is still small to be used in the study period. To choose the best model, it is necessary to test between the existing models, first do the Chow test to choose between Pooled Least Square or Fixed Effect Model. Then if the results of the Chow test determine that the best choice is Fixed Effect Model then the Hausman test is then performed. Tests are conducted to choose between Fixed Effect Model or Random Effect Model.

**Tabel 1 : Best Model Approach**

Best Model Approach		
Uji Chow		
Prob Chi-square	0.0000	Fixed Effect Model
Uji Hausman		
Prob Chi-square	0.0470	Fixed Effect Model

Source: Eviews data process

The data used in the study is data from ten different countries, where each country has characteristics that are different from one another. This causes the research to have a high level of data variability and is very likely to occur in the regression results. To overcome the bias from the country risk, the researcher uses the Fixed Effect regression model. Fixed Effect is a model with different intercepts for each subject (cross section), but the slope of each subject does not change over time (Gujarati, 2012).

The regression model used in this study is based on research conducted by Biswa Nath Bhattacharyay (2013) in Bond Market Development Determinants in Asia with modification of variables

$$SMS_{it} = B_0 + B_1tLNECSIZE_{it} + B_2tLNECDev_{it} + B_3tOPENESSEC_{it} + B_4tBANKINGSIZE_{it} + B_5tINFit + B_6tEXCH_{it} + U_{it}$$

(3.2)

Where:

- SMS<sub>it</sub> : Sukuk Market Size
- ECSIZE<sub>it</sub> : LN GDP i in year t
- ECDev<sub>it</sub> : GDP per capita, Purchasing Power Parity i country in year t
- OPENESSEC<sub>it</sub>: Percentage of exports of goods and services to country GDP i in year t
- BANKINGSIZE<sub>it</sub>: The percentage of domestic credit performed by the banking sector against the GDP of country i in year t
- INFit : Inflation rate of the country i in year t
- EXCH<sub>it</sub> : exchange rate variability of country i in year t
- B<sub>it</sub> : the coefficient of the independent variable
- U<sub>it</sub> : independent normal distribution error with zero average.

## Regression Result

The result of regression analysis model of market development of sukuk in OIC countries are presented in table 4.5. with SUKUK as the dependent variable and of LNECSIZE, LNECDev, OPENESSEC, LNBANKSIZE, INF, EXCH as the independent variable. And in the period of 2006-2015.

**Table 2 : Regression Results of the Sukuk Market Development Analysis Model in the OIC Countries**

Dependent Variable	Sukuk	
Independent Variable	Coefficient	t-Statistics
Intercept	-122.4016	-3.97047
LNECSIZE	5.04357**	4.22572
LNECDev	1.10159**	10.57914
OPENESSEC	-0.24485**	-5.22867
LNBANKSIZE	-0.00582	-0.01817
INF	0.07809	0.65821
EXCH	-0.000626*	-1.82094
<i>Adjusted R-squared</i>		0.924262
<i>F-statistic</i>		89.67868
<i>Durbin-Watson stat</i>		0.573608

Note: \* Significance at 10% level:  $p < 0.1$  \*\* Significance at 5% level:  $p < 0.05$ . \*\*\* Significance at 1% level:  $p < 0.01$ .

Source: Eview data results

Economic size variables have a significant positive effect on the development of sukuk market in ten OIC countries. Economic size is proxied by gross domestic product (GDP, Current). The coefficient in the estimation result is positive, in accordance with the hypothesis that, when the size of the economy increases, it will cause the sukuk capitalization to increase as well due to the good macroeconomic conditions. Issuers will view and adjust the amount of sukuk issued under existing market conditions. As economic growth increases, the size of a country's economic will increase so that it can encourage issuers to issue sukuk according to their goals and make the sukuk market more active and growing. Regression results are also in accordance with the research of Eichengreen and Leungaruemitchai (2004), Adelegan & Radzewicz-Bak (2009), Bhattacharyay (2013), and Smaoui & Khawaja (2016) proved that economic growth has a positive effect on the growth of the sukuk market. Research Chen et al. (2011) makes GDP a measure of the good or bad state of a country's economy.

Variable stages of economic development significantly affect the development of sukuk market in ten OIC countries. The stage of economic development is proxied as GDP per capita (PPP). The coefficient of GDP per capita in the positive regression estimation results. This is in accordance with the research of Eichengreen and Leungaruemitchai (2004), Adelegan & Radzewicz-Bak (2009), Bhattacharyay (2013), and Smaoui & Khawaja (2016). The market capitalization of sukuk is expected to rise by 1.10% per 1% increase of per capita income. In accordance with the initial hypothesis that the higher GDP per capita (PPP) of a country will increase the market capitalization of sukuk which will certainly raise the sukuk market of the country.

The economic openness of a country significantly affects the development of the sukuk market in the ten OIC countries. Economic openness is proxied by the ratio of goods and services exports to GDP. The coefficient of export ratio to GDP in the estimation result is negative. This implies that the lower the level of economic openness the lower the level of access to external financing and the greater the development of local sukuk market. In accordance with previous studies of Adelegan & Radzewicz-Bak (2009) on the development of bond markets in Sub-Saharan Africa and Grassa, R. & Gazdar, K. (2012) on the determinants of the development of the bond market in GCC countries which states that economic openness has a negative effect on the development of the bond market. the results of the study concluded that when the low economic openness it will lower the level of access to external financing so that the greater the development of local bond markets. GCC and African countries show domestic investment power, when the economic openness is low, the access of foreign investment is small and this is an opportunity for domestic investors to enter the market.

Changes in the exchange rate of the domestic currency against the US dollar significantly affected the development of the sukuk market in the ten OIC countries. The coefficient of exchange rate change in the research result is negative. The market capitalization of sukuk is expected to fall by 0.0006% per 1% increase in exchange rate changes. The results are in accordance with the null hypothesis and also fit some previous research on the bond market of Rajan and Zingales (2003), Eichengreen & Leungaruemitchai (2004) and Bhattacharyay (2013).

The size of the Banking Sector has no significant effect on the development of the sukuk market in OIC countries. This is in accordance with previous research that is Said & Grassa. (2013) and Smaoui & Khawaja (2016). The size of the banking as a whole has no significant effect on the development of sukuk. In countries that adopt dual banking, as in the case of research using samples of OIC states, the development of the banking sector has no correlation with the development of the sukuk market.

The results of the study found that inflation has no significant relationship in the development of sukuk market in OIC countries. Higher inflation, usually associated with macroeconomic instability and sometimes with government defaults, may have implications inhibiting the development of the Sukuk market.

## Conclusion

This research was conducted to analyze the macroeconomic factors that has effect on the development of sukuk market in OIC countries. The sukuk markets of OIC countries are selected because they are the main players and have a large contribution in the global sukuk market as a whole. So that, it can be used as a reference in the study to analyze the development of sukuk market today. Through regression analysis, the study found that there are several significant macroeconomic factors that affecting the development of sukuk market in ten OIC countries such as economic size, stage of economic development, economic openness, currency exchange rate changes.

Among the six macroeconomic factors, there are no variables that have dominant effect on the development of sukuk market in OIC countries. However, when viewed from the level of significance, the economic size factor is the most significant factor that affecting the development of sukuk market in OIC countries compared with the other six variables.

A well-developed sukuk market can be an alternative source of financing while at the same time enhancing a country's financial resilience by balancing high dependence on the banking sector with fixed income sectors. Achieving a better balance between banks and the sukuk market requires a more focused top-down approach. The need to strengthen, expand and deepen the sukuk issuance initiative can significantly promote the development of sukuk. One of them is affected by the macroeconomic factors tested in this research. OIC countries play an important role in driving the development of global sukuk markets as OIC countries are the main players that will be very influential in determining the condition of the sukuk market.

There are limitations in this study that can be used as an evaluation material for further studies. First, the study examines some macroeconomic factors, while there are many other macroeconomic factors as well as non-macroeconomic factors, such as political conditions, sharia compliance, corporate governance systems, legal systems, investment profiles, law and order, corruption index, which may affect the development of sukuk markets in OIC countries. The potential for the development of sukuk markets in OIC countries is still quite large when viewed from the relatively small role of the sukuk market as the main financing, especially for corporations. The suggestion for further research is to identify specifically in the corporate sukuk market, with institutional factors contributing to the development of the corporate sukuk market in OIC countries. So it can be identified what factors are most influential in every market sukuk.

## References

- Abubakar & Handayani. (2017). Kesiapan Infrastruktur Hukum dalam Penerbitan Sukuk Sebagai Instrumen Pembiayaan dan Investasi untuk Mendorong Pertumbuhan Pasar Modal Syariah Indonesia. *Jurisprudence*, Vol. 7 No. 1 Juni 2017
- Adelegan, O.J. and Radzewicz-Back, B. (2009). What Determines Bond Market Development in Sub-Saharan African? *IMF working paper-INP/09/213*.
- Ahmad, N., Daud, S. N. M., & Kefeli, Z. (2012). Economic Forces and the Sukuk Market. *Procedia - Social and Behavioral Sciences*, 65(ICIBSoS), 127–133. <https://doi.org/10.1016/j.sbspro.2012.11.101>
- Al Bashi Muhammad, Al – Amine Muhammad. (2012). *Global Sukuk and Islamic Securitization Market*. Leiden: Koninklijke Brill NV
- Alam, N., Hassan, M. K., & Haque, M. A. (2013). Are Islamic bonds different from conventional bonds? International evidence from capital market tests. *Borsa Istanbul Review*, 13(3), 22–29. <https://doi.org/10.1016/j.bir.2013.10.006>

- Ali Said & Rihab Grassa. (2013). The Determinants of Sukuk Market Development: Does Macroeconomic Factors Influence the Construction of Certain Structure of Sukuk? *Journal of Applied Finance & Banking*, 3(5), 251–267.
- A. L. Udovitch, "Bankers without Banks: Commerce, Banking, and Society in the Islamic World of the Middle Ages," in *The Dawn of Modern Banking*, ed. UCLA Center for Medieval and Renaissance Studies (New Haven, CT: Yale University Press, 1979), 268-74.
- Al-Suwailem, Sami. 2000. Towards an objective measure of *gharar* in exchange. *Islamic Economic Studies*, Vol.7, Nos. 1 & 2, Oct.'99, Apr. 2000.
- Arundina, T. 2010. DETERMINANT OF SUKUK RATINGS: THE MALAYSIAN CASE. Tesis.Kulliyah of Economics and Management Science. International Islamic University Malaysia
- Arundina, T., Azmi Omar, M., & Kartiwi, M. (2015). The predictive accuracy of Sukuk ratings; Multinomial Logistic and Neural Network inferences. *Pacific Basin Finance Journal*, 34, 273–292. <https://doi.org/10.1016/j.pacfin.2015.03.002>
- Ascarya dan Diana Yumanita, 2007, *Comparing The Development Islamic Financial/Bond Market in Malaysia and Indonesia*, IRTI Publications (2008) : Saudi Arabia.
- Ascarya. 2006. *Akad dan Produk Bank Syariah*. Jakarta: Raja Grafindo Persada.
- Ayub, Muhammad. 2007. *Understanding Islamic Finance*. John Wiley & Sons, Ltd: New York.
- A. Z.J. ben Josef, "Cheques," document T-S Ar. 30.184, Taylor Schechter Collection, Cambridge University Library, [lib.cam.ac.uk/Taylor-Schechter/exhibition.html](http://lib.cam.ac.uk/Taylor-Schechter/exhibition.html).
- Berensmann, K., Dafe, F., & Volz, U. (2015). Developing local currency bond markets for long-term development financing in Sub-Saharan Africa. *Oxford Review of Economic Policy*, 31(3–4), 350–378. <https://doi.org/10.1093/oxrep/grv032>
- Bhattacharyay, B. N. (2013). Determinants of bond market development in Asia. *Journal of Asian Economics*, 24, 124–137.
- Brooks, C. (2009). *Introductory Econometrics for Finance*. New York: Cambridge University Press.
- Chapra, M. U. (2009). The Global Financial Crisis Can Islamic Finance Help? *INSIGHTS*, 14, 27–38.
- Chapra, M. Umer (1996). Monetary Management in an Islamic Economy. *Islamic Economic Studies*, Vol. 4, No. 1.
- Chen, A. H., Mazumdar, S. C., & Surana, R. (2011). China's Corporate Bond Market Development. *Chinese Economy*, 44(5), 6–33. <https://doi.org/10.2753/CES1097-1475440501>
- COMCEC. (2018). *The Role of Sukuk in Islamic Capital Markets*. Retrieved from [http://ebook.comcec.org/Kutuphane/Icerik/Yayinlar/Analitik\\_Calismalar/Mali\\_Isbirligi/Toplantı10/files/assets/common/downloads/publication.pdf](http://ebook.comcec.org/Kutuphane/Icerik/Yayinlar/Analitik_Calismalar/Mali_Isbirligi/Toplantı10/files/assets/common/downloads/publication.pdf)
- De la Torre, A., & Schmukler, S. (2006). Emerging capital markets and globalization: The Latin American experience. Washington D.C. World Bank and Stanford
- Dollar, D., 1992. Outward-oriented developing economies really do grow more rapidly: evidence from 95 LDCs, 1976–1985. *Econ. Dev. Cult. Change* 40, 523–544.
- Eichengreen, B., and P. Luengnaruemitchai. 2004. Why doesn't Asia have bigger Bond
- Eichengreen, B., Borensztein, E., & Panizza, U. (2006). *A Tale of Two Markets: Bond Market Development in East Asia and Latin America*. HKIMR Occasional Paper No.3.
- Ekananda, M. (2016). Analisis Ekonometrika Data Panel (Kedua). Jakarta: Mitra Wacana Media.
- El-Shazly, Mona., Tripathy, Pragya. 2014. *Sukuk structures, profile and risks*. Working paper, forthcoming 2014.
- Felman, J., Gray, S., Goswami, M., Jobst, A. A., Pradhan, M., Peiris, S., & Seneviratne, D. (2014). ASEAN-5 bond market development: Where does it stand? Where is it going? *Asian-Pacific Economic Literature*, 28(1), 60–75. <https://doi.org/10.1111/apel.12051>
- Fink, G., Haiss, P., & Hristoforova, S. (2003). Bond markets and economic growth, working paper No. 49. Vienna: Research Institute for European Affairs, University
- Frederic S. Mishkin. 2016. *The Economics of Money, Banking, and Financial Markets*,
- Friedman, M. (1963). Price Determination in The United States Treasury Bill Market: A Comment. *Review of Economics and Statistics*, 318-320.



- G. W. Heck, *Charlemagne, Muhammad, and the Arab Roots of Capitalism* (Berlin: Walter de Gruyter, 2006), 217-218; Udovitch, "Bankers without Banks," 268-74; A. L. Udovitch, "Trade," in *The Dictionary of the Middle Ages*, ed. J. R. Strayer, vol. 12 (New York: Charles Scribner's Sons, 1989), 105-108.
- Ghazali, A. R. (2010). *Fiqh Muamalat*. Jakarta: Kencana Prenada Media Group.
- Grassa, R., & Gazdar, K., The determinants of the development of the Sukuk market in GCC countries. International Conference on Islamic Capital Markets, Bapepam-LK and IRTI – IDB, June 2012, Indonesia, (2012).
- Gujarati, Damodar N. 2012. *Basic Econometrics (4th ed)*. Mc-Graw Hill: Singapore
- Hawkins, J. (2002). Bond markets and banks in emerging economies, BIS papers, no 11, June–July.
- Houweling, P., & Van Zundert, J. (2017). Factor investing in the corporate bond market. *Financial Analysts Journal*, 73(2), 100–115.
- IMF. (2018). World Economic Outlook Update, January 2018. *World Economic Outlook*, 1–8. Retrieved from <https://www.imf.org/en/Publications/WEO/Issues/2018/01/11/world-economic-outlook-update-january-2018>
- In Seok, B. (2012). Determinants for Asian Bond Market. *Korea Capital Market Institute*, 4(3), 22–33.
- International Islamic Financial Market. (2018). A Comprehensive Study of the Global Sukuk Market (7th Edition). 185. Retrieved from [http://www.iifm.net/system/files/private/en/IIFM\\_Sukuk\\_Report\\_287th\\_Edition%29\\_2.pdf](http://www.iifm.net/system/files/private/en/IIFM_Sukuk_Report_287th_Edition%29_2.pdf)
- International Islamic Fiqh Academy, *Resolutions and Recommendations of the Council of the Islamic Fiqh Academy, 1985-2000* (Jeddah, Saudi Arabia: Islamic Development Bank, 2000), 61-62. Markets? *NBER Working Paper No. 10576*.
- Jones, D., Index, I., Jones, D., Index, G., Jones, D., Index, S., & Income, F. (2018). World Bank and IDB Launch Report on Mobilizing Islamic Finance for PPPs Uganda to Publish Islamic Banking Rules, (31).
- Kapingura, F., & Makhetha-Kosi, P. (2014). The Causal Relationship between the Bond Market Development and Economic Growth in Africa: Case Study of South Africa. *Mediterranean Journal of Social Sciences*. <https://doi.org/10.5901/mjss.2014.v5n3p126>
- Klein, P. O., & Weill, L. (2016). Why do companies issue sukuk? *Review of Financial Economics*, 31, 26–33.
- [Lichtfous](https://www2.deloitte.com/lu/en/pages/islamic-finance/articles/islamic-finance-niche-mainstream-market.html) Marco (2018). The International Islamic Financial Market Moving from niche market to a mainstream market. Deloitte Article. <https://www2.deloitte.com/lu/en/pages/islamic-finance/articles/islamic-finance-niche-mainstream-market.html>
- Lypsey R.G, P.N. Courant, D.D. Purvis dan P.O. Steiner. 1997. Pengantar Makroekonomi. Bina Rupa Akasara, Jakarta.
- Mishkin Frederic S. 2016. The Economics of Money, Banking, and Financial Markets, 11th Edition, ISBN 978-0-13-383679-0, Pearson Education.
- Mohamad Hasan, Maher & Dridi, Jemma. (2010). The Effects of the Global Crisis on Islamic and Conventional Banks: A Comparative Study. *Journal of International Commerce, Economics and Policy* (JICEP).
- Mosab I. Tabash, & Raj S. Dhankar. (2014). Flow of Islamic Finance and Economic Growth-- An Empirical Evidence of United Arab Emirates (UAE) Abstract : *Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB)*, 3(2), 1069–1085.
- Mu, Y., Phelps, P., & Stotsky, J. G. (2013). Bond markets in Africa. *Review of Development Finance*, 3(3), 121–135. <https://doi.org/10.1016/j.rdf.2013.07.001>
- N. Gregory Mankiw. 2012. Principles of Economics. USA: Cengage Learning
- N. J. Adam and A. Thomas, "Islamic Fixed-Income Securities: Sukuk," in *Islamic Asset Management: Forming the Future for Shari'a-Compliant Investment Strategies*, ed. S. Jaffar (London: Euromoney Books, 2004), 73; A. Thomas, "What Are Sukuk?", *American Journal of Islamic Finance*, vol. 2; Khan, *Islamic Economics*, 163.
- Nachrowi, N. D., & Usman, H. (2006). *Pendekatan Populer dan Praktis Ekonometrika untuk Analisis Ekonomi dan Keuangan*. Depok: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia. of Economics and Business Administration, April.

- Nagano, M. (2016). Who issues Sukuk and when?: An analysis of the determinants of Islamic bond issuance. *Review of Financial Economics*, 31, 4555. <https://doi.org/10.1016/j.rfe.2016.05.002>
- P. Valley, "How Islamic Inventors Changed the World," *Independent*, March 11, 2006, [independent.co.uk/news/science/how-Islamic-inventors-changed-the-world-469452.html](http://independent.co.uk/news/science/how-Islamic-inventors-changed-the-world-469452.html).
- Pradhan, R. P., Zaki, D. B., Maradana, R. P., Dash, S., Jayakumar, M., & Chatterjee, D. (2015). Bond market development and economic growth: The G-20 experience. *Tekhne*, 13(1), 51–65. <https://doi.org/10.1016/j.tekhne.2015.09.003>
- Reilly, F.K. 1989. *Investment Analysis and Portfolio Management*. The Dryden Press. New York
- S&P GLOBAL RATING. (2017). *Islamic Finance Outlook 2017 Edition*, 66. Retrieved from <https://www.spratings.com/documents/20184/0/Islamic+Finance+Outlook+2017/5abbe572-c826-4622-bd13-1aba725281fc>
- Safari Meysam, Ariff Mohamed, Muhammad Shamsheer. 2014. *Sukuk Securities*. Singapore: Jhon Wiley & Sons
- Smaoui, H., & Khawaja, M. (2017). The Determinants of Sukuk Market Development. *Emerging Markets Finance and Trade*, 53(7), 1501–1518.
- Smaoui, H., & Nechi, S. (2017). Does sukuk market development spur economic growth? *Research in International Business and Finance*, 41, 136–147.
- Sugema, Iman. 2014. *Prinsip Dasar Keuangan Syariah*. [diakses 2018 mei 28]; Tersedia pada: <https://swa.co.id/swa/trends/business-research/membedah-benefit-sistem-keuangan-syariah-bagi-kehidupan>
- Tariq, A.A. 2004. *Managing financial risks of sukuk structures*. Loughborough University, UK: Dissertation. University Press.

## **Advanced Analysis of Migration Flows and Their Impact on The Population of the Russian Federation**

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### **Abstract**

The article explores the indicators characterizing migration flows in the Russian Federation. Not only quantitative indicators are analyzed, but also the features characterizing the qualitative components of migration flows. Author analyzes the dynamics of migration flows for a sufficiently long period since the formation of the Russian Federation. The attempt to identify the main factors of existing trends and possible consequences of their development in the future is made.

**Keywords:** migration; labor resources; population; migration growth; migration balance.

### **Introduction**

During the analyzed period population in the most part of years are decreasing. In 1990-s fertility decreased a lot. That's why migration became the main factor of maintaining the number of labor resources.

It is very important to study not only the general population dynamics and its dependence on migration and demographic factors, but also to consider the peculiarities of changes in the urban and rural population.

Economy of Russian Federation are characterized by a number of crisis trends. The decline in employment reduces attention to the availability of labor resources in the economy. But in case of transition to active economic growth and increased demand for labor, the economy will quickly realize deficit of labor resources. There are two main factors of this situation:

- the population is gradually aging;
- the low level of productivity in Russia.

In these terms migration can be one of the most effective instruments of increasing of labor force.

Analyzing population dynamics in urban and rural areas between 1990 and 2017, it can be concluded that, in the most part of cases, the trends of population change between urban and rural populations coincide. Nevertheless, in the early 1990s and since 2008, there has been a mixed dynamic. At the same time, it is important to note that in 1992 the main factor of these tendency was the change of the category of settlements due to the transformation of urban settlements into rural ones. Also the change in the category of human settlements had the most significant impact on the change in the urban and rural population in 1999, 2004 and 2005 years.

It is very important to note the different speed of changes in urban and rural areas. The conclusion is that the urban population responds more quickly and sharply to changes in the situation in the country, and the amplitude of these fluctuations is more significant.

Migration processes in the Russian Federation intensified after the collapse of the USSR, when large masses of the population, long deprived of the opportunity to migrate, rushed from Russia. There is a special phrase to imagine that tendency "brain drain". A lot of high-qualified specialists went from the country for higher level of life in other regions of the world. Moreover, the demand for these people in many countries of the world was extremely high. It is impossible not to note the fact that

there was a reverse movement of the population. Firstly, there were people who migrated to the Russian Federation from foreign countries, and secondly, the collapse of the USSR intensified migration between the former Soviet republics. In particular, large masses of the population rushed to their historical homeland in the Russian Federation.

Later there were a decline in migration activity. If in 1997, about 600 thousand people arrived in Russia, and more than 200 thousand fell, by 2002 the flow of arrivals fell below the level of 200 thousand people a year, and leaving the country up to 100 thousand. The decrease in the flow of arrivals to the Russian Federation continued until 2004, when the flow amounted to a little more than 100 thousand people, and in the future activity began to increase again. In 2015 it reached a value about 600 thousand people. The decrease in the flow of people leaving the country continued until 2011. After this year the figure also began to increase rapidly.

It looks interesting to analyze the movement of the population between different regions into Russian Federation, in particular, to study migration between Federal districts in 2017.

The analyze of the influence of the migration factor on the labor resources in the Russian Federation cannot be complete with only quantitative characteristic. It is also important to conduct a more profound analysis of migration flows.

There was the trend by which a lot of mainly high-qualified specialists went from Russia to developed countries such as the United States, Germany, etc or to their historical homeland, such as Israel. Reverse motion is represented by the largest number of refugees came to the territory of the Russian Federation from the territory of the former Soviet republics. In particular, Georgia was the largest source of refugees. Also, a large number of refugees came from countries such as Uzbekistan, Tajikistan, Kazakhstan, Azerbaijan and Kyrgyzstan. Also, a large number of internally displaced persons to the Russian Federation were observed from Armenia, Latvia, Lithuania, Estonia, Moldova, Turkmenistan and Ukraine. At the same time, the largest source of internally displaced persons was Kazakhstan. From this country more than 2,5 million people moved to the Russian Federation during analyzing period.

The most part of persons who have applied for temporary asylum came from Ukraine - more than a half a million people. Also on this indicator can be noted Georgia, Afghanistan and Syria. The main factor of migration for these groups of people was the interethnic and ethnic conflicts after the collapse of the USSR. Also, a large number of people wished to return to their historical homeland.

There are flows of migration between regions of Russian Federation. In total, about 1,5 million people migrated this way. The peak of this population movement occurred in the 1990s and in the 21st century this trend gradually began to stop. One of the main reasons was also interethnic conflicts, as well as the escalation of the situation in the North Caucasus.

A big surge of migration into Russian Federation was fixed in 2015-2016, when there was a sharp increase in the number of persons granted temporary asylum. So compared to 2014 in 2015 there was an increase of almost 85 times, and in 2016-more than 110 times. This surge in the influx of people who have been granted temporary asylum is related to the events in Ukraine and the sharp outflow of the population from its territory, especially from the Eastern regions of the country.

The identified trends in the development of migration flows in the Russian Federation and the features of their impact on the processes of formation of labor resources in the economy allow to conclude that there are a some negative factors that impede the effective reproduction of labor resources. It can be noted that during the study period migration was the main factor and source of replenishment of the population of the Russian Federation in general and the labor force in particular. The positive migration balance helped to reduce the negative impact of the demographic factor, which is characterized by a number of crisis trends. The development and improvement of migration policy must become the most important source of formation of labor resources in the Russian Federation. This is too urgency in the context of the demographic crisis, which is expressed in the

low birth rate, the gradual aging of the population and the decline in the share of the working-age population in its total population.

### **References**

1. Aistrup, J.A., Zollinger, B. and Walker, M.S. (2003), 'Defining the available labor pool the Kansas labor force survey' *Economic Development Quarterly* 17 (3), 220-239.
2. Alon, S. and Haberfeld, Y. (2007), 'Labor force attachment and the evolving wage gap between white, black, and hispanic young women' *Work & Occupations* 34 (4), 369-398.

## **Development of Social Infrastructure of the Region as a Factor of Effective Reproduction of Labor Potential**

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### **Abstract**

In article methods of development of social infrastructure of the region are analyzed. Attention is paid to the role of social infrastructure in the process of formation and use of labor force. Author analyzes the dynamics of main indicators of the sphere of labor force. Developed and presented main mechanisms of development of social infrastructure in the conditions of regional economy.

**Keywords:** labor potential; labor resources; population; regional economy.

### **Introduction**

After the fundamental economic reforms of the 90s of the twentieth century, the social sphere in the country was very much destroyed. Social infrastructure facilities, many of which were previously assigned to state-owned enterprises, local authorities were without funding and material support, while private organizations refused to support social facilities, removing them mainly through the sale of their own assets. Having received a small financial benefit, the management of enterprises and local authorities in the conditions of economic crisis and recession did not want to see any expected negative consequences in terms of the negative impact on the formation and use of labor resources. As a result, attempts to reform the social sphere of enterprises and territories on the basis of the new model ended in failure, which ultimately led to the formation of a number of factors of negative impact on labor resources and the processes of their reproduction.

At present, one of the priorities within the country as a whole and the regional economy in particular is the revival of this sphere, the approval of the social model of labor and capital relations. The complexity of the tasks lies in the need to form a system model of these relations.

Opportunities for mass access to the social sphere can increase the employee's interest in work in a particular organization. Often it is the opportunity to arrange a child in a well-maintained kindergarten, and then to school with outstanding teachers that becomes a decisive factor in addressing the issues of motivation for quality and long-term work.

The socially-oriented model of social and labor relations has a lot of supporters who consider it quite promising and worthy of attention, in Russia this model is legalized in the Constitution, but in practice it is not used enough. As an exception, there are only a few large companies that offer their employees the so-called "social package", which often becomes one of the main motives for improving productivity and staff retention.

Studies show that in the conditions of the Russian economy, along with many problems, there is a problem of staff retention at the enterprise, there is a massive flow of labor resources from one sphere of the economy to another, from the agricultural sector to trade. All this leads to a shortage of labor resources in agriculture, industry and an excess of personnel in trade, financial and legal spheres. In this case, the prestige of the workplace often comes to the fore, which ultimately leads to a huge number of people wishing to receive economic and legal education and, to a lesser extent, engineering. Previously, there was the concept of "white collar", which was associated not only with management work, but primarily with access to the social sphere. After all, access to it often forms the prestige of a particular specialty. Today's overproduction of potential white-collar workers eventually leads to the emergence of an army of unemployed people with humanitarian education, and this is the most active and productive group of labor resources - young people with modern thinking, who easily adapt to changing conditions and have great potential for health. It is these labor

resources that can make the economy more efficient. The deep crisis in which the Russian industry has been since the 90s of the twentieth century is gradually fading into the past, the growth of gross product in the country as a whole and in the regions in particular, albeit at a low pace, but still observed, industrial production again requires labor resources. Despite the deep crisis in which the rural areas are located, there is also a gradual restoration of production, the gross grain harvest in recent years has reached noticeable values, this entails an increase in employment and the attraction of new personnel, however, the problem of low efficiency of management and secondary and higher professional education remains very acute. Many people in modern Russia tend to get the highest possible education, not giving importance to how it can be used in the future, which often leads to neglect of the quality of education, low efficiency of its further use, which leads to a decrease in the efficiency of investment in education.

As the reasons for such a low level of efficiency of education should be pointed to the low level of its content, the weak development of the social sphere. People often do not want to become part of the industry for which they were educated, they want to work where they can improve their social status and thus gain access to quality social services. It is possible to solve the problem of irrational distribution of labor resources by industry only through the implementation of a comprehensive program for the alignment of the social sphere of production by industry and professional groups, it is equally important to increase and align the real wage levels.

The formation of a developed social sphere contributes to the efficiency of reproduction and use of labor resources, which ultimately leads to a powerful impetus to the development of the economy. Awareness of the importance of motivation to increase productivity in the twentieth century has led many scientists to the conclusion that the formation of a system of relations between the workforce and employers, which is characterized by a more partner form of interaction, the development of corporate culture, humanism and the implementation of social policy can be a factor in improving the quality of life of society, the efficiency of its economy.

In the future, the model of a socially-oriented economy can get even more development, at the microeconomic level, such a concept as a socially-oriented model of an enterprise can manifest itself. In addition to financial and economic goals, the main goals of such an organization can be the achievement of social goals. As such, they can be: increasing wages and increasing the number of jobs, improving working conditions and the development of social infrastructure, increasing the level of social guarantees. This model takes into account the interests not only of employers, but also of employees and the state. Spending money to improve the social infrastructure of the enterprise a clear idea of what their funds go to healthcare, sports, culture, education, that is, involved in the process of reproduction and the formation of highly qualified human resources. Unfortunately, this system is not transparent, providing taxpayers with information about the purposes for which their funds are used. This reduces the effectiveness of social projects, and partly reduces the collection of taxes.

In the Kursk region at the present stage of development, there are several most significant reasons for the need to develop the social sphere and infrastructure in the regional economy, which include:

1. The destruction of the old system of social infrastructure, which, despite a number of shortcomings, has contributed to ensuring an adequate and stable level of social security for almost all segments of the population, is particularly acute problem of providing the population with pre-school educational institutions, as the buildings of kindergartens in the 90-ies of the twentieth century actively
2. The development of the social sphere of the region's economy is important from the standpoint of the relevance of the formation of the processes of reproduction of labor resources on the basis of increasing fertility. The decline in employment and the destabilization of the situation in the country have led to a complication of the demographic situation, which contributed to a decrease in the efficiency of the processes of formation of the labor force.
3. The formation of a sufficiently large group of people among the population of the region who have to live below the poverty line, which leads to insufficient access to the social sphere due to its commercialization and high cost. At the same time, this rather wide layer of the population

continues to be an essential part of the system of reproduction of labor resources. Such a situation can lead to degradation and reduction of the quality of labor resources in the region. It is also important to support the disabled population, and, if necessary, to involve them in the labor process, creating conditions for their involvement in production.

4. Modern production requires a high degree of integration with social infrastructure, and therefore must take care of the constant and stable growth of the quality of life of workers. It is important that the activities of enterprises should be aimed not only at their own profits, but also contribute to improving the working conditions of employees and improving the quality of social infrastructure.

5. The development of the social sphere of the regional economy is a consequence of global processes in the world economy, the formation of a new way of life and mass consumption, as well as the improvement of social conditions through the humanization of post-industrial society. With the increase of free time, people are expanding the range of needs and interests, increasing the desire for tourism, travel and consumer lifestyle. In exchange for this, employers receive qualified labor services with a high level of quality and creativity.

6. The formation of a high-quality social sphere in the region is a factor of positive influence on the regulation of migration processes at the regional level, which is able to slow down, and even stop the outflow of labor resources to other regions, as well as the dehumanization of rural areas.

The implementation of measures to develop the social sphere of the regional economy requires the formation of a special concept of socio-economic development of infrastructure in the region in General and its enterprises in particular. To do this, it is necessary to monitor the indicators characterizing the quality of life of the population with the allocation of different social groups, as well as territories. In the structure of indicators of the state of the social sphere, it is advisable to identify indicators that characterize the level of education and culture, services and trade, as well as the medical sphere. These industries are fundamental in the formation of the quality of life, which, in turn, is the key to the development of the system of reproduction of labor resources and increase their motivation to work. The lack of attention to the development of the social sphere leads to the degradation of the system of formation and use of labor resources.

In the processes of development of the social sphere of the region, a large place should be given to large commercial enterprises, which can have a powerful impact on the development of social infrastructure, especially in small or single-industry towns, as well as rural areas.

Public authorities should also have a place in addressing these issues. The Soviet economy, which existed for a long time in the conditions of the administrative economy, has accumulated considerable experience in the state management of the social sphere. A direct return to the old system does not make sense, because it has outlived its usefulness, but the application of the accumulated experience in modern conditions can become a factor in improving the efficiency of the social factor, in particular as a priority state directions of formation of the system of social infrastructure of the regions could be used as follows:

1. Creation of a legislative and legal framework aimed at regulating social infrastructure and creating incentives for enterprises to participate in the development of social infrastructure.

2. Development of infrastructure facilities of Federal and regional importance, roads and Railways, airports, gas pipelines and power lines. The availability of this infrastructure is an important condition for improving the quality of life of the population and the development of social infrastructure.

3. To promote the development of a system of socially important social objects of social infrastructure (hospitals, pre-school institutions, schools) to maintain the necessary level of social security of all categories of the population.

4. Participation in the creation of scientific projects of formation of the social sphere and the system of reproduction of labor resources, as well as mechanisms to improve the efficiency of their functioning, including through the integration of the social sphere, science and education as interrelated and extremely important factors of formation and use of labor resources.



5. Formation of a system of improving the moral level of the population, as well as the regulation of relations between entrepreneurs and labor collectives in order to improve their social security.

6. Increasing the level of social protection of the disabled part of the population, especially uncompetitive in the labor market. These include the disabled with partial disability, children, the elderly, orphans. The state power should provide them with support in the form of pensions, benefits, allowances, promote employment. The main objective of these measures should be to prevent the spread of unemployment and, as a consequence, poverty in the regions. That is why the state should implement a policy to adapt this limited part of the workforce on the basis of monitoring the situation, creating specific types of production.

## References

1. Jimenez-Martin, S. and Peracchi, F. (2002), 'Sample attrition and labor force dynamics: evidence from the spanish labor force survey' *Spanish Economic Review* 4 (2), 79-102.
2. Kovarda, V.V. (2013), 'Modeling the types of correlation between social and economic development and wildlife impact' *World Applied Sciences Journal* 24 (5), 675-680.

## **Labor Potential of Regional Economy and Factors of It's Reproduction**

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### **Abstract**

The article deals with the peculiarities of reproduction of labor potential in the regional economy. Features of formation and development of the labor market in the Russian Federation, and also processes of denationalization of labor relations within formation and modification of market economy are analyzed. The features of economic conditions, socio-economic development and efficiency of production in the regions are considered. Attention is paid to similar processes in the field of labor potential.

**Keywords:** labor potential, labor resources, regional economy, labor market.

### **Introduction**

The labor force in Russia existed in the administrative economy for the long time. It was period of active participation of the state in all stages of formation of the labor force. Human capital was the sphere of active state regulation, including full state provision of the population with education, medicine and social infrastructure. The state also regulated questions of rationing and payment. One of the main problems of this system was the desire to establishing and achieving of plans. This led to a decrease of quality of products and works and also reduced motivation to effective and responsible work. Economic reforms of the 1990s in Russia changed the system a lot. Also state very sharply left from this sphere and gave full freedom of formation and development for the private enterprises.

Labor resources were often not ready for a new form of social and labor relations. Fundamentally new conditions of labor relations have made adjustments to the mentality and relationships at labor market. The denationalization of the economy leads to the rejection of active state intervention in the sphere of education and employment. This, on the one hand, allowed to regulate the labor market through the mechanism of supply and demand, and on the other, contributed to the emergence of a number of distortions. An important stage of the withdrawal of the state from the labor market was a significant reduction of government spending for the reproduction of labor resources.

Denationalization of the sphere of formation of labor resources was the refusal of the state from direct participation in the regulation of the education. The state also is not involved in the employment process.

In market realities the demand for labor resources in various industries is formed not so much by the employment conditions as by the demand for manufactured goods and services.

The current conditions of labor potential formation in the regional economy of Russia should be considered as a transitional form.

Economic factors have enormous influence and play a fundamental role, but the role of the state remains significant. The state pays considerable attention to the labor legislation. Also the state resolves social conflicts. Moreover, in recent years the role of the state in the sphere of labor relations and regulation of the processes of formation of labor potential only increases. From year to year, this sphere needs more and more attention as one of the top priorities.

The main aim for private companies is to receive a profit. That's why only state can solve the problems of the level of people's earnings and regulate a minimum wage. All this is an important element of state policy because it has a high level of social significance. There are some specific

features of reproduction and formation of labor potential in the regional economy. Some of them are the same with the national economy, but there are also a number of unique.

Due to a differences in economic conditions regions can be significantly differentiated by the availability of labor resources. Main categories are:

1. Regions with surplus labor resources, characterized by high natural increase of labor resources, lack of available jobs.
- 2 Regions with lack labor resources. These regions can often characterized by unfavorable climatic conditions, weak social infrastructure, etc.
3. Regions provided with labor resources, characterized by a sufficient potential of labor resources.

There is a link between revenue and labour results in conditions of market. That's why the main factors for improving competitiveness are the growth of skills and level of education. Market mechanisms help to improve the processes of labor potential formation. At the same time, competition in the labor market has a number of contradictions, contributing to unemployment. In the regional economy unemployment is high and varied and it is difficult to neutralize it. Especially the problems of unemployment are important for women and young people.

One of the modern serious problems is injuries. It may be explained by a consequence of both technological and labor discipline violations. A lot of people killed and injured in the road accidents every year. Investment in this area should be one of the main areas of regulation and investment. Retrenchment of investments in this sphere will lead to a narrowed reproduction of labor resources, which negatively affects the economic potential of the country and in particular the regional economy.

The serious problem is the placement of labor resources in the country. In Russia it happens spontaneously under the influence of the level of income. As a result there is large distortions in the placement of the population. It can be a factor of unbalanced development of regions, creating risks for social contradictions. During recent years we can observe different measures aimed at the development of the Far East region. But it only helped to reduce the population outflow from these territories.

One more objective negative trend is urbanization. A lot of people migrate from rural areas to the city due to a differentiation of income and living standards. Reduction of the population of rural areas causes an importance of state regulation of migration processes and the development of an effective labor market.

It is important to maintain the correspondence between labor and other types of resources in the regional economy. The state and society should strive to create such labor relations, in which it will be possible to make full use of labor resources, and unemployment will be reduced to the natural level.

In the Russian economy, despite the crisis of recent years, the unemployment rate remains quite low. Moreover, there is a shortage of personnel in a number of highly qualified and low-skilled professions.

The current situation has a negative influence to the regional economy. Society also feels the destructive consequences due to the decreasing of the level of income.

Many countries of the world are developing comprehensive plans to increase employment through the creation of additional jobs and the development of a modern structure of industries, as well as through the diversification of the economy and the regulation of the labor market.

Supporting of the institution of the family is also important for the maintenance of the labour market. It performs serious psychological and socio-economic functions. Small social groups not only allow to reproduce human resources, but also to develop abilities, education, forms of business activities. Nowadays the institution of family in Russia is in a crisis that accompanied with the demographic crisis.

There are a lot of divorces, which has a negative impact on the formation of labor potential. Most families are unable to solve many problems. The key problems are the lack of housing and the lack of pre-school and school facilities.

The state must play a key role in supporting of the institution of family by special concepts and programmes.

Serious problem in the sphere of the labor market is the incomplete use of labor potential. An important aspect is to provide the increase of labor productivity.

In modern conditions there is uneasy situation of transitional condition in the sphere of labor potential. The evolving market imposes new requirements and standards of training to the labor resources.

All these factors continue to shape destructive effects of development in the sphere of labor market. The risks are particularly high in regions where the population is most vulnerable due to the initially lower standard of living. Existing problems cause the necessary of creation of a detailed concept of management to improve the efficiency of the formation of labor potential in the regional economy.

## References

1. Minakova, I.V. and Kovarda, V.V. (2010), 'Problems of resource provision of economic growth in the regions of Central Federal district' *Journal Ingecon. Series: Economy*. 37 (2), 57-61.
2. Tsukanova, N.E. (2011), 'Demographic processes in Russia: current state and forecasting' *National interests: priorities and security*. 27, 14-23.

## **Diversification and Consolidation of the System Training in Agriculture in Romania**

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### **Abstract**

This paper analyzes the state of agricultural technical education in Romania after evaluations and researches, including fieldwork, which focused specifically on the most vulnerable part of these public educational programs - the practice of students in both didactic and real enterprises. A series of programmatic documents were analyzed both by the Ministry of Agriculture and the Ministry of Education and by the departments / bodies responsible for implementation or institutional reform, by the theoretical (school curriculum, occupational standards, technical curricula) and practical (school partnerships with the business environment, industries, labor market). A series of interviews and case studies have been carried out in field research, especially in schools with traditional agricultural education (related specializations), who hold teaching facilities. Also, integrated models have been studied, with a real opening to the labor market.

**Keywords:** rural development, farm management, human resources, agriculture

### **Introduction**

Over the years, communication projects on environmental issues and agri-food education have played an important role in rural development, but multifunctional agriculture has not been popularized at school level. Conservation and maintenance of territories, the promotion of diversity and the enhancement of natural resources for the valorization and development of rural areas and the growth of jobs are important subjects relevant to the strategic objectives of agricultural policies, although they are currently not fully understood and not debated within ministerial programs.

Recently, rural areas are undergoing changes due to changes in the global economy and consumption at international level, pressures on soil and natural resources, issues that make traditional, social and economic organizational models difficult. The on-going transition stimulates reflection on the value of common goods and the role of civil society.

### **Results and Discussions**

The low attractiveness of the sector and the reduction of the number of graduates of agricultural schools (vocational, high school and post-secondary education) are factors that have contributed to lowering the level of training of managers of farms. The rural population in Romania has a low level of education, most of the inhabitants aged between 25 and 64 years only attending gymnasium, according to statistics.

Over the last decade, the number of agricultural lyceums registered a downward trend, the most dramatic decline being recorded by agricultural high schools. The decrease of the high-school units with agricultural profile occurred simultaneously with the decrease of the number of graduates at national level. A positive development was the total number of graduates with this profile, which is an opportunity

for rejuvenating generations of farmers with adequate training. In Romania, lifelong learning is in an early stage of manifestation, which results from the low degree of participation in the training process.

The evolution and specialization of agriculture requires adequate support for technical and economic vocational training as well as greater capacity for access to knowledge and information, including in the form of dissemination. Support from information and training actions will help to transfer knowledge, promote cooperation and apply innovative techniques in food chains, including through the dissemination of the results obtained from the activities in the operational groups.

These actions will contribute to measures to restructure and modernize farms in order to increase competitiveness and productivity, as well as to adapt to the effects of climate change. At the same time, farmers will have access to knowledge and information for good management of climate risks and other risks to which farms are exposed.

Romania's Rural Development Strategy is part of the reform and development context proposed by the EU through the Europe 2020 strategy and the 2014-2020 National Rural Development Program (NRDP) takes into account its priorities and contributes to smart growth, by supporting forms of cooperation between research institutions, farmers and other "actors" of the rural economy, promoting knowledge partnerships and strengthening links in education, but also by supporting the component of training, skills acquisition and dissemination of information. The new NRDP envisages sustainable growth that focuses on lowering carbon emissions and supporting environment-friendly farming practices.

Last but not least, support for investment in infrastructure and the rural economy leads to poverty reduction and job creation in rural areas, contributing to inclusive growth. Improving education, vocational training policy (including lifelong learning) as well as curriculum and delivery modalities is essential for Romania to create jobs, develop services (public and private), reduce poverty (especially for vulnerable groups, including long-term unemployed, people in subsistence farming, people with disabilities and the Roma), progress and social stability.

In addition, the development of human capital becomes, in the 2014-2020 NRDP, a cross-cutting theme for addressing competitiveness needs, determined by the high share of the employed population in agriculture, but with a low level of training, and on the other hand, the need to qualify farmers and adapt their knowledge to the modern context (technologies, general knowledge of climate change, etc.).

## **Conclusions**

Priority needs for human capital development were expressed in the directions for training and better integration of research results. Improving information and training (including lifelong learning) and adapting the curriculum to real needs are essential for increasing competitiveness in the agri-food and forestry sector. The 2014-2020 NRDP aims at ensuring a better correlation between education, training and agriculture, as well as raising farmers' awareness of the environmental benefits. Also, the provision of specific advisory services to farmers and farmers aims to increase the economic viability of agricultural holdings, but also to diversify farm activities with subsequent effects on the competitiveness of farms.

Counseling on particular aspects of the process of setting up and developing associative forms will stimulate the formation of producer groups and assist them in the phases of effective development and implementation of investment projects. The advice given to the initiation of new small-scale businesses in rural areas will contribute to the stimulation of entrepreneurship and the economic development of rural areas.

Additionally, the consultancy will aim to promote sustainable management of natural resources, adaptation to the effects of climate change and reduction of GHG and ammonia emissions and

compliance with the obligations specific to NRDP measures. In addition to supporting addressing priority needs, successful implementation of the 2014-2020 NRDP will also depend on availability and support for developing innovative, innovative ideas, projects and activities to promote business development and rural communities.

There is a priority need to share knowledge and experience by connecting people within a well-organized and managed national rural development network. The aim of the network is not only to support the effectiveness of rural development policy but also to facilitate the creation of synergies, encourage knowledge and contribute to the objectives of the European Innovation Partnership on the productivity and sustainability of agriculture.

The aim is to strengthen and diversify the vocational training system in agriculture, in order to:

- Have a small and medium sized class of farmers with well-developed and productive and commercial potential;
- Increase the capacity of farmers to achieve an efficient, competitive, sustainable and non-aggressive agricultural system, respecting the European requirements in the field;
- Increase the capacity of agricultural producers to absorb and make full use of European funds;
- Increase the level of participation of professional associations and organizations of farmers in the sphere of services;
- Raise the living standards of the rural population and bring it closer to urban conditions, while respecting the specificity.

## Bibliography

1. Condei R., Popescu A., Bălan A., Tudor V. (2015), *Aspects of Employment in Agriculture in the Main Development Regions of Romania*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 15 ISSUE 2, 67-74.
2. Mariana BĂLAN (2015), *Correlations between Migration and Employment among Young People*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 15 ISSUE 3, 59-66.
3. Marinescu E. (2013), *THE Business Environment and the Current Level in Educational Formation for Old County Agriculture*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 13 ISSUE 3, 131-136.
4. Mănescu Camelia, Mateoc T., Ada-Flavia Cristina, Popescu A., Mateoc-Sîrb Nicoleta (2015), *Education and health: important factors in the development of rural*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 15 ISSUE 1, 265-270.
5. Toderiță, A., Toma, B., (2014), *Education for Agriculture*, CRPE Report
6. Toma C., Turtoi C., Gavrilesu C. (2014), *Importance Of Economic Knowledge Transfer For Supporting Of Total Absorption Grants By Semi Subsistence Farms*. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 14 ISSUE 2, 317-324.
7. \*\*\* The Presidential Commission for Public Policy for Agriculture Development, the National Strategic Framework for the Sustainable Development of the Agro-Food Sector and the Rural Area in 2014-2020-2030
8. \*\*\* The Council of the European Union, the Council Conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training (ET 2020).
9. \*\*\* Annual Progress Report on the Implementation of the National Rural Development Program in Romania in 2011, 2012, 2013, 2014
10. \*\*\* National Rural Development Program for the period 2014-2020

## **Terrorism and Its Impact on Tourism with Special Focus on European Destinations**

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### **Abstract**

Terrorist attacks have a serious impact on nation's prosperity. One of the sectors that is directly affected by the terrorist attacks is tourism industry. The purpose of this study is to explore one of the major risks of tourism - terrorism. It examines the effect of terrorism on European destinations especially in the past two years of 2015 and 2016 when Europe started to be hit by the Islamic State terrorist attacks. The methods include a literature review of available sources on the research topic found in the world's acknowledged databases. In addition, the authors use the statistical data from several web pages. The results indicate that terrorism is not that high risk if compared with political instability or natural disaster. However, the findings also reveal that recent attacks in Western Europe have a significant impact on the outflow of international tourists and consequently, on the fall of country's GDP.

**Keywords:** tourism, terrorism, Global Terrorism Index, risk, impact

### **Introduction**

Tourism is risky in its own right, not only because of its unfortunate connection with terrorism. Terrorism is one of the risks involved in tourism. It does not generate any positive feelings among tourists, though, which other risks involved in tourism may evoke. Worryingly, terrorism aiming at pure destruction and destabilization, rather than specific demands, is currently becoming more prevalent. Tourists become the target for various reasons, one of them being that they represent western values perceived by other cultures as corrupt and immoral. On the other hand, there are even greater dangers to tourism than one-off terrorist attacks, mainly long-term political instability and war.

Terrorism affects both tourists and destinations. Whereas tourists can decide whether or not to go to potentially dangerous destinations, the latter usually need some time to recover and polish their tarnished image. Even European destinations are barely safe from terrorist attack. Nevertheless, in some European



countries, e.g., France or Spain, the threat of terrorism is much higher than in other countries such as the Czech Republic.

The negative image damages destinations in particular economically and, as a consequence, socially. In relatively peaceful countries the Gross Domestic Product (GDP) contribution from tourism tends to be higher than in dangerous areas, which, on the contrary, may deal with issues like unemployment or homelessness. Thus, struck destinations need to employ alternative strategies, including crisis management, to revive their image. European destinations are disadvantaged as they are well-known and the media coverage of terrorist assaults in Europe is usually massive in comparison to those happening in the most affected countries such as Nigeria or Pakistan.

## **Methods**

The methodology of this review study is based on Moher, Liberati, Tetzlaff, & Altman (2009). The methods used for this article include a literature review of available sources on the research topic in the world's acknowledged databases Web of Science, Scopus, and ScienceDirect, and a method of comparison and evaluation of the findings from the selected research studies found on the research issue.

The search was based on the key words: terrorism AND tourism, terrorism AND tourism AND Europe in the period of 2000 till 2016. In addition, the authors used the statistical data from the Eurostat web pages especially for the years of 2015-2016. Majority of the articles were found in Science Direct - 1,360 studies, followed by Scopus - 257 studies, and Web of Science – 211 studies. Altogether 1,828 studies were identified in these three databases. After excluding the irrelevant titles and abstracts and their duplicity, only 19 research studies remained for the full-length analysis. Out of these 19 studies, only three studies focused on the exploration of the impact of terrorism exclusively in Europe. In addition, nine web pages were used, especially for the data statistics. A few older articles from the references of the selected studies, e.g., Roehl & Fesenmaier (1992), were also used for the comparison of results. The findings from the selected research studies can be divided into three main topic areas: risks in tourism, terrorism and tourism globally, and impact of terrorism on European destinations. These three area are then discussed below in the part on Findings.

## **Results**

### ***Risks in tourism***

Tourism and risk go hand in hand. If home is often linked to safety, then going out of one's home always involves some degree of uncertainty, insecurity and risk. Tourists go outside their normal place of residence, where they often lack understanding of the local dangers awaiting them. These risks might be of various kinds and degrees. Korstanje (2011), for instance, mentions four categories, namely, risk, angst, fear and danger. Various tourists themselves may view risks awaiting them differently, too. Some tourists come to fuming Etna, where they may easily get injured, in order to witness the volcano spew lava, others climb snow and ice covered mountains, where they can slip and fall or freeze to death, in order to experience something new and exciting. On the other hand, there are tourists who would not risk discomfort of not having a proper bed and breakfast.

Basically, as Fletcher & Marakabati (2008) maintain, risk is an inherent part of tourism. For example, there are adventure holidays with activities including extreme sports, or one may run the financial risk related to the use of the Internet or credit card, or there are health risks associated with travelling to places with high incidence of injuries or contagious diseases, let alone place-related risks linked to encountering dangerous animals or insects, or a lack of water in deserts. Fletcher & Marakabati (2008) say that one risk

factor that has had an increasing significance over the past decade has been the tourist's perception of personal safety or security.

In general, authors (Baker, 2014; Fletcher & Marakabati, 2008) usually distinguish perceived and actual risks. As Kozak, Crotts, & Law (2007) maintain, travellers from different countries may have varying degrees of the perceived risk. Korstanje (2011) distinguishes sedentary societies for whose risk avoidance is a natural behaviour and nomads who are always on the move and have no territory to defend. Baker (2014) believes perceived risks may outweigh reality in forming attitudes toward destinations and cites Roehl & Fesenmaier (1992) who divided tourists' perception of risk into three groups, specifically, risk neutral (who do not consider tourism to involve risk), functional risk (who view a possibility of mechanical, equipment, or organizational problems as a major tourism-related risk), and place risk (who are scared of holidays as fairly risky and of destinations as very risky). Lepp & Gibson (2003) point out that previous investigations identified four major risk factors: terrorism, war and political instability, health concerns, and crime and then they offer their own list of seven risk factors: health, political instability, terrorism, strange food, cultural barriers, a nation's political and religious dogma, and crime. They hypothesize that tourists seeking familiarity would perceive higher level of risk associated with international tourism than those seeking novelty and add their findings that women perceive a greater risk regarding health and food, whereas more experienced tourists downplay the threat of terrorism, and familiarity seekers are the most risk adverse (Lepp & Gibson, 2003). Lepp & Gibson also emphasize that the issue of perceived risk raises questions: How do different types of tourists perceive international tourism in terms of risk and safety? What factors influence their perception?

### ***Terrorism and Tourism***

The risk of a terrorist attack is just one of many. On the other hand, it does not bring about any positive challenge like, for example, mountaineering, canoeing, or similar risky activities, which tourists like doing and choose to do. Terrorism does not include any positive feelings among tourists, it only causes fear or even damage to (usually innocent) people's property or health. Unfortunately, in recent decades, terrorism has become a hot issue for the tourist industry (Neumayer & Plumper, 2016).

Currently, there are several definitions of terrorism. (Baker, 2014) For instance, Walter (2003 looked into defining terrorism in international law and says that "terrorism requires an objective element, i.e. a crime of a certain scale, and a subjective element, i.e. a certain motivation or intention on the part of the perpetrators" (Walter, 2003: 4-5). Oxford Dictionaries (2017) provides the following definition of terrorism: "The unlawful use of violence and intimidation, especially against civilians, in the pursuit of political aims." Korstanje & Clayton (2012) also put forward several definitions of terrorism and, more importantly, they draw attention to the difference between systematic terrorism, represented by ETA, or the IRA - groups with specific demands, and random terrorism, used by al-Qaeda and aiming at destabilization and destruction.

The history of terrorism is long but according to Baker (2014), international terrorism witnessed a significant increase in the late 1960's and early 1970's. It was followed by a short spell of lower incidence of terrorist attacks. The 1980's nonetheless began and ended more violently. Another lull came in the first half of the 1990's (Baker, 2014). Pizam & Smith (2000) quote interesting statistics, saying that there were 206 major terrorist events in 1972 and within 13 years the number increased manifold as there were counted 3,010 events in 1985. Lepp & Gibson (2003) can see an important turning point in the 1972 Munich Olympic Games when a global television audience of nearly 800 million viewers watched an act of terrorism. This event put terrorism into the centre of global attention and since then it has been a visible international issue that started to influence international tourism (Lepp & Gibson, 2003). Feridun (2011) states that tourists and tourist sites emerged as a new type of terrorist target in the mid-1990's. After the year of 2000 the number of deaths in Western Europe has decreased. Even so, there were the significant numbers of casualties in 2004 due to the fact that 191 people died in the Madrid attacks, then

in 2011, when two attacks by a lone terrorist claimed 77 lives, and 2015 is remembered for the January and November Paris attacks with the toll of 17 and 90 victims, respectively (DATAGRAVER, 2016). Unfortunately, 2016 witnessed attacks in Brussels or Nice, and 2017 so far has seen infamous events in London and Antwerp. In other words, terrorism challenges tourism in European countries and probably will not stop doing so, at least in the near future.

Sonmez (1998), among others, asks: What are the motives of terrorists in targeting tourists? As Korstanje & Clayton (2012) state, tourism and terrorism are two completely different philosophies but they both need and use modern technology, rely on media management, require manipulation of people's perceptions and attitudes. The current world make both international tourism and international terrorism much easier. Bianchi (2006) talks about consumer capitalism and hyper-mobile capital, instantaneous communication and extensive movement of people as the main characteristics of the world at the beginning of this century. Bianchi (2006) adds that there is on the one hand the right to travel and on the other hand risk and insecurity, resulting in newly imposed limits to freedom, surveillance, and targeted restrictions on mobility. The question remains, though: What is the right to travel based on?

Whereas tourists may believe they have the right to travel, the members of host communities may not agree. In fact, as Korstanje (2011) has it, the encounter between host communities and tourists engenders many issues and anxieties on both sides. Pizam & Smith (2000) ask if there is anything in the tourist location that creates opportunities linking organized terrorist attacks against tourists to tourism itself. Terrorist attacks are sometimes a reaction to demonstrably irresponsible tourism development using public funds for building tourism-related infrastructure in luxury ghettos while basic requirements elsewhere go unmet (Pizam & Smith, 2000). Lepp & Gibson (2003) add that in some countries tourism represents capitalism and conspicuous consumption and attacks on tourists signify ideological opposition to western values, or it may symbolize an attack on the government. Korstanje & Clayton (2012) also claim that tourists are both innocent and vulnerable and, moreover, they represent mobility, affluence and consumption perceived by some host communities as corrupt and immoral.

### ***Impacts of terrorism on tourism with special focus on European destinations***

International tourism is a major source of foreign exchange earnings and foreign direct investment; it generates jobs, sources of tax revenue and alleviates poverty, especially in developing countries, where it is often the primary export industry (e.g., Baker, 2014; Drakos & Kutan, 2003; Feridun, 2011; Saha & Yap, 2013). Nevertheless, the tourism industry is vulnerable to diverse extreme events, from natural disasters (e.g., epidemic diseases, floods or torrential rains, hurricanes, landslides, volcanic eruptions), to human-caused disasters (crime, economic downturns, insurgency, political upheavals, regional tensions, or riots, terrorism, war) (Arana & Leon, 2007; Sonmez, Apostolopoulos, & Tarlow, 1999). Therefore, several authors (e.g., Sonmez, 1998; Baker, 2014) inquire about the impacts of terrorism and political instability on tourist demand and the effects of terrorist attacks violence on destination image. According to some studies (e.g. Arana & Leon, 2007; Feridun, 2011), both the severity and particularly frequency of terrorist attacks cause decline in tourism demand. However, it seems that political instability affects tourism far more severely than one-off terrorist attacks (e.g., Fletcher & Marakabati, 2008; Saha & Yap, 2013). Lepp & Gibson (2003) warn that war and political instability can also affect neighbouring countries not directly involved in any conflict.

There is, nevertheless, difference between the impacts on tourists and those on destinations. As it has been mentioned, according to Sonmez et al. (1999), apart from terrorism, the image of a destination can be tarnished by natural disasters as well as human-caused events but while tourists are free to avoid destinations associated with risk and either choose a safer destination or avoid travel, tourist destinations cannot escape the consequences of these disasters and events. Other authors (e.g., Baker, 2014; Kozak et al., 2007) agree and state that the majority of travellers rather change their travel plans than visit an

unsafe destination, which means that the negative image may damage tourism. In other words, the image is a significant factor in choosing destinations.

The negative image damages destinations in many ways. It increases unemployment, aggravates homelessness, and causes many other social and economic ills (Baker, 2014). According to Drakos & Kutun (2003) there are both direct and indirect costs of the negative image caused by terrorism like additional advertising expenses, reconstruction costs for damaged tourist facilities, or security enforcement expenses, including costly improvements in airport security. What is more, governments, travel agents, and the media issue warnings about the risks associated with international tourism and tourists to take precautions against risks (Lepp & Gibson, 2003), which are often linked to insecure destinations. As Alderman (2016) argues, although the place recovers after some time, its business will never be the same. For example, after the Islamic state terrorist attacks in Brussels in March 2016, Belgian economy suffered a nearly 1 billion EURO loss. The most affected areas of business were hotels, restaurants and tourism. The experts in the field of tourism indicate that it usually takes 3-6 months after returning to normal, which in comparison with the crises such as disease, environmental disaster, or political turmoil, is not that long since the political turmoil in a destination can lead to a recovery time of nearly 27 months or a natural disaster such as tsunami in Thailand in 2004 can last 14 months. (World Travel and Tourism Council, 2014)

Although the most affected countries by terrorism are nowadays Iraq, Nigeria, Afghanistan, Pakistan, and Syria due to their political turmoil, the European destinations have become target of the terrorists, too, especially due to their involvement in war conflicts in some of the countries mentioned above. In the year of 2015 there were 175 European victims of terrorism, majority of them dying in France. And the same was true for 2016 although the number slightly fell down to 134 victims. The most hit country by terrorism in Europe has seemed to be France since 2015. In the January of 2015 there was a mass shooting at the satirical magazine Charlie Hebdo office in Paris, carried out by Said and Cherif Kouachi, two Islamist gunmen who identified themselves as belonging to Al-Qaeda in Yemen. In this shooting there were 17 victims. However, far much bigger terrorist massacre was held in November 2015 in Bataclan theatre in Paris. During this terrorist attack 90 people died. No wonder that from 2014 to 2015 the GDP contribution from tourism in the country fell by US\$1.7 billion. By comparison during the same period Italy, a neighboring country which recorded no deaths from terrorism, grew its tourism sector by US\$4.9 billion. In 2016, for example, Guardian Holidays, which sells hotel and Eurostar packages, announced a decline of their sales of 35% in comparison with the year of 2015. Research shows that tourism's contribution to GDP is twice as large in countries with no terrorist attacks compared to countries with attacks. (Global Terrorism Index, 2016) Other countries which are under a high threat of terrorism in Europe are Belgium, Germany, Spain, Russia, Turkey and UK.

The inbound visitor growth in Europe indicates that international tourists are becoming interested in the parts of Europe, which have not been affected by terrorist attacks yet. (Table 1)

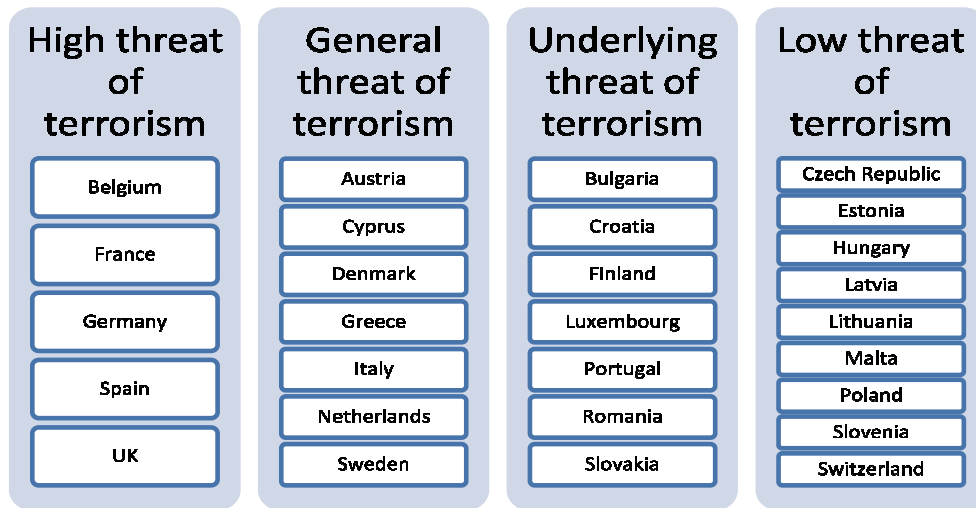
**Table 1: Inbound visitor growth in Europe during the period of 2015-2016**

<b>Part of Europe</b>	<b>2015</b>	<b>2016</b>
Northern Europe	6.5%	5.1%
Western Europe	3.9%	-0.5%
Southern/Mediterranean Europe	4.7%	0.9%
Central/Eastern Europe	5.2%	5.2%

Source: authors' own processing based on Statista (2017)

Nevertheless, Europe still appears to be relatively safe tourism destination with a low crime rate and pick-pocketing. Interestingly, according to the Global Peace Index (2016), only one country has been mentioned for a very low risk of terrorism and civil demonstrations, which was the Czech Republic.

Figure 1 below then divides the EU countries according to the potential threat of terrorist activity.



**Fig. 1: EU countries according to the treat of terrorist activities (authors' own processing based on the data from Thistlethwaite & Romero, 2016)**

## Conclusions

Although the WTTC (2016) proclaims that tourism continues to grow despite terrorism and other challenges, European countries and their tourism destinations cannot relax and stop considering ways to hinder these risks. For instance, the forecast for the direct Travel & Tourism GDP in France has decreased since March 2016 from 2.9% to only 1.1%. Similarly, Turkey is also experiencing a tourism crisis (WTTC, 2016). The WTTC report (2017) shows that Travel & Tourism creates a lot of jobs in the EU.

Yet, it is vital for negatively viewed tourist destinations to incorporate crisis management planning, to use marketing and management strategies to protect and rebuild their image of safety and attractiveness, and to aid local tourism industry by establishing a tourism crisis management task force, or developing a crisis management guidebook (Sonmez et al., 1999). Baker (2014) agrees that destination marketers should understand tourists' perceptions and attitudes in order to devise promotional strategies to alter negative and reinforce positive perceptions. Baker (2014) adds that travel risk should be studied in terms of real and perceived risk and in relation to destination image and tourists' attitudes.

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## References

- Alderman, L. (2016). Terrorism scares away the tourists Europe was counting on. [Online], [Retrieved October 22, 2017], <https://www.nytimes.com/2016/07/30/business/international/europe-economy-gdp-terrorism.html>
- Araaa, J.E., & Leon, C.J. (2008). The impact of terrorism on tourism demand. *Annals of Tourism Research*, 35 (2), 299-315.
- Baker, D.M.A. (2014). The effects of terrorism on the travel and tourism industry. *International Journal of Religious Tourism and Pilgrimage*, 2(1), 58-67.
- Bianchi, R. (2006). Tourism and the globalisation of fear: Analysing the politics of risk and (in)security in global travel. *Tourism and Hospitality Research*, 7(1), 64-74.
- DATAGRAVER. (2016). People killed by terrorism per year in Western Europe 1970-2015. [Online], [Retrieved November 15, 2017], <http://www.datagraver.com/case/people-killed-by-terrorism-per-year-in-western-europe-1970-2015>
- Drakos, K., & Kutan, A.M. (2003). Regional effects of terrorism on tourism in three Mediterranean countries. *Journal of Conflict Resolution*, 47(5), 621-641.
- Feridun, M. (2011). Impact of terrorism on tourism in Turkey: empirical evidence from Turkey. *Applied Economics*, 43, 3349-3354.
- Fletcher, J., & Morakabati, Y. (2008). Tourism activity, terrorism and political instability within the Commonwealth: The cases of Fiji and Kenya. *International Journal of Tourism Research* 10, 537-556.
- Global Terrorism Index. (2016). [Online], [Retrieved October 22, 2017], <http://economicsandpeace.org/wp-content/uploads/2016/11/Global-Terrorism-Index-2016.2.pdf>
- Institute for Economics and Peace. The Global Peace Index. (2016). [Online], [Retrieved November 15, 2017], <http://economicsandpeace.org/>
- Korstanje, M.E. (2011). The fear of traveling: a new perspective for tourism and hospitality. *An International Journal of Tourism and Hospitality Research*, 22(2), 222-233.
- Korstanje, M.E., & Clayton, A. (2012). Tourism and terrorism: conflicts and commonalities. *Worldwide Hospitality and Tourism Themes*, 4(1), 8-25.
- Kozak, M., Crotts, J.C., & Law, R. (2007). The impact of the perception of risk on international travelers. *International Journal of Tourism Research*, 9, 233-242.
- Lepp, A., & Gibson, H.J. (2003). Tourist roles, perceived risk and international tourism. *Annals of Tourism Research*, 30(3), 606-624.

- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D.G. (2009). The PRISMA Group. Preferred reporting items for systematic review and meta-analysis: the PRISMA statement. *PLoS Med*, 6(6), e1000097.
- Neumayer, E., & Plumper, T. (2016). Spatial spill-overs from terrorism on tourism: Western victims in Islamic destination countries. *Public Choice*, 169(3-4), 195-206.
- Oxford Dictionaries (2017). [Online], [Retrieved November, 24, 2018], <https://en.oxforddictionaries.com/definition/terrorism>
- Pizam, A., & Smith, G. (2000). Tourism and terrorism: a quantitative analysis of major terrorist acts and their impact on tourism destinations. *Tourism Economics*, 6(2), 123-138.
- Roehl, W.S., & Fesenmaier, D.R. (1992). Risk perceptions and pleasure travel: an exploratory analysis. *Journal of Travel Research*, 30(4), 17-26
- Saha, S., & Yap, G. (2013). The moderation effects of political instability and terrorism on tourism development: A cross-country panel analysis. *Journal of Travel Research*, 30, 1-13.
- Sonmez, S.F. (1998) Tourism, terrorism, and political instability. *Annals of Tourism Research*, 25(2), 416-456.
- Sonmez, S.F., Apostolopoulos, Y., & Tarlow, P. (1999). Tourism in crisis: Managing the effects of terrorism. *Journal of Travel Research*, 38(1), 13-18.
- Statista. (2017). [Online], [Retrieved November 15, 2017], <https://www.statista.com/statistics/311559/inbound-visitor-growth-europe/>
- The slow return to Paris: How tourism is taking time to recover. [Online], [Retrieved November 24, 2017], <https://www.theguardian.com/travel/2016/feb/20/return-to-paris-tourism-after-november-terror-attacks>
- Thistlethwaite, F., & Romero, K. (2016). How safe is your 2016 summer holiday: Map reveals most dangerous destinations in Europe. [Online], [Retrieved October 22, 2017], <http://www.express.co.uk/travel/articles/673818/Safe-holiday-destinations-summer-2016-Europe>
- Walter, C. (2003). Defining terrorism in National and International Law. [Online], [Retrieved November 10, 2017], [https://www.unodc.org/tldb/bibliography/Biblio\\_Terr\\_Def\\_Walter\\_2003.pdf](https://www.unodc.org/tldb/bibliography/Biblio_Terr_Def_Walter_2003.pdf)
- World Travel and Tourism Council (WTTC). (2014). [Online], [Retrieved November 15, 2017], [www.wttc.org](http://www.wttc.org)
- World Travel and Tourism Council (WTTC). (2016). [Online], [Retrieved November 15, 2017], <https://www.wttc.org/media-centre/press-releases/press-releases/2016/global-tourism-resilient-to-terrorism-brexit-and-further-macroeconomic-challenges/>
- World Travel and Tourism Council (WTTC). (2017). Travel & Tourism Economic Impact 2017, European Union LCU. [Online], [Retrieved November 15, 2017], <https://www.wttc.org/-/media/files/reports/economic-impact-research/regions-2017/europeanunionlcu2017.pdf>

## **Legislation Improvement with the Aims of Simplification of Business Procedures in Russia**

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### **Abstract**

Institutional business development conditions are determined, measures of legislation improvement with the aims of simplification of business procedures in Russia are suggested

**Keywords:** small and medium business, state support, reduction of administrative barriers for business, improvement of enforcement institutions.

### **Introduction**

Small and medium business development issues remain in the area of top-priority attention both of the state, business and the society, as a whole. Their relevance at the modern stage is related to the understanding that it is impossible to achieve macroeconomic landmarks – increasing life quality of the population and achievement of the world competitive ability of the Russian economy – without a developed and stable small and medium business sector. Therefore, the decree of the President of the Russian Federation of May 8, 2018 “On national goals and strategic tasks of development of the Russian Federation in the period up to 2024” established the general federal task of increasing the number of those occupied in the small and medium business sector by 2024 up to 25 million people [8]. Solving this task suggests the following:

- 1) improvement of general business conditions by further reduction of administrative barriers;
- 2) improvement of mechanisms and instruments of state support of small and medium business;
- 3) creation of mechanisms of motivation for small and medium business legalization and acceleration, suppression of opportunist behavior [9].



## Results and Discussion

Unfavorable macroeconomic conditions of the latest years that led to worsening of the social and economic position of citizens, on the one hand, fast technical, social changes, on the other hand, as well as imperfection of formal institutions have formed opportunities for illegal self-realization of citizens. Since the given form of the economic activity is evident and its scale increases, violating general economic interests, its institutional formalization is required, for example, by introducing the shadow small business legalization program “Small and Medium Business – Coming Out of the Shadow”, the implementation of which, according to experts, will make it possible to increase the gross domestic product of the country by 2.5 % and the contribution of small and medium business in the gross domestic product of the country by 2025 – from 20 % to 30 %. In our opinion, taking small business and the self-employed from the shadow is not only solution to the fiscal issues of the state and the rights of citizens for legal activity but the guarantee of the state of their protection, too.

To enable a fast and at the same time attractive (from the point of view of expenses) transition, it is necessary to formalize in legislation a mechanism that provides for: registration for the self-employed in the federal tax system with the one-stop shop principle via multifunctional centers; prohibition of inspections with respect to the self-employed; the right of the self-employed to be employed; a single payment to social insurance funds (Pension Fund of Russia, Federal Compulsory Medical Insurance Fund, Social Insurance Fund) in the amount of below 10 thousand rubles per year; the right to submit information about sales to tax bodies in the automatic mode; exemption from the liability to submit reports.

Another issue that seems insignificant at the first sight is the size of state duties that differ for small and medium business entities and population by a factor of ten, though the registration actions and labor inputs are the same. We believe that it is necessary to introduce changes in the existing legislation (Article 333.33 of the Tax Code of the Russian Federation), equalizing the state duties for small and medium business and state duties for the population.

To enable small and medium business to fulfill its social and economic functions in the economy and provide for innovation modernization and structural transformation of economy, mechanisms of its acceleration and stimulation for growth are required. In this context, in our opinion, a certain role can belong to the state.

Nowadays small businesses that do not meet conditions of the simplified taxation system have to be split into smaller organizations or have to open and close, as a result getting into the center of attention of tax bodies. To prevent the undesirable behavior it is possible to increase the threshold value for using the simplified taxation system (and then to increase, for certain kinds of activities, sales incomes up to 400 million rubles and the number of employees up to 150 or 200 people). Also it is proposed to introduce changes in the Federal Law “On development of small and medium business in the Russian Federation” about increasing for a medium business entity of threshold values of income received from business activity for the previous calendar year determined in the order established by the legislation about taxes and levies summarized by all kinds of activities carried out and used by all tax regimes up to 3 billion rubles and the limit number of employees established by the above named federal law up to 350 people.

Now there is a need to introduce changes in the Tax Code of the Russian Federation with the aim of strict definition of notions: affiliation, business split-up, taxation minimization and prevention of use by businessmen of illegal taxation minimization schemes.

In the latest years the state has done a lot to improve small and medium business support mechanisms provided by the Federal Law No. 209-FZ, which was positively assessed by businessmen [1]. At the same time, there are areas for improvement. In particular, it is necessary to:

- examine the issue of creating uniform digital signatures accepted in all state services, which will enable reducing the financial load of entrepreneurs and simplifying the procedure of their connection to state services;

- introduce changes in Article 2 of the Federal Law “On the use of cash-register equipment during cash settlements and (or) settlements with the use of electronic payment means”, by adding Paragraph 2.1. of the following content: “Organizations and entrepreneurs that pay the unified tax on imputed income for separate kinds of activities, when carrying out kinds of business activity established by paragraph 2 of Article 346.26 of the Tax Code of the Russian Federation and entrepreneurs that are tax payers who use the patent taxation system, when carrying out kinds of business activity with respect to which laws of the federation subjects provide for use of the patent taxation system and not subject to the use of paragraphs 2 and 3 of the given Article, can effect cash settlements and (or) settlements with the use of payment cards without the use of cash-register equipment on condition of issuing, upon a customer’s (client’s) request, a document (a sales slip, receipt or another document that confirm receipt of monetary means for corresponding goods (work, service)” [3];

- formalize in legislation a mechanism of state protection of monetary means of small and medium business entities in case of bank bankruptcies – similar to insurance of deposits of private persons;

- examine the possibility (with account for economic feasibility) of establishing the procedure of alienation of property rented by business assigned by the state on the ground of the right of economic and operation control of state and municipal establishments and unitary enterprises, which will enable commercializing of “sleeping” property and land assets, which are sometimes assigned to such companies artificially;

- accelerate examination of changes in the Law on commercial activity developed by the Ministry of Industry and Commerce of Russia by simultaneously solving issues of retail delivery trade being in demand among the population.

In our opinion, in this law one should simultaneously solve the problem of access of local companies to federal trade networks, by eliminating the inequality of rights of network suppliers in issues of obtaining “advantageous places on shelves”, payment terms, self-willed changes of prices of both parties as well as legislative introduction of the prohibition for trade companies to establish any restrictions, apart from those that are provided for by the existing legislation.

The agro-industrial sector is one of top priorities of the state support. We believe the following is necessary with the aim of improving the farmer support system and developing the agrarian cooperation:

- implementation of a legislative initiative for provision of agricultural lands for agricultural enterprises in their ownership without tenders at the end of lease period (if the lands are used according to their intended purpose);

- examination of the possibility of introducing changes in the federal legislation as regards prolongation of the term for use of the grant obtained as well as presence of small debts (up to 5 thousand rubles) by taxes, which is nowadays a ground for refusal by commissions to examine documents for receiving subsidies. The practice analysis shows that, due to a number of objective reasons, small and medium

business entities not always have a possibility to implement the grant within the specified time period, which then leads to violation of terms of agreements and the need to return the grant;

- increasing of concessional lending volumes, provision of a guaranteed access to credit resources of both large companies and small and medium business enterprises, which will enable obtaining stable results in all areas of the agro-industrial sector. This requires formalization, on the level of by-laws, of certain limits for each region with specification of the extent of financing and terms for its provision for recipients;

- development of special measures of support of agricultural consumer cooperative societies [12].

To modernize the system of supporting exporters being small and medium business entities, including entrepreneurs, and increase the share of such exporters in the total volume of non-resource export at least to 10 %, regions have to provide means to support exhibition and trade fair activities on co-financing terms in corresponding programs. Nowadays it is partially implemented through the Russian export center in Moscow, however, only a small number of companies, primarily large ones, can use exhibitions with its participation.

Creation of a favorable institutional environment for business is not only implementation of measures of encouragement and stimulation, it also includes mechanisms of prevention and suppression of undesirable forms of behavior of economic entities.

In the latest years the Government of the country has greatly adjusted the state contract system [4], [5], [6]. At the same time, in practice small business, having obtained the access to procurements of large companies, has faced “old” problems:

- domination of intermediates who win tenders, sometimes even having no major process equipment or capacities, but contracting other producers, while the size of extra charges of an intermediate in certain cases can reach 200 %;

- priority of import equipment and products, while there are Russian counterparts;

- delays in payment for goods supplied, works carried out, services rendered, etc.

Such a situation does not promote development of the actual producer, so we believe it is necessary to formalize in legislation the size of extra charges of an intermediate in case of its participation in tenders for state and municipal needs. Besides, we suggest extending the action of Regulation of the Government of RF of July 17, 2015 No. 719 “On confirmation of production of industrial products in the territory of the Russian Federation” for state companies and their subsidiaries, which requires a confirmation from the supplier – findings on confirmation of production of industrial products in the territory of RF issued by the Ministry of Industry and Commerce of Russia [7]. To provide for prompt payments similarly to the Federal law on the contract system we suggest establishing the thirty-day term to pay for goods by contracts in the Federal law on purchases by certain kinds of legal entities as well as establishing administrative liability for delayed payments.

Another systematic problem for business is inadequate protection against “low-sort” import on the internal market. The solution to the problem, we believe, lies in the plane of improvement of non-tariff import regulations, including procedures of sanitary and phyto-sanitary control, certification, technical regulation of products, etc.

The next direction is reducing administrative load on business, which a mandatory basis for improvement of conditions for carrying out business activities [11]. At that, the expenses of the state and business related to the state control and supervision should not exceed the size of potential damages because of non-observance of mandatory requirements being the subject of control or supervision.

The reforms implemented in the given directions: introduction of a unified register of inspections, risk-oriented approach, preventive and other measures made it possible to increase the transparency of supervisory measures. Together with reduction of the administrative pressure, introduction of preventive measures (“supervisory vacations”, administrative penalties in the form of warnings in case of the first violation revealed during inspection), business has also reacted positively to the idea of preventive examination, when inspectors are invited by businessmen themselves with the aim of revealing possible violations. Such a form of interaction between the state and business makes up the basis for resolution of conflicts and formation of the institution of trust.

At the same time, the situation now existing in the sphere of control and supervision activities, despite taking measures on improvement of the given institution, remains problematic. In particular, in separate cases there is initially presumption of guilt and strict sanctions policy of supervisory bodies, carrying out of inspections (patrol inspections and administrative investigations) above the Federal law “On protection of rights of legal entities and entrepreneurs during state control (supervision) and municipal control”, unjustified taking of restrictive measures due to violations revealed in the form of blocking bank accounts of business entities with no adequate grounds for it [2]. The danger of such sanctions with respect to small and medium business entities consists in the fact that it does not exclude their transformation from an enforcement action directed at prevention of administrative violations into an instrument of suppression of economic independence and initiative, excessive restriction of freedom of entrepreneurship.

In our opinion, nowadays the liability of business entities for violations revealed during inspections often exceeds the degree of social danger of the violations and damage inflicted. This is caused by the inequality between penalty sanctions and severity of violations and rather large sizes of administrative penalties (especially financially heavy for microenterprises and entrepreneurs). Because of it we believe that it is necessary to examine the issue of introducing differentiation of the level of administrative penalties for entities of micro, small and medium business. In particular, we suggest introducing changes that establish use of diminishing factors depending on the category of the micro, small and medium business entity subject to the penalty. The system of differentiation of imposing administrative penalties should directly relate to the risk-oriented approach that suggests establishing the dependence between intensity of inspections and the degree of harm inflicted [10].

Provisions of the administrative legislation related to the so-called “double sanctions”, when both the legal entity and public officer are held liable for the same violation, also need to be improved. We should examine the issue of restricting the term of administrative suspension of activities of small and medium business entities to 10 days with account for possible prolongation of the specified time period (at present, the term is 90 days). Besides, we suggest increasing the liability of public officers of control and supervisory bodies for initiating illegal (unjustified) inspections.

Thus, in our opinion, the institution enforcement system should be built in such a way that it would enable reducing the pressure on honest entrepreneurs and unavoidability of punishment of dishonest and illegal business entities as well as increasing their liability (for example, many-fold increase of sanctions with each further inspection in case inspectors’ instructions are ignored).

What concerns criminal prosecution of entrepreneurs, we believe it is possible to examine the issue of amnesty for entities of entrepreneurial activities (by economic articles of the Criminal Code of RF) with

the aim of their release from penal institutions, introduction of a pledge fund for prevention of confinement of entrepreneurs, extension of powers of prosecutors in case of taking a number of procedural and investigative decisions, initiating of criminal cases against entrepreneurs only with the prosecutor's approval, etc.

## References

1. (2007) 'On development of small and medium entrepreneurship in the Russian Federation' [Online] : Federal law of July 24, No. 209-FZ. – Mode of access : "Consultant-Plus" legal reference system.
2. (2008) 'On protection of rights of legal entities and entrepreneurs during state control (supervision) and municipal control' [Online] : Federal law of December 26, No. 294-FZ. - Mode of access : "Consultant-Plus" legal reference system.
3. (2003) 'On the use of cash-register equipment during settlements in the Russian Federation' [Online] : Federal law of May 22, No. 54-FZ. - Mode of access : "Consultant-Plus" legal reference system.
4. (2013) 'On the contract system in the sphere of purchases of goods, works, services for provision of state and municipal needs' [Online] : Federal law of April 5, No. 44-FZ. - Mode of access: "Consultant-Plus" legal reference system.
5. (2011) 'On purchases of goods, works, services by certain kinds of legal entities' [Online] : Federal law of July 18, No. 223-FZ. - Mode of access: "Consultant-Plus" legal reference system.
6. (2014) 'On peculiarities of participation of small and medium business entities in purchases of goods, works, services by certain kinds of legal entities' [Online] : Regulation of the Government of RF of December 11, No. 1352. - Mode of access: "Consultant-Plus" legal reference system.
7. (2015) 'On confirmation of production of industrial products in the territory of the Russian Federation' [Online] : Regulation of the Government of RF of July 17, No. 719. – Mode of access : "Consultant-Plus" legal reference system.
8. Decree of the President of RF "On national goals and strategic tasks of development of the Russian Federation for the period up to 2024"[Online] // <http://kremlin.ru/events/president/news/57425>
9. (2015) 'Small and Medium Enterprises (SMEs) Finance : The World Bank'. [Online]. - Mode of access : <http://www.worldbank.org/en/topic/financialsector/brief/smes-finance>.
10. Vasilyeva, S.V. Boganchikova, I.O. and Semenova, A.N. (2015) Aspects of interaction between the state and small business entities in market instability conditions, The state and prospects of development of the state and society in modernization conditions: dialogue between science and practice: materials of the International research and practice conference, 79-84.
11. Kupriyanova, E.V. Abrosimova. M.S. (2017), 'Management of development of small business entities in the Chuvash Republic'. Proceedings Problems of modern economy and management, directions of their solution: materials of the International virtual research and practice conference. P. 130-134.

12. Makushev, A.E. Ivanov, E.A. Kornilova, L.M., (2017) 'Problems of development of an agricultural consumer cooperation society in the Chuvash republic at the modern stage' *Vestnik of Kazan State Agrarian University* 12, 4 (46), 116-121.

## Particularities Regarding the Functional Status of the Natural Aquatic Ecosystems in the Republic of Moldova

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### Abstract

The present paper proposes the presentation and analysis of several main objectives regarding the protection of the fish resources, their sustainable use, the preservation of the potential and biological diversity in the natural fishery waters of the Republic of Moldova. It is known that the specialization process is always compromised by aggressive factors, and as a result some taxons fail to self-identify as species, and the existing ones adapt to frequent environmental changes. As an example, the data show that in the past the Dniester River sheltered about 80 species of fish, however it currently includes only about 20 species, which implies the total disappearance of some fish species. This phenomenon is also remarked in the Prut River, due to the inefficient regulation of the water flows from the hydrotechnical constructions, the catastrophic climatic conditions in recent years and the anthropogenic phenomena. Also, the quantitative fishery extraction of fish biomass during the year's prohibition periods affected the structural-functional condition of ichthyogenesis. These activities harm not only ichthyofauna, but also some animals such as mammals, birds, crayfish, turtles affecting the entire food chain. In order to protect aquatic biological resources, the State Fisheries Service implements actions to combat poaching and fishing during the year's prohibition periods. These activities are monitored and presented annually in reports and regulated by law.

Based on reports and official data issued by these institutions, it can be seen that fishery resources in the country's water basins continue to degrade considerably from one year to the next. Only the strict observance of the laws and normative acts adopted will create the conditions for sustainability and progress.

**Keywords:** *Republic of Moldova, aquatic natural resource, State Fishery Service.*

### Introduction

The State Fishery Service is a specialised body which carries out natural water resources management, environmental protection, fishing and fish farming, combating poaching in the natural aquatic areas of the Republic of Moldova, and it annually undertakes measures for fish improvement and breeding.

An important role in the activity of the State Fisheries Service is also played by the legislative-normative framework, which efficiently implements various measures that regulate the way and the conditions for creation and protection of the fish stock, for reproduction, growth and acquisition of hydrobionts, and for the improvement of different fish species. Annual surveillance and verification measures are being carried out in protection areas to comply with the applicable environmental legislation. In the aquatic ecosystems of the Republic of Moldova, most stenobiont species have become very rare, endangered by extinction, namely under the influence of anthropogenic factors (river damming, chemical and thermal pollution, poaching, extension of agricultural fields and pond drainage) which has dramatically reduced the indigenous ichthyofaunistic biodiversity. Under these conditions, adaptive species prevail, with short life cycles and early maturity, high resistance to persistent pollution and aggressive environmental factors.

## Short Literature Review

For anthropically impaired ecosystems, the most resilient species of fish seem to be the Gibel carp, the spine loach and the common roach, which even in difficult conditions form durable and constant associations. Being abundant and frequent in almost all hydrobiotopes, they prove a high potential and an exceptional ecological valence (Bulat, 2011). According to researches carried out on the Dniester River within the boundaries of the Republic of Moldova, some fish species such as the three-spined stickleback (*Gasterosteus Linnaeus*), after the construction of the Novodnestrovsk hydropower plant and the big floods in 2008-2010, following the voiding of space niches, have become a multidominant species causing an invasive effect (Bulat, et al., 2016). For species with a long life cycle such as zander, pike, and common bream, the accelerated growth and the late attainment of sexual maturation is an impediment to reproduction under the circumstances of unregulated fishing and exaggerated poaching (Bulat, 2009). An important reason for the ichthyofaunistic reduction of some fish species on the Dniester River and the Prut River was the development of agriculture, the intensification of the chemicalization process and the water pollution with pesticides, herbicides and other toxic substances, which led to the destruction of some species of fish (perch, common rudd). (Тромбицкий, et.al, 2011).

## Materials and Methods

The information on the public authorities' activity, which is reflected annually in reports, was obtained from the State Fishery Service of the Republic of Moldova. The data on the natural resources in the natural aquatic basins and the manner of their damaging have been collected from specialised works. The data collected were statistically sorted and processed. The results obtained were compared with other data from the literature for an appropriate interpretation.

## Natural resources favourable to the fishery sector in the Republic of Moldova

The ichthyofaunistic wealth plays an important role for the Republic of Moldova, despite the fact that it has a small territory and is limited by two hydrographical basins relevant as regards dimensions and ichthyofaunistic peculiarities. The richest ichthyofauna of the Republic of Moldova is found in the natural ecosystems of the Dniester River and the Prut River, namely in the south end stations - Palanca (on the Dniester River) and Giurgiulesti (on the Prut River), representing true ichthyofaunistic areas. An assessment toward the upstream area reduces the particularities of fish production. In the downstream sector, the ichthyofauna is richer due to the presence of the ecotone area. The ichthyofauna of the Dniester River was represented by 70% lithophilous fish species, among which the famous "royal fishes" such as sterlet, beluga, thorn sturgeon, diamond sturgeon, and Cyprinidea such as ide, vimba bream, chub, common barbell. Now these species have been drastically reduced, and whereas the beluga has become much rarer and is found only in the Danube, the Russian sturgeon and its smaller relatives such as starry sturgeon and starlet may still be encountered. The Prut River, due to deep pits, meanders and trees, was inhabited by many fish species, namely sleep such as the wels cat fish, but frequent floods in recent times have led to the destruction of a large number of individuals of this fish species. Small rivers ensure the flow regime of large rivers, serve as biological filters in the process of self-purification of water, provide spawn deposit area for many fish species. The ichthyofauna of small rivers is largely represented by species such as pike, common roach, perch, ruffe and non-valuable species in terms of food such as: sunbleak, ninespine stickleback, spined loach. Among the valuable species we may mention the European carp, the Gibel carp. In terms of abundance we witness the dominance of the species considered to be "food-depreciated" which are of insignificant importance in the diet, although a few decades ago we could see inhabitant species such as crucian carp, eel, tench, which are extremely rare at present (Table 1).



**Table 1: The biotic integrity class of the natural aquatic ecosystems of the Republic of Moldova**

Ecosystem	Biotic integrity class	Water quality category
Prut River	Medium	Moderate
Dniester River	Poor	Weak
Bâc River	Very poor	Bad

Source: Data processed from Bulat, (2016).

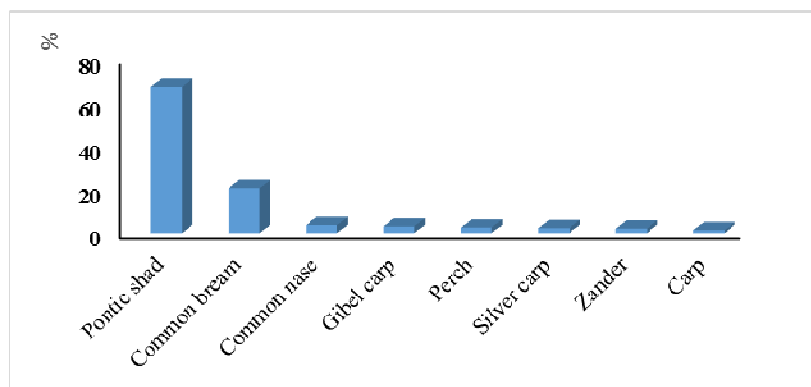
According to data presented in table 1, the Prut River class of biotic integrity is medium, in other words one has identified a reduction of its ichthyofaunistic diversity down to 30%, where the diversity and the share of semi-migratory and migratory species decreases, and those with the short vital cycle grow (euribiotic species). In the Dniester River there is a ichthyofaunistic diversity reduced by more than 30%, the valuable species are constantly decreasing and the biodiversity suffers substantial negative changes. In the rivers, the ichthyocenosis is represented by several species resistant to toxicity represented by various aggressive environmental factors. In exceptional cases, we witness the disappearance of all ecosystem hydrobionts and the digression of ichthyocenosis.

### The activity of the State Fishery Service in the period 2011-2017

Reports on the activity of the State Fisheries Service are made annually. The purpose of the reports is to provide access to relevant information about the status of natural aquatic resources on the territory of the Republic of Moldova and the measures taken to protect them. The competences of the State Fisheries Service extend only to natural water basins such as the Dniester River, the Prut River and its tributaries, the Danube River, the Beleu Lake, the Cahul Lake and the Manta Ponds, spread over the territory of the Republic on an area of 24000 ha.

According to the activity plan for 2011, the State Fishery Service organised 374 raids, which resulted in the detection of 937 offenses and fines were imposed in a total amount of 287160 lei. Considering the ichthyofaunistic importance of natural aquatic basins, their sustainable and rational use represent a major goal for the prophylaxis and struggling against poaching and the detection of various breaches of the protection regulations.

In order to obtain information on the Dniester River's ichthyofauna, on their diversity, structure and functional characteristics, a number of selected river areas were studied. The 2011 industrial and commercial fishing data collected in the Ștefan Vodă - Căușeni sector on the river length showed that the catch structure was composed of the following fish species:



**Fig 1: Fish species monitored by the State Fishery Service on the lower course of the Dniester River**

Source: Data processed from the State Fishery Service (2011-2017)

The study found that in the Lower Dniester River, the predominant species in industrial / commercial fishing are the Pontic shad (migratory species) and the common bream (semi-migratory species), (fig 1), which confirms the importance of the Lower Danube River for the reproduction of these species. For this purpose, a series of measures can be imposed to improve the breeding conditions of these species, knowing that the Dniester River serves as an aquatic basin for the reproduction of different fish species such as: migratory species from the Black Sea, semi-migratory species from the Dniester river basin, and sedentary species.

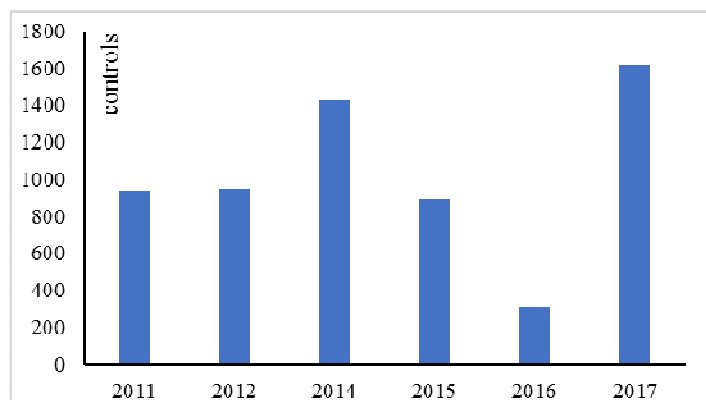
It is worth mentioning that the annual volume of fish catches is heavily dependent on the number of applications for each natural aquatic objective (Table 2).

**Table 2: Catches of industrial and commercial fishing in the Republic of Moldova (2011)**

Fish species	Ștefan Vodă Sector (Lower Dniester)		Soroca Sector (Medium Dniester)		Dubăsari storage lake		Criuleni Sector (Lower Dniester)		Costești – Stâncă storage lake		Cahul Sector	
	pcs./%	Kg./%	pcs./%	kg./%	pcs./%	kg./%	pcs./%	kg./%	pcs./%	kg./%	pcs./%	kg./%
Common roach	0	0	0	0	131 / 6.9	62 / 3.5	471 / 10	185 / 8.8	500 / 7	219 / 2.5	0	0
Chub	0	0	0	0	0	0	56 / 1.2	51 / 2.4	0	0	0	0
Asp	0	0	0	0	48 / 2.5	58 / 3.2	54 / 1.1	96.5 / 4.6	260 / 3.6	482 / 5.5	97 / 0	148.5 / 9.1
Grass carp	273 / 1.3	148.6 / 1.1	0	0	22 / 1.1	28 / 1.5	17 / 0.3	69 / 3.3	0	0	562 / 1.0	505.5 / 31.0
Common nase	0	0	0	0	0	0	166 / 3.54	104 / 4.9	0	0	0	0
Silver bream	0	0	0	0	0	0	62 / 1.3	33 / 1.5	0	0	0	0
Common bream	4220 / 20.56	2400 / 18.8	0	0	791 / 42	566.5 / 31.9	303 / 6.4	275 / 13.2	3187 / 44.6	3327 / 38	4 / 7.4	6.5 / 0.3
Gibel carp	627 / 3	324.6 / 2.5	0	0	625 / 33.2	460.5 / 25.9	142 / 3	74 / 3.5	1100 / 15.4	435 / 5	1200 / 87.4	276.8 / 17.0
Carp	264 / 1.2	626 / 4.9	0	0	39 / 2	92 / 5.1	45 / 0.9	94 / 4.5	747 / 10.4	1390.5 / 15.8	187 / 2.0	390.6 / 23.9
Bighead carp	0	0	0	0	35 / 1.8	197 / 11.1	33 / 0.7	170.5 / 8.1	267 / 3.7	1249 / 14.2	16 / 0.5	26 / 1.5
Silver carp	460 / 2.2	1676.8 / 13.1	0	0	0	0	0	0	108 / 1.5	350 / 4	135 / 1.0	248.6 / 15.2
Zander	412 / 2	544 / 4.2	0	0	114 / 6	134 / 7.5	102 / 2.1	147.5 / 7	822 / 11.5	1069 / 12.2	25 / 0.37	18.35 / 1.12
Pontic shad	13359 / 65	6339 / 49.7	0	0	2 / 0.1	6 / 0.3	3152 / 67	695 / 33.3	0	0	0	0

Source: Data processed from the State Fishery Service (2011-2017)

As for the 2012 report (fig 2), about 947 offenses were detected, flagrantly violating the legislation on the protection of natural biological aquatic resources. Observing the efforts made by the State Fishery Service, we regret to mention that fish poaching persists and it is absolutely necessary to protect these resources for their sustainable use. In 2015 and 2016 respectively, the State Fishery Service organised between 222-312 raids and 113 travels in the territory, and 889 offenses were detected and documented as a result of the activities carried out. During the year 2017, 517 raids and 134 operational trips were organised in the territory and an exceptional number of violations were detected, about 1614 offenses triggering fines in the amount of 677,290 MDL.



**Figure 2: Annual reports, in the period 2011-2017, highlighting the offences.**

Source: Data processed from the State Fishery Service (2011-2017).

### Measures and strategies for the protection of endangered fish species

The organisation of joint raids, with subordinated institutions of the Ministry of Environment, conducted on a monthly basis, and especially during the periods of fishing prohibition, will protect natural biological aquatic resources from illegal manoeuvres leading to degradation of the equilibrium of the fishery fund. For the development of fishery, public authorities in accordance with the Academy of Sciences of Moldova and the specialised institutions will undertake actions meant to stimulate the creation of fisheries and the breeding and reproduction of fishes and aquatic organisms in the natural aquatic basins. Equally worthwhile would be the design and construction of an incubator centre with the status of "Improvement Centre", which would allow the reproduction of the valuable fish species, thus forming a stable equilibrium in the ecosystem. The development of the collaboration among the environmental authorities will be very effective and useful in preventing the negative consequences of anthropogenic activity, along the riparian protection zones and strips. A very important factor is to ensure that the level of water is as constant and sufficient as possible, allowing the spawn deposits areas to be flooded, especially during fish breeding. In a degraded environment, invasive species cause chain reactions such as: predatorism and alteration of valuable fish species habitat, which results in the disturbance of the stability balance in the ecosystem.

Some data obtained from a synthesis of statistical processing have shown that species with aggressive inter-specific behaviour which deposit their spawn in several instances care for their offspring's and possess phenotypic and genotypic plasticity which adapts easily to natural aquatic ecosystems. These features are possessed by fish species such as: stone moroko (*Pseudorasbora parva*), Gibel carp (*Carassius gibelio*), black-striped pipefish (*Syngnathus abaster*), pumpkinseed (*Lepomis gibbosus*). The research was carried out by Temminck et Schlegel (1844), Bloch (1782), Eichwald, (1831).

### Conclusions

In the ecosystems of rivers and lakes, their specific wealth is dramatically lost due to human factor actions that lead to negative consequences resulting in the disappearance of valuable fish species. That is why protecting these resources is very important for their sustainable use.

Systematic monitoring of the status, structure and conditions of hydrobionts' development in ecosystems of natural aquatic basins would improve the current situation. In order to determine the fishery quantity and quality of and to regulate fishing, annual controls will be carried out to detect the health condition of the fish population. In order to prevent and combat poaching and illegal fishing, systematic checks will be carried out with harsher punishment measures, imposing the highest fines possible, because these actions greatly affect the natural ichthyofauna, which leads to a major imbalance in the country's natural water basins.

## Bibliography

- Bulat D., (2009), Structure and functional condition of ichthyocenosis of the Vatra storage lake (Ghidighici) (in original in Romanian), Institute of Zoology of the Moldova Academy of Sciences, Republic of Moldova, [online]. [accessed on 25.09.2018], [https://ibn.idsi.md/sites/default/files/imag\\_file/STRUCTURA%20SI%20STAREA%20FUNCTIONALA%20A%20ICHTHYOCENOZEI.pdf](https://ibn.idsi.md/sites/default/files/imag_file/STRUCTURA%20SI%20STAREA%20FUNCTIONALA%20A%20ICHTHYOCENOZEI.pdf)
- Bulat D.D., (2011), Synthesis of postulates characterising the condition of small river ichthyofauna in the Republic of Moldova (in original in Romanian), Chişinău, [online]. [accessed on 26.09.2018], [https://ibn.idsi.md/sites/default/files/imag\\_file/Sinteza%20postulatelor%20ce%20caracterizeaza\\_0.pdf](https://ibn.idsi.md/sites/default/files/imag_file/Sinteza%20postulatelor%20ce%20caracterizeaza_0.pdf)
- Bulat D., D., Ungureanu L., Usafii M., (2011), Dynamics of invasion and ecology of stone moroko, also known as topmouth gudgeon (*Pseudorasbora Parva*), in the aquatic ecosystems of the Republic of Moldova (in original in Romanian), Chişinău [online]. [accessed on 27.09.2018], [https://ibn.idsi.md/sites/default/files/imag\\_file/Dinamica%20invaziei%20si%20ecologia%20murgoiu\\_lui\\_baltat.pdf](https://ibn.idsi.md/sites/default/files/imag_file/Dinamica%20invaziei%20si%20ecologia%20murgoiu_lui_baltat.pdf)
- Bulat D., D., Ungureanu L., Toderaş I., (2011), Allogeneic fish species in the aquatic ecosystems of the Republic of Moldova (in original in Romanian), Chişinău [online]. [accessed on 27.09.2018], [https://ibn.idsi.md/sites/default/files/imag\\_file/Speciile%20alogene%20de%20pesti%20din%20ecosistemele%20acvatice%20ale%20RM.pdf](https://ibn.idsi.md/sites/default/files/imag_file/Speciile%20alogene%20de%20pesti%20din%20ecosistemele%20acvatice%20ale%20RM.pdf)
- Bulat D., D., Fulga N., Toderaş I., (2016), Invasion of the three-spined stickleback – *Gasterosteus Aculeatus Linnaeus*, 1758 in the Dniester River (limits of the Republic of Moldova), and determining factors (in original in Romanian), Chişinău [online]. [accessed on 27.09.2018], <http://ojs.studiamsu.eu/index.php/real-nature/article/view/626>
- Government Decision (2006), Law regarding the fish fund, fishing and fishery, Republic of Moldova, [online]. [accessed on 24.09.2018], [http://lex.justice.md/document\\_rom.php?id=68F56F6D:8E74D2B2](http://lex.justice.md/document_rom.php?id=68F56F6D:8E74D2B2)
- Bulat D.D., (2016), Ichthyofauna of the Dniester River and the Prut River (in original in Romanian), Chişinău [online]. [accessed on 27.09.2018], <file:///C:/Users/User/Desktop/uefscd/627-2130-1-PB.pdf>
- Bulat D., (2017), Ichthyofauna of the Republic of Moldova: threats, trends and recovery recommendations, Monograph (in original in Romanian), Chişinău [online]. [accessed on 28.09.2018], <http://zoology.asm.md/uploads/File/Publicatii/BULAT%20MONOG%20II.pdf>
- Munteanu (Pila), M., Stanciu, S., 2018, Institutions, Regulations, Controls and Results in the Fisheries Sector of the Republic of Moldova, 31st IBIMA Conference: Innovation Management and Education Excellence through Vision 2020 (25-26 April 2018, Milan, Italy), <http://ibima.org/accepted-paper/institutions-regulations-controls-and-results-in-the-fisheries-sector-of-the-republic-of-moldova>
- The State Fishery Service (2011-2017), Activity Reports, Republic of Moldova, [online]. [accessed on 25.09.2018], <http://www.sp.gov.md/raport.html>
- Тромбицкий И., Бушуев, С., (2011), КОМПЛЕКСНЫЕ МОЛДО-УКРАИНСКИЕ ИССЛЕДОВАНИЯ ИХТИОФАУНЫ ВОДОЕМОВ БАСЕЙНА НИЖНЕГО ДНЕСТРА (The Moldavian-Ukrainian complex regarding the ichthyofaunistic researches of the lower basin of the Danube), [online], [accessed on 15.06.2018], [http://dniester-basin.org/wp-content/uploads/2012/03/report\\_Dniester\\_fish\\_expedition-2011\\_21March2012\\_Rus\\_FINAL.pdf](http://dniester-basin.org/wp-content/uploads/2012/03/report_Dniester_fish_expedition-2011_21March2012_Rus_FINAL.pdf) pp 122

## Structural and Functional Aspects of the Natural Aquatic Ecosystems in the Republic of Moldova

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### Abstract

The present paper proposes the presentation and analysis of the structural-functional state of the natural aquatic ecosystems in the Republic of Moldova. The aim of the paper is to study the ichthyofauna of the natural aquatic ecosystems and to forward a comparative analysis from the point of view of the role that each river plays in the ecosystem. The status of the environmental factors and stability are determined by structural-functional status indices that directly or indirectly influence the ichthyofaunistic diversity. In most ichthyocenoses of the natural aquatic ecosystems in the Republic of Moldova, the species with vital cycle are dominant, along with a massive degradation of the population with a long life cycle. In all natural aquatic ecosystems, the richest diversity of ichthyofaunistic and fishery production is found in the lower courses of the Dniester River and the Prut River due to the ecotone zone. As for the diversity of the fish population (sabre carp, ide, streber, common nase, Romanian barbel, burbot), the Prut river significantly exceeds the Dniester river, which denotes a less pronounced anthropogenic phenomenon of the Prut river compared the Dniester River. An essential factor in maintaining a multidisciplinary fishery production is the systematic water quality monitoring meant to exclude excessive mineralization or pollution, a biological improvement, and a populating with spawns that would change today's unfavourable situation.

**Keywords:** *Republic of Moldova, aquatic ecosystems, ichthyofauna*

### Introduction

The ichthyofaunistic diversity of natural aquatic ecosystems contains relict endemic species of the Danube and Dniester as well as allogeneic taxons of Asian and North American origin. The Dniester River exhibits hydrobiotopes in which the following fish species survive: gobies, European bitterling, common bleak, loaches complex, *undreaua* and Gibel carp. This demonstrates a decline in indigenous and medium and large species, favouring the expansion of the euritope species with a short life cycle. The ichthyofaunistic diversity of small rivers has undergone significant changes since the second half of the 20th century due to the activities of riverbed setup, pond drainage, domestic waste pollution and chemical addition of various compounds originating from farming.

### Short Literature Review

The natural normalization of the fish population can be conceived as a biological improvement of the aquatic ecosystems and the populating with high value spawns. (Leuca et al., 2006). One of the most important factors for maintaining the ecological capacity of natural aquatic ecosystems is their multiannual monitoring and the existence of the information system on the quantity, quality, status of the ecosystem and their dynamics. (Gîlcă et al., 2006). Some studies show that due to the actions of acclimatization of the new hydrobionts and the expansion of the allogeneic species in the ichthyofaunistic diversity increased insignificantly in the years 1997-2000 compared to the years 1959-1961 (Usatfi et al. 2011). Many species of stenobiont fish (*Gobio*, *Romanogobio*, *Rhodeus*, *Squalius*, *Cottus*), also called

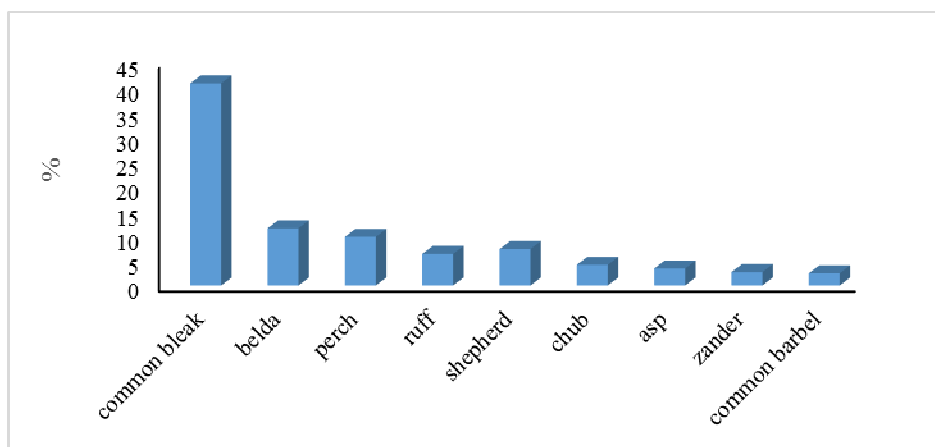
clean-water indicating fishes, in order to survive, are forced to adapt and even proliferate in case of success (Bulat, 2017).

## Materials and Methods

The information on the ichthyofaunistic diversity for the natural aquatic ecosystems in the Republic of Moldova was obtained from the specialised literature, consulted from the Clarivate Analytics, Scopus, Google Academic databases. For the analysis of the indigenous fish species we used data provided by the Academy of Sciences of Moldova, the Institute of Zoology of the Academy of Sciences of Moldova. The data collected were statistically sorted and processed. The results obtained were compared with other data from the literature for an appropriate interpretation.

## Aspects specific to the natural aquatic ecosystems of the Republic of Moldova

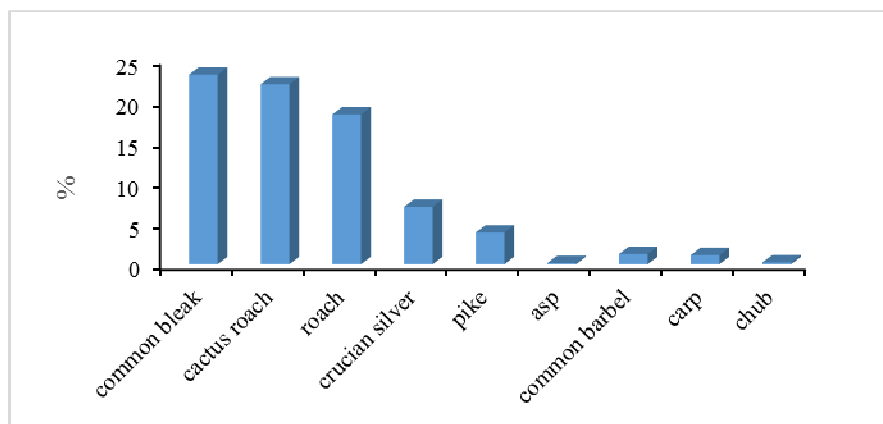
The comparative aspects between the two major aquatic macro-ecosystems have become possible due to the multiannual research conducted. The Prut River significantly exceeds the Dniester River in terms of ichthyologic diversity and rare species such as: sabre carp, ide, Romanian barbel, burbot, which inhabit these two aquatic ecosystems. In the Dniester River it encounters fish species from the category of loach as *Clupeidae* (Pontic shad and Black Sea shad), the semi-migratory species as sabre carp (*Pelecus cultratus*), and although this species is on the brink of extinction in the Dniester River. In the Prut River it witnesses the beginning of the rehabilitation of the same fish species. The *Gymnocephalus* complex is more common in the Prut River compared to the Dniester River. Due to the faster flow of water, low transparency and steep banks without vegetation, the growth rates of the fish production in the Prut River are lower than in the Dniester River, but in the Prut River the hydrobiotopic features is characterized by numerous deep pits and meanders shelter fish species such as wels catfish (*Silurus glanis*), common barbel (*Barbus barbus*), European carp (*Cyprinus carpio*), common nase (*Chondrostoma nasus*) and burbot (*Lota lota*). In the Dniester River, the ichthyogenous fauna benefits from a richer aquatic vegetation, a favourable factor for the nutrition, fattening and sheltering of the juvenile population, especially of the allogeneic taxons, which prefer hydrobiotopes rich in submerged aquatic vegetation and a favourable water thermal regime. Comparative aspects of fish species which predominate in natural aquatic ecosystems are presented in figures 1 and 2.



**Fig 1: Fish species predominant in the Prut River**

Source: Data processed from Bulat (2017).

The hydrological and biological importance of small rivers is also a major one because they supply large rivers, and when fish species are endangered by various anthropogenic causes or aggressive environmental factors they are sheltered in small rivers to feed and multiply. A very important factor is that many small rivers suffer from various natural factors such as high sulphur content, iodine deficiency, increased hardness and excessive mineralization of water, and as a result the ichthyofaunistic diversity is subjected to substantial negative changes.



**Fig 2: Fish species predominant in the Dniester River**

Source: Data processed from Bulat (2017).

The Botna River is a tributary of the Dniester River, with about 7 species of fish comprised in its ichthyofauna, most of them belonging to the Cyprinidae family (table 1).

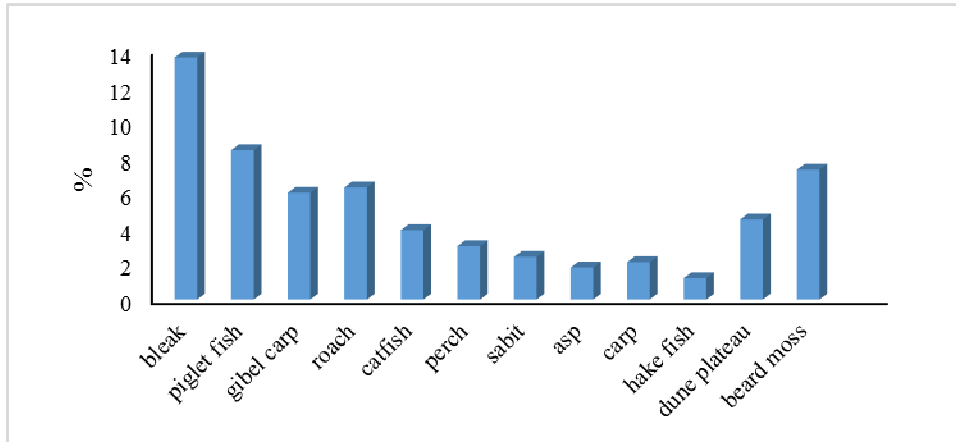
**Table 1: Fish species in the Botna river basin**

Fish species	Upper sector	Lower sector
<i>Cyprinidae</i>		
<i>Pseudorasbora parva</i>	37	51
<i>Rhodeus amarus</i>	10	24
<i>Carassius gibelio</i>	10	14
<i>Romanogobio kesslerii</i>	12	6
<i>Alburnus alburnus</i>	-	17
<i>Rutilus rutilus</i>		
<i>Gobiidae</i>		
<i>Babka gymnotrachelus</i>	4	-

Source: Data processed from Cepurnova e2006).

All the species in this river are characterised by small size, slow growth rate and short life cycle. These peculiarities are due to the unstable hydrological and ecological conditions of the river. The Bâc River, which is located in the Chisinau municipality, is also of interest from the ichthyofaunistic viewpoint. From upstream to the North-Station region, 4 representative associations were identified: *Gibel carp* (loaches complex); common bleak (*Sarmatic gudgeon*), cactus roach (*Rutilus virgo*); European perch (*Perca fluviatilis*), European bitterling (*Rhodeus amarus*). It could appreciate that the Bâc River ichthyofauna constitutes a specific but erroneous richness because the river's upper section has practically drained completely as a result of fragmentation; the middle sector is heavily polluted and supplied from the ichthyofaunistic perspective only by the Ghidighici Lake; and the lower sector owes its fishery

diversity to the Dniester river. The Prut River tributaries play a significant role in maintaining the ecological balance of the hydrographical basin. Researches have revealed that in these rivers there are around 12 predominant fish species and subspecies (figure 3).



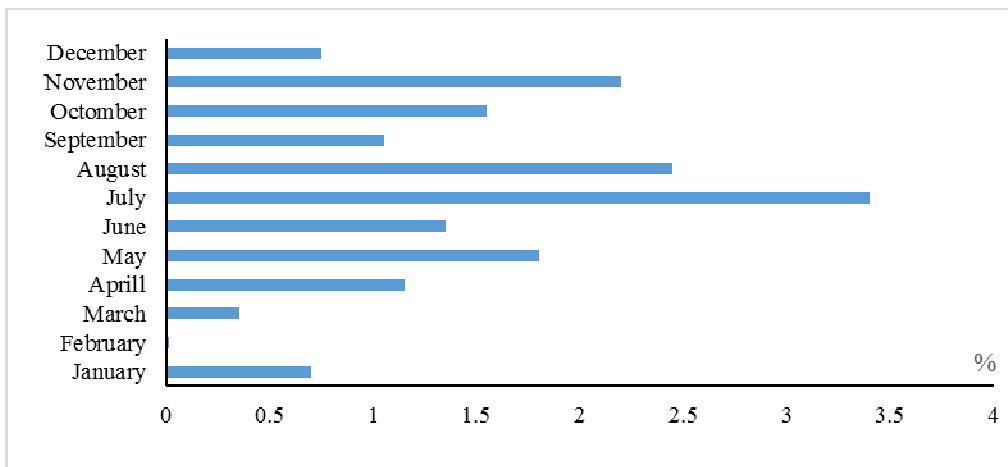
**Fig 3: Diversity of the ichthyofauna of the Camenca, Delia, and Colmățui rivers**

Source: Data processed from Usatfi (2006).

What is characteristic for all small rivers is the fact that these rivers lack the rare and economically valuable species, and so these species do not migrate to its tributaries for reproduction.

### Comparative aspects regarding water quality in the natural aquatic ecosystems of the Republic of Moldova

The water quality of the Dniester, Prut and Danube rivers is characterized by moderate pollution due to biogenic elements such as copper compounds, phenols, and petroleum products. A wider monitoring was carried out in Giurgiulesti, where the dissolved oxygen shortage was found during the summer, which represents a major danger to the fishery production.

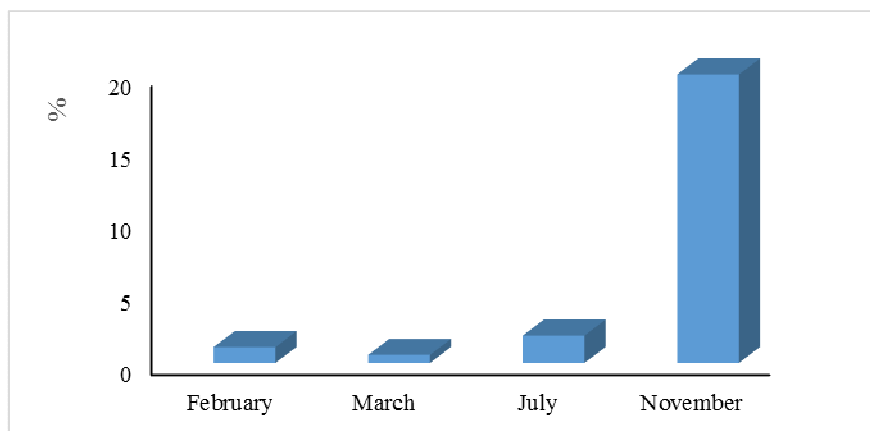


**Fig. 4: The concentration of nitrites in Dniester River (2005).**

Source: Data processed from Gilcă (2006).



The water quality in small rivers is worse compared to the quality of large rivers, because massive pollution is predominant there, with ammonium ions, nitrates, copper compounds, detergents. Consequently, in the last decades, only fish resistant to toxic waste have survived in the small rivers. Every year samples are collected to control the water quality of rivers and ponds. As an example shown in figure 5, the water quality of the Gârla Mare River, at Blindești village, was analysed in different periods of the year.



**Fig. 5: Concentration of active anionic detergents in the Gârla Mare River (2005).**

Source: Data processed from Gilcă (2006).

## Conclusions

The comparative aspects between the two major aquatic macro-systems are studied and this comparison is possible due to the multiannual research studies. The Prut River significantly exceeds the Dniester River when it comes to the histological variety and the population of rare species such as: ide, sabre carp, burbot, while the vegetative richness of the Dniester River favours the predominance of allogenic fish species that prefer hydrobiotopes rich in such submerged vegetation. As a result, the small rivers, due to biotic and abiotic factors, cannot shelter a large diversity of fish, compared to the Dniester River or the Danube River, but they form biocenoses that allow the development of interdependent fishery associations. Consequently, the small river ecosystems become more sensitive to the impact of negative factors. The systematic monitoring of water quality will eliminate the negative processes such as water mineralization and their subsequent pollution resulting from the anthropic factor, and the population with moderate-sized spawns will solve the problems caused by the rarity of many fish species in this period.

## References

- Bulat D., 2017, Ichthyofauna of the Republic of Moldova: threats, trends and recovery recommendations, Monograph (in original in Romanian), Chișinău [online]. [accessed on 29.09.2018], <http://ecotiras.org/docs/berg/BULAT%20MONOG%20II%20SITE.pdf>
- Bulat, Dtru., Bulat, D., Ungureanu L., Usatii, M., 2011, Dynamics of invasion and ecology of stone moroko, also known as topmouth gudgeon (*Pseudorasbora Parva*), in the aquatic ecosystems of the Republic of Moldova (in original in Romanian), Chișinău [online], [accessed on 7.09.2018], [https://ibn.idsi.md/sites/default/files/imag\\_file/Dinamica%20invaziei%20si%20ecologia%20murgoiului\\_baltat.pdf](https://ibn.idsi.md/sites/default/files/imag_file/Dinamica%20invaziei%20si%20ecologia%20murgoiului_baltat.pdf)
- Cepurnova, L., Șmatoc, V., 2006, The current state of the Botna river ichthyofauna (in original in Romanian), The Human and Animal Biology Chair, State University of Moldova Chișinău [online].

[accessed on 29.09.2018], pp. 128-133, [http://www.berg-bendery.org/new\\_resources/book/Berg-book.pdf#page=140](http://www.berg-bendery.org/new_resources/book/Berg-book.pdf#page=140)

Gîlcă, G., Cozari, L., 2006, The evaluation of aquatic objects pollution on the territory of the Republic of Moldova in 2005 and the trend of water quality modification in the period of the years (2001-2005) (in original in Romanian), Environment Quality Monitoring Division within the State Hydrometeorology Service, Chişinău [online]. [accessed on 29.09.2018],

[https://ibn.idsi.md/sites/default/files/j\\_nr\\_file/mediul%20ambiant\\_5\\_2006\\_0.pdf#page=16](https://ibn.idsi.md/sites/default/files/j_nr_file/mediul%20ambiant_5_2006_0.pdf#page=16)

Leuca, P., Usafii, M., A., Crepis, O., Lobcenco, V., 2018, The ecological-biological argumentation for reintroducing the vimba beam and the perch in the Dubăsari storage lake (in original in Romanian), Chişinău [online]. [accessed on 29.09.2018], pp. 83-84, [http://www.berg-bendery.org/new\\_resources/book/Berg-book.pdf#page=140](http://www.berg-bendery.org/new_resources/book/Berg-book.pdf#page=140)

Munteanu (Pila), M., Stanciu, S., 2017, Preliminary Research Concerning the Fisheries Sector Potential of the Republic of Moldova, The 30th International-Business-InformationManagement-Association Conference: Vision 2020: Sustainable Economic Development, Innovation Management, and Global Growth, (Madrid, Spain, Nov. 08-09, 2017), <http://ibima.org/conference/30th-ibima-conference/#ffs-tabbed-112>.

Munteanu (Pila), M., Stanciu, S., 2018, Evolution and Measures of the Fish Fauna Recovery in the Republic of Moldova, 31st IBIMA Conference: Innovation Management and Education Excellence through Vision 2020 (25-26 April 2018, Milan, Italy), <http://ibima.org/acceptedpaper/evolution-and-measures-of-the-fish-fauna-recovery-in-the-republic-of-moldova>.

Usafii, M.A., Crepis, O., Cebanu, A., Leuca, P., (2006), Structural-functional particulars of ichthyofauna in the small rivers of the medium and lower Prut River basin (in original in Romanian), Chişinău [online]. [accessed on 29.09.2018], pp. 137-140, [http://www.berg-bendery.org/new\\_resources/book/Berg-book.pdf#page=140](http://www.berg-bendery.org/new_resources/book/Berg-book.pdf#page=140)

## Probabilistic Assessment of Projected Deviation in a General Population When Applying the Monetary Method

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### Abstract

The paper analyzes the drawbacks of the well-known monetary method in case selected statistical procedures are used in auditing. It is shown that, with equal absolute values of deviations in financial statements, the application of the monetary method in different conditions may lead to different results. An improved monetary method, which lacks such drawbacks, is proposed.

**Keywords:** audit, selected statistic procedures, monetary method, improved monetary method

### Introduction

International Standards on Auditing (ISA) 500 "Audit Evidence" state that when choosing items for the examination of account turnovers or account balances, the auditor can use such methods as selecting all items (100% examination), selecting specific items, and audit sampling.

According to ISA 530 "Audit Sampling and Other Means of Testing", when using a statistical sampling approach, the auditor should use the techniques of mathematical statistics to select elements and evaluate the examination results of the selected elements. Such examination, as ISA 530 claims, involves extrapolating the deviation found in the sample on the entire population (account turnover or account balance) and as a result the auditor detects the so-called "projected" deviation - the most probable deviation the population contains.

Classic papers on auditing (Adams R., 1995; Arens, Loebbecke, 1995; Jaenicke, O'Reilly, 1997; Robertson, 1993) review the so-called "monetary" method for statistical sampling and evaluating the examination results. The special feature of the monetary method is that the element of the population is not a natural item (document, transaction), but a monetary unit - ruble. When this method is used, sampling consists of "n" rubles (the ruble included in the value of the selected document is an element of sampling) rather than "n" natural items<sup>1</sup>). In order to assess the results of the examined elements of such a sample, the authors suggest a method based on the hypothesis of binomial distribution of a random variable (number of deviations in the sample).

It is known from the theory of probability that if a population of size N contains M of the observed (in our case – deviating) elements, then number m of observed (deviating) elements in a sample of size n is a random variable distributed according to the binomial law. It is also known that under certain conditions ( $N > 10n$ ,  $M/N < 0.1$ ) probability R of binomial distribution can be determined quite precisely by the Poisson formula:

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<sup>1</sup> In the above-mentioned literature, such a document, whose value contains our monetary element of the population - ruble, is called a "logical element".

$$R = (pn)^m * e^{-pn} * \frac{1}{m!}, \quad (1)$$

where  $N$  is the size of the population;  $M$  is the number of observed (in our case - deviating) elements in the population;  $n$  is the size of the sample;  $m$  is the number of observed (deviating) elements in the sample of size  $n$ ;  $p = \frac{M}{N}$  is the relative number of observed (deviating) elements in the population.

Setting an acceptable value of probability  $R$  ( $R = 0.1$  or  $R = 0.05$ ), the Poisson formula can be used to define value  $M$  and  $p$  for certain magnitude  $m$  ( $m = 0, 1, 2, \dots$ ) – the ultimate possible (for the set probability) number of deviating elements in the population (in absolute and relative units).

The sum of errors in the population (let us designate it as  $P$ ) according to the authors (Adams R., 1995; Arens, Loebbecke, 1995; Jaenicke, O'Reilly, 1997; Robertson, 1993) can be determined from the relative sum of deviations in the sample (let us designate it as  $x$ ) using the dependence

$$P = M * x = p * N * x \quad (\text{rub.}), \quad (2)$$

where  $x = k / j$ ;  $k$  is the sum of deviation (rub.);  $j$  is the book value of the document, containing deviation (rub.).

For example, the population consists of 10 000  $k$  rubles (let us designate the size of the population expressed in rubles as  $J$ , then  $J = 10\,000\,000$  rubles). The size of sample  $n = 100$  rubles (100 "logical elements"). As a result of examining the sampled population, it is set that it contains one deviation ( $m = 1$ ). The book value of the document, where the deviation is found,  $j = 5,000$  rubles, the sum of deviation  $k = 500$  rubles. The relative sum of deviation  $x = \frac{k}{j} = 500 / 5\,000 = 0.1$ . In other words, a ruble, being the

unit of the sample and included in the value of the document, containing a deviation, deviates in the amount of 10 kopecks (one tenth). It follows from the table values of binomial distribution, presented in [2 - 4], that at  $m = 1$  and  $n = 100$  the relative number of deviating elements in the population with 95 percent probability will not exceed 4.7% ( $p=0.047$ ) – see Table 1.

**Table 1 : The dependence of ultimate values of deviations in the population on the sample size and the number of deviations in the sample at 95 percent probability**

Sample size <i>n</i>	Number of deviations in sample <i>m</i>										
	0	1	2	3	4	5	6	7	8	9	10
25	11.3	17.6	*	*	*	*	*	*	*	*	*
30	9.5	14.9	19.5	*	*	*	*	*	*	*	*
35	8.2	12.9	16.9	*	*	*	*	*	*	*	*
40	7.2	11.3	14.9	18.3	*	*	*	*	*	*	*
45	6.4	10.1	13.3	16.3	19.2	*	*	*	*	*	*
50	5.8	9.1	12.1	14.8	17.4	19.9	*	*	*	*	*
55	5.3	8.3	11.0	13.5	15.9	18.1	*	*	*	*	*
60	4.9	7.7	10.1	12.4	14.6	16.7	18.8	*	*	*	*
65	4.5	7.1	9.4	11.5	13.5	15.5	17.4	19.3	*	*	*
70	4.2	6.6	8.7	10.7	12.6	14.4	16.2	18.0	19.7	*	*
75	3.9	6.2	8.2	10.0	11.8	13.5	15.2	16.9	18.4	20.0	*
80	3.7	5.8	7.7	9.4	11.1	12.7	14.3	15.8	17.3	18.8	*
90	3.3	5.2	6.8	8.4	9.9	11.3	12.7	14.1	15.5	16.8	18.1
100	3.0	4.7	6.2	7.6	8.9	10.2	11.5	12.7	14.0	15.2	16.4
125	2.4	3.7	4.9	6.1	7.2	8.2	9.3	10.3	11.3	12.2	13.2
150	2.0	3.1	4.1	5.1	6.0	6.9	7.7	8.6	9.4	10.2	11.0
200	1.5	2.3	3.1	3.8	4.5	5.2	5.8	6.5	7.1	7.7	8.3

Ultimate values of the number of deviations *p* %

Source: compiled according to materials (3)

Then the sum of deviations in the population with 95 percent probability will not exceed the variable

$$P = M * x = p * J * x = 0.047 * 10\,000\,000 * 0.1 = 47\,000 \text{ rub.}$$

It should be noted that this technique is not to be used if the number of deviation elements in the sample is more than one ( $m = 2, 3, 4, \dots$ ). Consider an example with the premises similar to the previous one (the size of population  $J = 10,000,000$  rubles, the size of sample  $n = 100$  rubles). Let the sampled population contain two deviations ( $m = 2$ ). Let the relative sum of deviation in one document  $x_1 = 0.1$ , in the other  $x_2 = 0,05$ . Then variable  $P$ , which will not be exceeded by the sum of deviations in the population with 95 percent probability, according to the authors [3], can be determined as follows:

$$P = P_1 * J * x_1 + (P_2 - P_1) * J * x_2 ,$$

where  $P_1 = 0.047$  (at  $n = 100, m = 1$ );  $P_2 = 0,062$  (at  $n = 100, m = 2$ ) – see Table 1.

Then

$$\begin{aligned} P &= P_1 * J * x_1 + (P_2 - P_1) * J * x_2 = \\ &= 0,047 * 10\,000\,000 * 0.1 + (0.062 - 0.047) * 10\,000\,000 * 0.05 = \\ &= 54\,500 \text{ rub.} \end{aligned}$$

It is obvious that this technique is not suitable at least due to the fact that if the position of the documents containing deviations ( $x_1 = 0,05$ ,  $x_2 = 0,1$ ) is interchanged, a different result will be obtained:

$$\begin{aligned} P &= P_1 * J * x_1 + (P_2 - P_1) * J * x_2 = \\ &= 0.047 * 10\,000\,000 * 0.05 + (0.062 - 0.047) * 10\,000\,000 * 0.1 = \\ &= 38\,500 \text{ rub.} \end{aligned}$$

Moreover, variable P determined in such a way represents a certain "ultimate" value, which will not be exceeded by the possible sum of deviations with 95 percent probability.

At the same time, as mentioned above, ISA 530 "Audit Sampling" contains a different instruction: the standard prescribes the auditor to assess the most probable (projected) deviation in the population, rather than the "ultimate" one. Bearing in mind ISA 530 standards and making point estimation of projected deviation in the population, the auditor should assess the risk of the sample, which can give an answer to the question about how probable it is that the expected deviation can exceed the admissible deviation (threshold of material misstatement applicable for the analyzed population – c. A3 ISA 530).

Assessment of the projected (most probable) deviation in the population based on the "monetary" method is reviewed in (Loginenkov, A.V., 2014). The method of projecting deviations proposed in (Loginenkov, A.V., 2014) is based on the hypothesis of normal distribution of the size of relative deviations in the population.

From mathematical statistics (generalized mean value theorem) it is known that the general mean at normal distribution can be evaluated by the sample mean. Then, upon determining the sample mean

$$\bar{x} = \sum_{i=1}^n x_i / n,$$

where  $x_i$  is a relative deviation in the i-th element included in the sample; n is the sample size, the projected (most probable) deviation can be estimated in the population:

$$K = J * \bar{x} = \frac{J}{n} * \sum_{i=1}^n x_i,$$

where  $\sum_{i=1}^n x_i = x$  is the relative sum of deviations in the sample.

For the above example (population size J = 10 000 000 rubles, sample size n = 100 rubles, relative sum of deviations in the sample x = 0.1) the most probable deviation in the population will amount to

$$K = \frac{J}{n} * x = (10\,000\,000 / 100) * 0.1 = 10\,000 \text{ rub.}$$

The lack of this technique is the fact that the hypothesis of normal distribution of the relative size of deviations in the population is not statistically justified. The literature on auditing recognizes the hypothesis on normal distribution of a random variable - the absolute size of deviations in the population. The author of this paper obtained experimental validation of this hypothesis in due course. The size of relative deviations represents a random variable, being the quotient obtained from division of two random variables: the absolute size of deviations and the book value of the document containing deviation. The distribution law of the random variable (book value of the document) can be different. Due

to this, the hypothesis on normal distribution of the size of relative deviations in the population can hardly be recognized as acceptable.

A simple example can be given to confirm that the above techniques may produce an inadmissible scatter of results.

Let the population be, as before, 10 000 k rubles ( $J = 10\,000\,000$  rubles), sample size  $n = 100$  rubles. The book value of documents varies within  $j = 5\,000$  rubles to  $j = 50\,000$  rubles. The sum of identified deviation is the same as before,  $k = 500$  rubles.

If the book value of the document where deviation has been found  $j = 5\,000$  rubles, then the relative sum

of deviation  $x = \frac{k}{j} = 500/5\,000 = 0,1$ . In this case, as mentioned above, the ultimate value, which will

not be exceeded by the possible sum of deviations in the population with 95 percent probability, will be  $P = 47\,000$  rubles, and the most probable sum of deviations in the population will be  $K = 10\,000$  rubles.

If the book value of the document where deviation has been found is  $j = 50\,000$  rubles, then at the same

absolute size of deviation the relative sum of deviation  $x = \frac{k}{j} = 500/50\,000 = 0.01$ . In this case, the

ultimate value, which will not be exceeded by the possible sum of deviations in the population with 95 percent probability will be  $P = 4\,700$  rubles, and the most probable sum of deviations in the population will be  $K = 1000$  rubles. It is obvious that such a scatter of possible results is not acceptable for the auditor.

It is possible to avoid the above drawbacks, if, when applying the monetary method, the relative size of deviations is obtained not by the ratio of the absolute size of the identified deviation to the book value of the document containing deviation, but to its average value, which is determined from the sum of book values of all documents included in the population, and their number. In this case the random variable (relative size of deviations in the population) will be distributed according to the normal law, because it will be related to a random value (absolute size of deviations in the population) by a constant factor.

Let us see how the proposed technique can be used in a specific context.

Let the population be, as in the examples above, 10 000 k rubles ( $J = 10\,000\,000$  rubles), sample size  $n = 100$  rubles. The book value of documents varies within  $j = 5\,000$  rubles to  $j = 50\,000$  rubles, with the total number of documents  $N = 1\,000$ . The sum of identified deviation is the same as before,  $k = 500$  rubles.

The average value of document

$$\bar{j} = J / N = 10\,000\,000 / 1\,000 = 10\,000 \text{ rub.}$$

The relative size of error

$$x = k / \bar{j} = 500 / 10\,000 = 0.05.$$

The most probable error in the population

$$K = \frac{J}{n} * x = (10\,000\,000 / 100) * 0.05 = 5\,000 \text{ rub.}$$

Let us compare the obtained result with the result that can be determined using the well-known method, called in literature by the method of "assessing the average amount sum per unit". The projected deviation in the population can be determined with the use of this method in the following way;

$$K = \frac{N}{n} * k = (1\ 000 / 100) * 500 = 5\ 000 \text{ rub.},$$

where  $N = 1\ 000$  is the population size in natural units;  $n = 100$  is the sample size in natural units;  $k = 500$  rubles is the sum of deviations in the sample.

As we can see the result is identical to the one obtained above with the monetary method, which follows from the obvious equation:

$$K = \frac{N}{n} * k = \frac{N}{n} * \bar{j} * (k / \bar{j}) = \frac{J}{n} * x,$$

since  $N * \bar{j} = J$ , a  $k / \bar{j} = x$ .

Thus, when the monetary method is used in the course of selected statistical procedures, the absolute sum of deviations in the sample should be attributed to the average value of the document, rather than to its book value.

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## References

1. Adams R. Fundamentals of auditing. – Moscow: Audit-Unity. – 1995. – 560 p.
2. Arens, A., Loebbecke, J. Auditing. – Moscow: Finances and statistics. – 1995. – 560 p.
3. Montgomery's Auditing / Jaenicke, H., O'Reilly, V. et al. – Moscow: Auditing. – 1997. – 541 p.
4. Robertson, D. Auditing. – Moscow: Contact. – 1993. – 496 p.
5. Loginenkov, A.V. Classifying and systematizing statistical sampling methods in auditing / A.V. Loginenkov // Auditing and financial analysis. – 2014. – No.1. – PP. 173-205.



## **Impact of Market Turbulences On Employment Market in Slovakia**

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### **Abstract**

Okun's law being as one of the empirical relationship that express the relationship between the deviation of the unemployment rate and the deviation of the output growth became one of the most cited metrics regarding the rate of an unemployment. Despite having the explanatory or causal conclusions, it can provide guide to country stabilization policy and an indicator of its success. The main finding of this paper are that Okun's law does not work perfectly on time series that include the turbulences on global market. We found the determination coefficient of regression model to be quite low: 0, 4781. The behaviour of GDP and UR are consistent in periods before crisis and after stabilization after crisis. The determination coefficients of regression are 0,846 and 0, 9617 respectively. The effects of crisis and integration Slovak republic into Euro zone have some significant results on behaviour of indicators of labour market.

**Keywords:** Gross Domestic Product, Unemployment Rate, Okun's Law, Slovakia, Financial Crisis

### **Introduction**

This paper asks how well Okun's Law explains unemployment changes in Slovakia in respect to financial crisis in 2008 and as a result of globalisation when Slovakia joined EU in 2004, entered Schengen area in 2007, joining Eurozone in 2009. That all led to increase of foreign investments and changed the labour market in the country. As already noted by Okun, the analysis of employment is either difficult or even not possible during periods of high fluctuations. Therefore, we studied employment market of Slovakia for three different periods - first since 1999 to 2017 and second since 2011 to 2017.

### **Methods**

We studied statistical data gathered by Eurostat regarding Unemployment Rate (UR) and Gross Domestic Product (GDP) in Slovakia since 1998 to 2017.

In 1962 Okun defined three different methods to estimate the behaviour of parameters of model that correlate UR against GDP - 1) first difference, 2) trial gaps and 3) fitted trends and elasticity. We analyse the time series for the span of years 1998-2017, as well separated the time series in two chunks before and after Great Recession of 2008-2009. Afterwards we discuss the possible effect of predictions the European Commission published recently.

## **Theory and Focus**

### ***GDP and unemployment in Slovak Republic***

Unemployment is influenced by the development of Gross Domestic Product (GDP), which is one of the basic indicators of measuring the economy's performance in the country.

At the end of the 1990s and beginning of 2000s, unemployment in the Slovak Republic remained high, reaching 19,2% according to Statistics Office of SR in 2001 (Statistical Office of the Slovak Republic, 2018) or 12,4% according to Eurostat in 2001 as well (Eurostat, 2018b). The situation began to change in 2002, when unemployment began to decline, which could be seen as a consequence of restructuring measures in certain sectors and, at the same time, thanks to the recovery of the economy, also thanks to inflow of foreign investment. Following the new employment policy of the Slovak Republic due to the accession of Slovakia to the EU, employment started to decrease significantly, reaching a single-digit level of 9,6% in 2008. (Statistical Office of the Slovak Republic, 2018). GDP has been steadily increasing and strong economic growth has been reflected in the labour market in the form of a rise in labour force.

The economic crisis in 2008 affected the area of unemployment, when unemployment has begun to increase again after a longer period of decline. The crisis has also been reflected in GDP, which unlike in previous years has fallen, which has also been reflected in higher unemployment. At the end of 2010, unemployment was the highest for a relatively long period. GDP has risen, but its impact on unemployment has not shown. In this year, the crisis did not go so far and unemployment has stopped growing. In the coming year, the unemployment again began to decline. By the end of 2011, and again during 2012, we are seeing rising unemployment, despite the increase in GDP. The rise in unemployment in Slovakia was one of the most visible effects of the global economic crisis.

Beginning in 2013 to the present, the unemployment rate has declined steadily to the present historical minimum. In December 2017, the registered unemployment rate reached a historic minimum of 5,94%, in January 2018 it was only 5,88%, in March 2018 only 5,55%. The unemployment rate, calculated from the total number of jobseekers, reached 7,12% in January 2018 (compared with December 2017 – 7,18%). (Central Office of Labour, Social Affairs and Family, 2018). Given the forecasts in the economy and the state of the economy, it is assumed that the positive development will continue. Active labour market policy instruments are being implemented for graduates of secondary schools and universities, as Slovakia has a lack of qualified workforce.

### ***The impact of direct foreign investment on the Slovak economy***

In the interest of developing international economic relations, the Slovak Republic has started to remove legal barriers related to foreign business in Slovakia since 1990 and has begun to introduce economic measures to support and allow foreign business entities in Slovakia. (Milošovičová, 2016) „Since 1993 Slovakia has been one of the most popular investment destinations in the region, because, as one of the most developing markets it offers to investors various reasons why to invest in the country” (Milošovičová and Stachová 2016) – its favourable geographic position, accessibility and quality of the local suppliers, effective and relatively cheap workforce. The attractiveness of our country has increased after the accession of the Slovak Republic to the European Union on 1 May 2004 and the introduction of the euro since 1 January 2009 has increased both foreign direct investment and foreign trade in Slovakia, which has contributed to faster GDP growth and higher living standards. According to the latest available data of the National Bank of Slovakia (Foreign Direct Investment, 2016), the total volume of foreign direct investment in Slovakia reached 41.496.499.000 € in 2016. Among the leading investors are the Netherlands, Czech Republic, Luxembourg, South Korea, Germany and Austria.

The arrival of foreign investors positively influenced the Slovak economy - new jobs have been created, new subcontracting relations has been established, foreign trade support started to be emphasized. Increase in foreign direct investment positively affected also the economic growth of the country (in 2007, the economic growth in Slovakia reached a record level of 10.8%) (Eurostat, 2018a). Hajdúchová and Giertliová (2015) state that the multiplier effect of investments, which means that if investments are spent efficiently, they bring faster GDP growth and lower unemployment, is confirmed. "Investments clearly contributed to the decline in the unemployment rate so nationwide as well as in individual regions, and to the growth in living standards and consumption by households." (Stachová and Šuplata, 2013) The fact that investments are directed mainly to export industries has both a positive and a negative side. On the one hand it is good, because as a result of mass production we are highly competitive, our economy is growing and wages are rising. On the other hand, such development can have a negative impact, because if we increase wages in the sector, investors may move their production to other countries (eg. Romania, Ukraine).

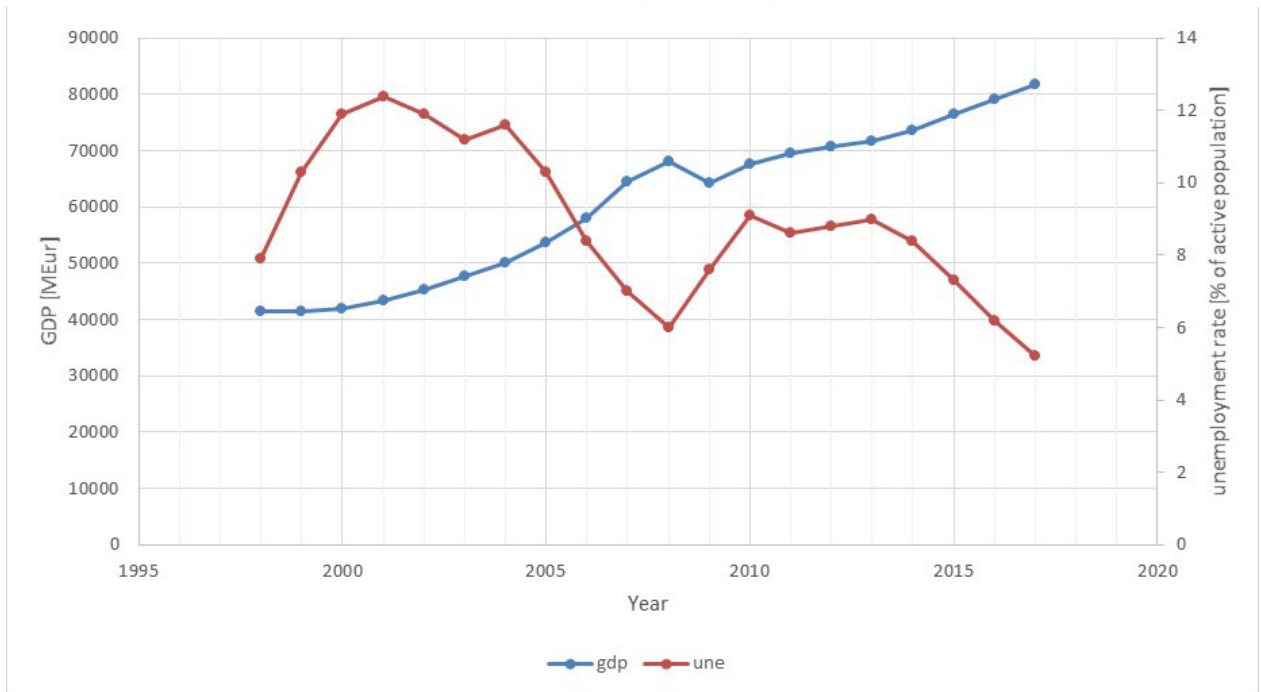
**Okun's law**

Okun's law (Arthur Okun 1928–1980) was an American economist that in 1962 proposed the relation between changes of GDP to changes of unemployment rate. (Okun, 1962) He proposed three different methods of use of the GNP and unemployment rate data. One of them is to use first differences of input data and correlating them. As result of his findings is a linear regression method that can be used for prediction of HNP in respect to unemployment rate or prediction of unemployment rate based on expected HNP change.

**Analysis**

We applied proposed methods on GDP and unemployment rate data collected by Eurostat for Slovak republic on yearly average GDP and yearly average unemployment rate data. (Eurostat, 2018a)

We decided to use R squared and F statistics value to evaluate overall goodness of fit as R squared



**Fig. 1: GDP and Unemployment Rate in Slovakia - source Eurostat (Eurostat, 2018a)**

summarizes the fit by calculating the fraction of total variance explained by the fit. After evaluating a model for the whole period since 1998 and 2018 it was clear that our model will definitely not work for periods with fluctuations as was mentioned by Okun in his original work. This is supported with graph of residual distribution as well.

For the whole period since 1999 to 2017 the parameters for Okun's model the parameters obtained by linear regression are showing good p-value for variable ( $p=0.001$ ) and model regression F significance is good as well ( $\text{sig.F} = 0.001$ ). R square shows very low approximation ( $R\text{square}=0.478$ ). That means the fraction of total variance is not explained by the fit very well. The fit of model is quite low, even that parameters of model and regression model significance are in 95% confidence interval. This suggests that model is influenced by extremes and will not give suitable results.

**Table 1: Regression parameters for model 1999-2017 – own processing**

<i>Regression Statistics</i>	
Multiple R	0,691
R Square	0,478
Adjusted R Square	0,447
Standard Error	0,898
Observations	19

**Table 2: ANOVA model fit parameters 1999-2017 – own processing**

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	12,557	12,557	15,572	0,001
Residual	17	13,709	0,806		
Total	18	26,266			

**Table 3: Model parameters 1999-2017 – own processing**

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0,760	0,308	2,470	0,024	0,111	1,410
X Variable	-0,245	0,062	-3,946	0,001	-0,376	-0,114

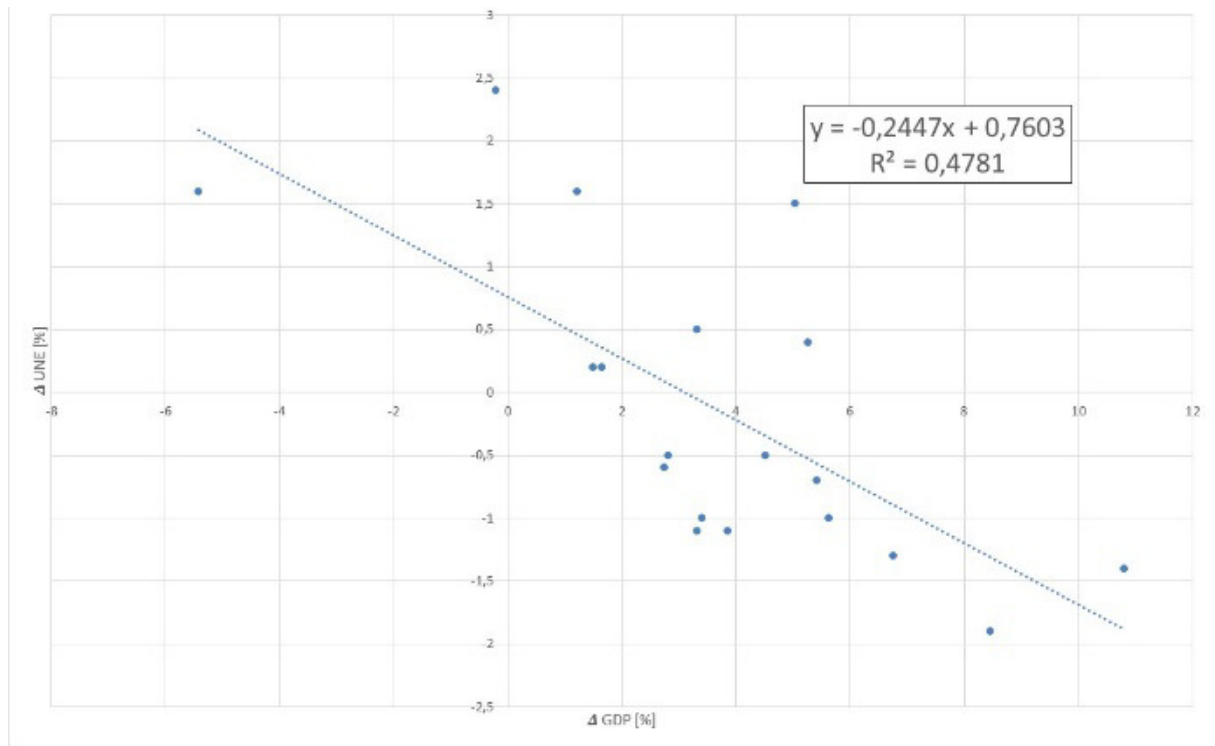


Fig 1: Okun model for 1999-2017 (fails in Rsquare and residui) – own processing

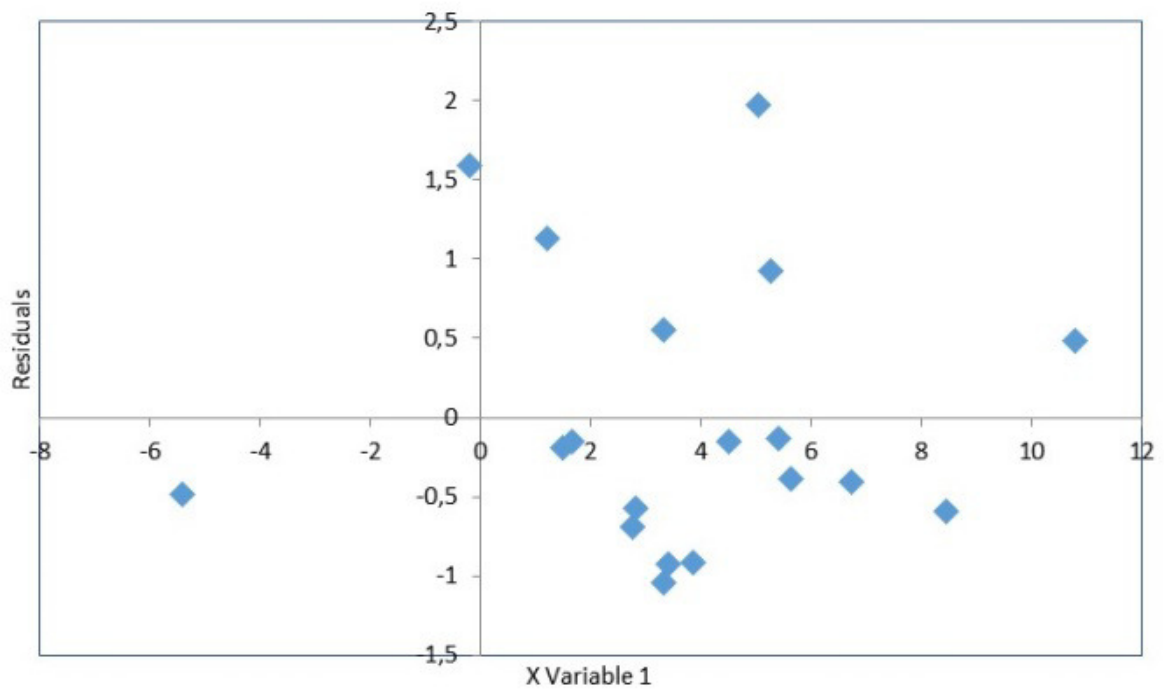


Fig 2: Residual plot 1999-2017(fails in Rsquare and Residui) - own processing

As a solution we split the time series to two distinct periods, where we could partly avoid direct effects of financial crisis that started in 2007. Of course we could not avoid indirect effects that could have caused the fluctuation and various specific behavior connected with financial crisis. The split of data we did was to separately use parts of the same input data in periods since 1999 to 2007 and since 2011 to 2017.

For first period since 1999-2007 the model exhibits good p-value for variable ( $p=0.001$ ) and model regression F significance is good as well ( $\text{sig.F} = 0.00044$ ). R square shows much better approximation ( $R^2=0.846$ ). That means the fraction of total variance is explained by the fit quite well. The distribution of residuals looks random.

**Table 4: Regression parameters for model 1999-2007 – own processing**

<i>Regression Statistics</i>	
Multiple R	0,920
R Square	0,846
Adjusted R Square	0,824
Standard Error	0,605
Observations	9

**Table 5: ANOVA model fit parameters 1999-2007 – own processing**

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	14,078	14,078	38,467	0,000
Residual	7	2,562	0,366		
Total	8	16,640			

**Table 6: Model parameters 1999- 2007 – own processing**

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	1,864	0,375	4,965	0,002	0,977	2,752
X Variable	-0,388	0,063	-6,202	0,00044	-0,536	-0,240

For second period since 2011-2017 the model exhibits good p-value for variable ( $p<0.00001$ ) and model regression F significance is good as well ( $\text{sig.F} <0.00001$ ). R square shows great approximation ( $R^2=0.962$ ). That means the fraction of total variance is explained by the fit very well. The distribution of residuals looks random. The fit of the model is very good and parameters and model significance are well fit in 95% confidence interval. The results of such model can be followed. The disadvantage of this estimate is the length of used time series.

**Table 7: Regression parameters for model 2010-2017 – own processing**

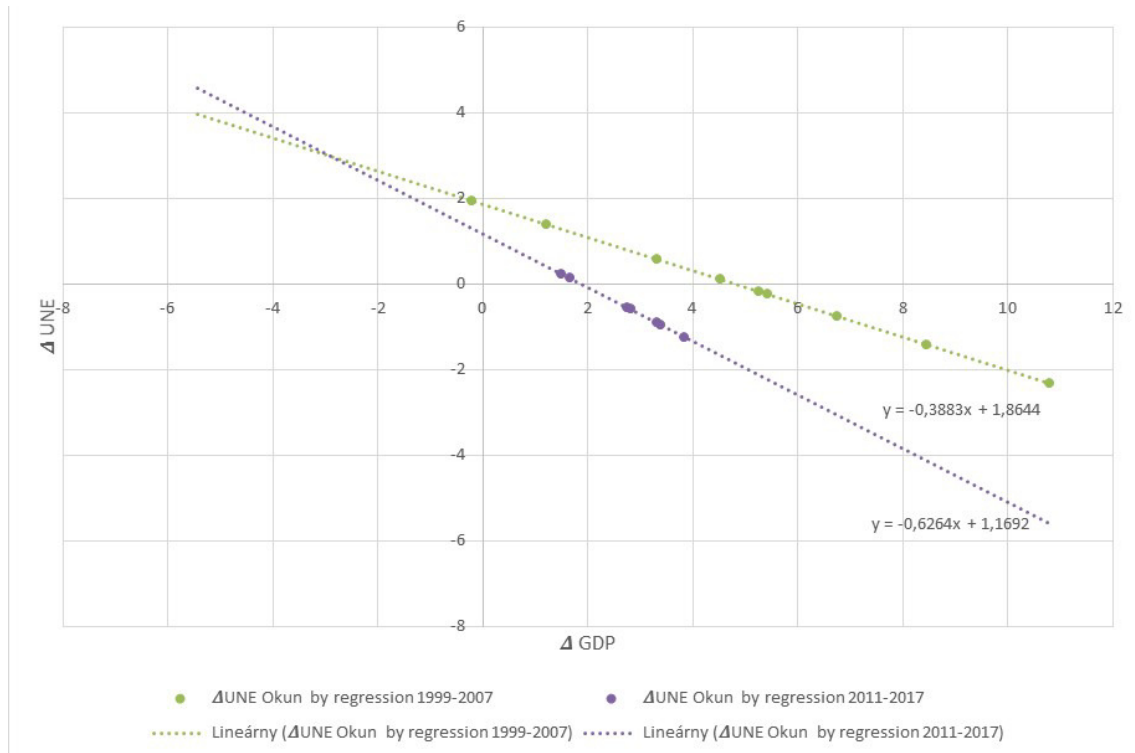
<i>Regression Statistics</i>	
Multiple R	0,981
R Square	0,962
Adjusted R Square	0,954
Standard Error	0,122
Observations	7

**Table 8: ANOVA model fit parameters 2010-2017 – own processing**

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	1,863	1,86297	125,58	9,87696E-05
Residual	5	0,0742	0,01483		
Total	6	1,9371			

**Table 9: Model parameters 2010-2017**

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	1,169	0,161	7,272	0,001	0,756	1,583
X Variable	-0,626	0,056	-11,206	9,87696E-05	-0,770	-0,483



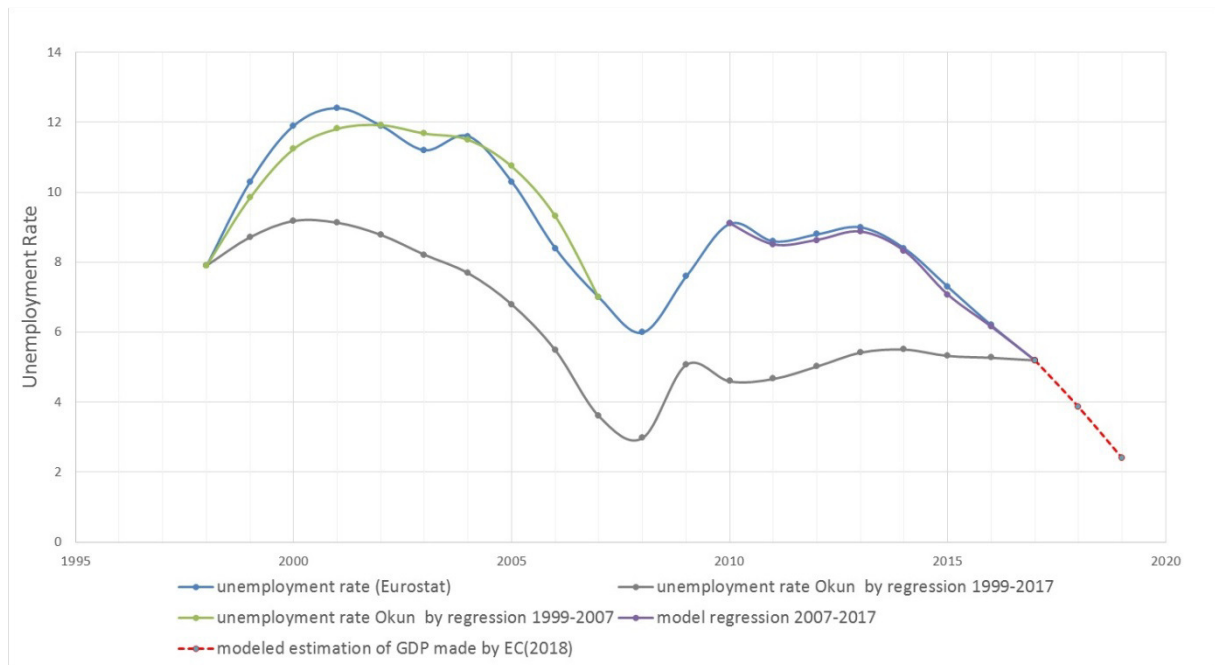
**Fig 3: Linear model aka Okun's Law for Slovakia 1999-2007 and 2011-2017 – own processing**

## Conclusion

According to Okun (1962) who examined quarterly data, the resulting parameter of slope is -0,3 that well described data of 55 observations for USA in period since 1947 Q2 to 1960 Q4 with  $R^2 = 0,79$ . He concluded that “for each extra one percent of GNP, unemployment is 0.3 points lower, ... , one percentage point more in the unemployment rate means 3.3 percent less GNP”.

First we need to conclude that our time series we chosen to examine was based on yearly average data as this data exhibited good approximation in the means of Okun’s law. It is necessary to note that when testing the quarterly average data from the same source, we did not find the approximation to be producing expected results. In our split case the number of observations were 9 and 7, the slope parameter has values of -0,388 and -0,626,  $R^2_{adj} = 0,846$  and  $R^2_{adj} = 0,954$  respectively. In our case, the conclusion would be that each one percent in GDP constitutes unemployment decrease of cca 0.4 percent in period 1999-2007 and cca 0.6 percent in period 2011-2017. Other way around - one percent less unemployment means 2.5 percent GDP growth.

When testing these findings with current estimations of European commission (Country Report Slovakia 2018 - 2018 European Semester, 2018) where there is real GDP growth for 2018 expected on level of 4 percent and in 2019 growth of 4.2 percent we would expect the unemployment rate to decrease of 1.08 percent (2.4% GDP growth as of 2017) and 0.12 percent in 2019.



**Fig 4: Unemployment rate in Slovakia - real, modeled and estimation – own processing**

The overall comparison of real measured unemployment rate and model created based on Okun’s law and estimation based on European commission GDP growth estimation is shown in figure .

“We conclude that foreign business entities highly contribute to economic growth, employment of citizens as well as foreign trade, where as a number of foreign entities export their products outside the Slovak Republic.” (Trel’ová, 2016)



The unemployment rate in Slovakia reaches the historical minimum, employment is breaking records and employers report tens of thousands of vacancies. Nevertheless, many of them are unable to find a skilled workforce.” (Ministry of Labour, Social Affairs and Family of the Slovak Republic, 2018) Because the shortage of skilled labour force constitutes a serious threat to the further development of enterprises and the entire Slovak economy, it is necessary to implement active labour market measures. The priority is to align education and training for the labour market with the current and expected future demands of employers, which is possible, for example, also in the form of dual education. The fastest solution to the current situation is the employment of foreigners.

## References

Central Office of Labour, Social Affairs and Family. *V januári 2018 miera evidovanej nezamestnanosti v súlade s dlhodobým trendom*. [Online], [Retrieved September 8, 2018], Available: [https://www.upsvr.gov.sk/media/medialne-spravy/v-januari-2018-miera-evidovanej-nezamestnanosti-v-sulade-s-dlhodobym-trendom.html?page\\_id=764912](https://www.upsvr.gov.sk/media/medialne-spravy/v-januari-2018-miera-evidovanej-nezamestnanosti-v-sulade-s-dlhodobym-trendom.html?page_id=764912)

*Country Report Slovakia 2018 - 2018 European Semester*: (2018). Assessment of progress on structural reforms, prevention and correction of macroeconomic imbalances, and results of in depth reviews under Regulation (EU) No 1176/2011, European Commission, Brussels, 7.3.2018, [Online]. [Retrieved September 13, 2018], Available: <https://ec.europa.eu/info/sites/info/files/2018-european-semester-country-report-slovakia-en.pdf>

Eurostat (2018a). (nama\_10\_gdp, extracted 06/06/2018 09:32:02) nama\_10\_gdp - GDP and main components (output, expenditure and income) [nama\_10\_gdp] - Gross domestic product at market prices - Chain linked volumes (2010), million euro. [Online], [Retrieved September 8, 2018], Available: [http://ec.europa.eu/eurostat/product?mode=view&code=nama\\_10\\_gdp](http://ec.europa.eu/eurostat/product?mode=view&code=nama_10_gdp)

Eurostat (2018b). (une\_rt\_a) Unemployment by sex and age - annual average [une\_rt\_a] - Percentage of total population. [Online], [Retrieved September 8, 2018], Available: [http://ec.europa.eu/eurostat/product?mode=view&code=une\\_rt\\_a](http://ec.europa.eu/eurostat/product?mode=view&code=une_rt_a)

*Foreign Direct Investment*. (2016). [Online], [Retrieved September 4, 2018], Available: <https://www.nbs.sk/en/statistics/balance-of-payments-statistics/foreign-direct-investment>

Hajdúchová, I. and Giertliová, B. (2015). The Impact of Globalization on the Employment Development in the SR. *Globalization and its Socio-Economic Consequences* (pp. 171-179). Zilina: ZU - University of Zilina.

Milošovičová, P. (2016). Pôsobenie nemeckých podnikateľských subjektov na Slovensku. Ekonomická integrace ČR a SR v podmímkách globalizujúcej sa Evropy. - České Budějovice : Vysoká škola evropských a regionálnych štúdií, 2016. - ISBN 978-80-7556-006-3. - S. 53-63.

Milošovičová, P. and Stachová, P. (2016). Development of the global Slovak - Austrian relations. Globalization and its socio-economic consequences : part 3. - Žilina : University of Žilina, 2016. - ISBN 978-80-8154-191-9. - S. 1402-1410.

Okun, A. M. (1963). *Potential GNP: Its Measurement and Significance*. Yale University, Cowles Foundation for Research in Economics.

Ministry of Labour, Social Affairs and Family of the Slovak Republic. *Prognózy vývoja na trhu práce pomôžu zlepšiť politiky štátu*. 15.2.2018 [online]. Available: <https://www.employment.gov.sk/sk/informacie-media/aktuality/prognozy-vyvoja-trhu-prace-pomozu-zlepsit-politiky-statu.html>

Stachová, P. and Šuplata, M. (2013). The Economic Dimension of Regional Policy in the Slovak Republic. *Contemporary Issues of World Economics and Politics*. Smolenice, Slovakia, pp. 650-660.

Statistical Office of the Slovak Republic. (2018). [Online], [Retrieved September 3, 2018], Available: [http://www.statistics.sk/pls/elisw/objekt.send?uic=962&m\\_sso=2&m\\_so=15&ic=41](http://www.statistics.sk/pls/elisw/objekt.send?uic=962&m_sso=2&m_so=15&ic=41)

Treľová, S. (2016). The requirement of flexibility and labour mobility as a result of Globalization. *In: Globalization and its socio-economic consequences : part 5 [elektronický zdroj]*. - Žilina : University of Žilina, 2016. - pp. 2228-2235 [online]. - ISBN 978-80-8154-191-9

## **The R(evolution) of Territorial Marketing : towards an Identity Marketing**

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### **Abstract**

In a context of asserted competition, political decision-makers in charge of territorial destiny can no longer resolve to “do things well”, they must “do the right things”, those that will be the most structuring and the most determining for the future of the territory. They now have to face new dilemmas and tensions, which force them into showing more discernment, responsiveness as well as creativity to address the growing complexity of local issues. They must retain the territorial marketing that will not only allow their territory to develop, but first of all to survive. As a result, territorial marketing today takes a broader, more in-depth, more strategic and more versatile approach, drawing on sources as diverse as anthropology, sociology, culture, etc.

Identity marketing is part of the new practices of territorial marketing and draws from the reservoir of the territory’s intrinsic strengths and weaknesses to develop its territorial marketing approach.

This paper has two main objectives; the first one is to explore and present the major new marketing practices, the result of observations at the level of several territories – Some of these practices have already been formalized and have proven their worth in terms of outcomes; others have reached in the improvement phase or are going through the experimental stage. The second objective of this article is to explain the state of mind of the new identity-based territorial marketing approach that will allow territories to be branded in order to be noticed.

**Keywords:** Territorial marketing, new practices, identity, identity marketing

### **Résumé**

Dans un contexte de concurrence affirmée, les décideurs politiques, responsables de la destinée territoriale, ne peuvent plus se résoudre à « bien faire les choses », ils doivent faire « les bonnes choses », celles qui seront les plus structurantes et les plus prégnantes pour l’avenir de leur territoire. Désormais, face à de nouveaux dilemmes et tensions, ils doivent faire preuve de discernement, de réactivité mais aussi de créativité devant la complexité grandissante des enjeux locaux. Ils se doivent de retenir les stratégies du marketing territorial d’abord susceptibles de permettre à leur territoire de se développer, mais surtout qui en assureront la survie. De ce fait, le marketing territorial prend aujourd’hui une dimension plus ample et plus approfondie, plus stratégique et plus polyvalente, glanant dans des sources aussi diverses que l’anthropologie, la sociologie ou la culture. Le marketing identitaire est ainsi une nouvelle pratique du marketing territorial consistant à puiser dans le réservoir des atouts et des faiblesses intrinsèques au territoire pour élaborer sa démarche marketing territorial.

Ce papier a deux objectifs majeurs ; le premier est d’explorer et de présenter l’essentiel des nouvelles pratiques du marketing territorial, fruit des observations au niveau de plusieurs territoires - certaines de ces pratiques sont déjà formalisées et ont fait leur preuve en termes de résultats, d’autres sont en phase d’amélioration ou en stade d’expérimentation-. Le deuxième étant d’explicitier l’état d’esprit de la nouvelle démarche du marketing territorial basé sur l’identité qui permettrait aux territoires d’être marqués pour être remarqués.

**Mots clés :** Marketing territorial, nouvelles pratiques, identité, marketing identitaire.

## Introduction

Territorial marketing is far from being a 21<sup>st</sup> century invention. The idea that a territory has to look for notoriety and attract targets is not original in itself (Meyronin, 2009) and some practices go back as far as the 19<sup>th</sup> century. According to the historicist Stephen Ward, who based his views on Alexandre Basdereff's works, "public marketing" has an essential advantage as it puts together the private sector's efficiency along with the concern of general interest. He supports the idea that the elaboration of a marketing plan could help solve two issues that far outweigh mere communication: finding solutions to the needs of users and promoting local economic activity.

This marketing approach models on the one applied by companies although with major nuances. It is divided into three phases: First the marketing study of the territory's environment, then the elaboration of strategic marketing specifically focused on segmentation, targeting and positioning, and finally implementing operational marketing, the objective of which is to adopt a targeted offer.

One of the nodal points of this approach is to convey the political will of elected representatives and bodies responsible of territorial marketing and appeal strategy to assert and/or reinvent the territorial identity. Consequently, practitioners and researchers gradually become aware of the importance of the identitarian dimension in the territorial marketing approach.

In this vein, many researchers, namely Rochette (2015), Alaux (2015), Gayet (2015) and Chamard (2014) perceive identity as the founding nucleus around which strategy, governance, offer, brand, brand image and territorial communication are built. However, it should be mentioned that this identity is not fixed. On the contrary, it unites past, present and future visions, it is moving and constantly changing.

In this respect, our research will clarify the new practices of territorial marketing (holistic marketing, shared marketing, citizen-based marketing, hyper-segmentation marketing, excellence marketing, creative marketing, digital marketing, customization marketing, viral marketing, experience marketing). We will highlight the central component of this emerging territorial marketing which advocates identity as a pillar concept (identity marketing), thus forming a solid base for the territory values, likely to federate all stakeholders and develop a strong and sustainable territorial brand in order to conceive a relevant offer for citizens (who could then act as ambassadors) as well as for the tourists and investors that the territory aims to attract.

## Overview on the 10 New Practices of Territorial Marketing

### *A marketing based on a holistic approach*

This first approach is a vision that tackles all functions and aspects of territorial marketing: its strategy, financing, positioning brand, etc. Gayet (2014) develops six methods to apprehend the holistic approach, or what he calls "integrated marketing". We will present hereunder an overview of these methods and the territories where the related mindset has been mobilised:

- Integrating the approach within the territory's project: this is what Barcelona chose to apply when implementing its project "Barcelona Vision 2020", as it was the general territory project that oriented the decision-makers towards territorial marketing;
- Integrating the approach into the pattern of operational development; that was the choice of Saint-Etienne, "80 actions to boost Stephanoise attractiveness" (Maynardier, 2011). In this sense, what matters most is the concept of city. This vision focuses on the project, which includes even the strategy of attractiveness as one of its components. As far as the region of Bretagne has considered it, this method is perceived as innovative and specific.
- Developing a strategy based on four general orientations that translate into a series of twenty priority actions: that method was the choice of Alsace region. It takes the shape of a logical

flow from the strategic dimension to the operational one. “Amsterdam Marketing” has followed the same path and segmented its market in seven target groups for which the managers have defined specific priority actions. These comprehensive dynamics allow the intensification of verticality and the readability of the action.

- Developing a territorial brand that acts as an atrium and around which the stakeholders cooperate and contribute to the development of a transversal approach: this is the method that Lyon, Colorado and Michigan have opted for.
- Emergence of a willingness to tune marketing coordination with a function of conductor, whose primary mission is to optimize harmony between actions or tools, and/or to mutualize techniques and operations: that is what Berlin and Brussels have chosen to do.
- Developing a marketing strategy based on a big event or a major facility that federates the entirety of stakeholders and actors in the project. That is the case of London (Olympic Games), Marseilles (European Capital of Culture) and Brazil (Football World Cup).

These six practices confirm that marketing puts into motion various dynamics and intentions that share the same goal: territorial attractiveness.

### ***A Shared Marketing***

Among the strong lines of this movement, we can list the relevance of the territory, its nature, its functions, its dimensions and the identification of its potential actors. The main idea is the required synergy between actors as well as a sector porosity that allows the optimization and mutualisation of resources.

The researchers Winker and Seigis (2012), cited by Eshuis , Klijn and Braun (2014), support the idea that territorial marketing can play a central role in the process of organization and dialogue with stakeholders.

Chamard (2014), for his part, supports that animating a network of stakeholders is a vital stake for territorial marketing. Boris heads in the same direction by confirming that stakeholders can only adhere with the values they have taken part in formulating. In this vein, the inhabitants have a great part of responsibility. As to identity, it is the keystone of these shared values.

### ***A more and more citizen-based marketing***

Citizens have started manifesting their willingness to take part in the development of their territory. In this regard, according to Eshuis and Klijn (2013), several debates about participation of citizens have emerged. These researchers have worked on the criticisms directed at territorial marketing practitioners and have brought out the most recurrent criticism, that marketing followed a “top-down” approach, which means that decision-makers had the prerogative to develop a strategy and implement it without taking into account the needs and desires of the citizens.

Residents today are more involved in attractiveness and territorial marketing strategies, thanks to meetings as well as consultations via Internet (Gayet, 2015). Elected representatives, territorial marketing practitioners, strategists and technicians are now aware of the importance of involving citizens in the process of territorial marketing. According to Klijn & Braunn (2014), territorial marketing doesn’t aim at satisfying the needs of tourists and external investors alone, but also and above all the inhabitants of the region. Thus, residents are both participants and recipients. The borderline between endogenous and exogenous targets gets blurrier, and the involvement of residents

becomes inescapable since they act as first ambassadors of their territory (Meyronin, 2014). Maynardier sharpens the study and confirms that this method of governance “allows the creation of figures, of partners, of colleges, of ambassadors”, a necessary involvement both for the project’s identification and for its recognition.

The region of Alsace has worked on its identity and its territorial attractiveness approach with more than 4200 residents, thanks to a blog and to social media.

### ***A Marketing Based On Hyper-Segmentation***

The territorial offer is more and more segmented, even hyper-segmented, which Chamard (2015) describes as affinity-based or communitarian, on the fact that the territory pools individuals according to “affinity”.

Gayet (2015) hones the idea by adding that each community works as a separate tribe, with its own language, codes, tools and networks. For Amidou (2014), this community is built around three main elements: the individuals, the links and the shared contents. Thus, the larger rallying models being no longer relevant, addressing customers in a more precise, adapted and affinity-based way, would give better results. Consequently, one example of hyper-segmentation would be to break down a touristic offer, for instance, in romantic weekends, tours for single people, stays for families, bachelors events etc.

Tourism in Alsace region is another salient example, as this touristic vision motivates more than one million and half visitors, with a confirmed potential of more than two hundred million (Chamard, 2015). As a matter of fact, tourism in Alsace has developed affinity-based themes rallying a great number of people, and has leveraged around labels such as “Christmas in Alsace”, “The Road of Alsace Wines”, etc.

Gayet (2016) adds that with the intensification of social media use, each member becomes multifunctional: commentator, inspirer, purchaser, developer, controller, seller or diffuser. As such, the individual intervenes in the process of services quality while playing a major role in developing customer surveillance and improving the territorial offer.

### ***A Marketing That Has a Motto: Excellence***

In this new context characterized by the customer’s opportunism and exigency, excellence is no longer a choice, it has become a sales factor (Gayet, 2015).

The study of the new trends and practices of territorial marketing confirms that the most attractive territories are the ones that have succeeded in their territorial marketing approach by relying on excellence.

Along with the proposal of effective methods and solutions, excellence requires to dare think differently, to break with the existing situation and to advocate innovation. In order to reach excellence, it is recommended to develop the related competencies so as to showcase the virtues of “differentiation” (Rochette, 2012), a key element in the improvement of the territory’s attractiveness.

Chamard (2015) points out that when territories favour this approach, excellence is also to be found in others associated fields such as clusters, governance, labels, sustainability, innovation, etc. Gayet adds to this list the following items: effective ecosystems, collaborative economy, territorial brand, smart city and real-time customer relationship management.

### ***A Creative Marketing***

As far as territorial marketing is concerned, we choose to use the definition of creativity suggested by Garcia and Peganow (2012), according to whom creativity is “the capacity to produce new and adapted ideas”. Except that creativity in public domain doesn’t emerge spontaneously, it is managed and supervised.

For Garcia and Peganow (2012), creativity rests on three pillars:

- The climate: it refers to an atmosphere of trust-building and autonomy;
- The competencies: both individual and collective;
- The processes: a central component that ensures and fosters participation of as many people as possible.

The objective is to help this creativity develop in organizations and become an integrated approach to their functioning.

Gayet indicates that innovation and creativity are essential at all levels of the territorial marketing approach: from shared diagnosis to influence strategy, through identity studies, governance and attractiveness. It is also based on the creation of citizen-friendly platforms such as crowd-funding, crowdsourcing, customized communication, etc. Amidou (2014) completes the idea and alerts to the fact that innovation is a mandatory survival mode in a permanently moving and accelerating environment.

In practice, UNESCO created in 2004 a network dedicated to creative cities, that aims at forming a union to help exploit creative, social and economic potential in local communities and promote them. Each year, UNESCO organizes a meeting with several objectives: First to go over the initiatives taken in order to integrate creativity to a sustainable urban development. Then to establish partnerships and think about future development and strategic goals for a geographically balanced enlarged network. Third to establish selection criteria of host cities for the next annual meetings and to periodically revise affiliations to the network.

Other researchers go even further by claiming that marketing doesn’t hold a meaning if it is not different. Villemus (2014) considers that the phrase “different marketing” in itself is a pleonasm, since marketing is different by definition.

### ***A Marketing More Digital Than Ever***

Digital marketing refers to the Internet-based marketing methods and tools: online communication (social media influence), optimization of e-commerce, creation of traffic through digital devices (computer, mobile phone, podcast reader, video games, dynamic display – external advertising boards and television in selling points).

Digital marketing is essential to the existence of Generation Y. For Villemus (2014), the generation of digital boomers born after 1995 doesn’t live “with” the Internet but “within” the Internet, now becoming a world in itself. This leads to the oxymoron “virtual reality”, in which an individual turns into a “He/She” before being an “I” (Cohen, 2012). This marketing optimizes traditional/regular marketing and can even replace it.

It is obvious that nowadays digital marketing allows to do what was thought impossible to achieve with marketing 1.0 and imposes itself as a multifunctional and multidimensional way. It is definitely thanks to this latter that it has become possible to develop a collaborative economy, an affinity-based marketing (4.4), a real-time marketing (Gayet, 2014) and a policy of ambassadors for territorial brands.

According to Amidou (2014), since the emergence of digital marketing, Internet users, already consumers, have turned into journalists, videographers, photographers, and share their experiences to

the point of developing an expertise. In brief, the digital world has become the preferred means for marketers to establish a direct relationship with their target.

### ***A Marketing Based On the Customization of the Offer***

Customized marketing consists of individualizing actions of promotion and communication according to the profile of each client. Customization can deal with the channel or the medium, the message or the offer. Customized marketing is theoretically more modest in its practice than “one-to-one” marketing because customization is often done at the level of the recipient’s data and the offer may be common to the target or the segment.

In territorial marketing, Chamard (2014) explains that in the process of creation of a direct link with the customer, customized territorial marketing is a powerful weapon to address the fierce competition. This territorial marketing takes the shape of tools such as RSS, applications, maps, research engines and customized offers of tracking systems (Chamard, 2015). It is a set of tools that allow direct and permanent contact with clients. This is easy and feasible nowadays with the development of mobile users and the instantaneity of customized communication with the client, which allows a direct relationship with the targeted individuals (Villimus, 2014).

Gollain (2014) completes the study and promotes the idea that marketers should place the customers at the heart of the territorial marketing approach and bring an offer that is both differentiated and customized at demand. Villemus (2014) adds that transactional marketing and relational marketing will no longer fit the need and will be replaced with a marketing that is intimate, personalized, sincere and interactive.

### ***A Viral Marketing***

Viral marketing is a technique that aims at promoting an offer through a persuasive message transmitted from a person to another. It is called viral as the offer is considered to spread out like a virus.

Chamard (2014) points out the benefits of viral marketing and stipulates that it is focused on leverage effects that try to organize the “virality” towards the entire set of the marketing mix elements. It is both a result of and a bedrock for affinity-based marketing and customized marketing. One of the most exemplary territories having experimented viral marketing is the Excellence branch “Lumière” (Light) in Lyon region, with the cluster Lumière considered as a textbook case in this field. Once again, the Internet and connected objects will help speed up this type of approaches. Gayet remarks that viral marketing will undoubtedly help create leverage.

On the other hand, this category of marketing allows, according to Villemus, to go back to the etymologic meaning of the word “communicating” which is defined as “putting in common”. This definition is the one retained by several researchers in the field of psychology, namely by Salomé (2003). In this sense, individuals are in a permanent exchange of advice and recommendations. They become first-level influencers and intervene in the process of decision making for potential clients. The customers are now empowered since, after the first purchase, they turn into consultants with the ability to anticipate the experience of others, in addition to becoming parties in the phrasing of marketing expectations. Thus, thanks to the network marketing and viral marketing, the traditional pattern of marketing communication from the 1950s (Attention, Interest, Desire and Action) is fundamentally shaken.

### ***A Customer Experience-Based Marketing***

Experiential marketing is a concept created by Halbrook and Hirschman in the Eighties and gets its basic concepts from hedonistic philosophy, customization, memory and emotion. It is meant to make the customers remember their experience and want to renew it. This marketing has been spread out since 1999 in the USA and in many European countries by Joseph Pine and Gim Gilmore through their book “the Experience Economy” (Harvard Business Review), with the key concept of



progression of the economic value. The history of economy could hence be summed up with the help of the four stages of economic value progression:

- The stage of raw material economy where the essential know-how consists in farming and extracting merchandise from the earth;
- The stage of industrial economy, where the fundamental know-how consists in crafting manufactured goods in big quantities and thus largely standardized;
- The stage of the economy of services, whose first stake of sales is to provide a quality service. The sectors of Internet access and mobile telephony are revealing of the speed at which an offer of service becomes standardized;
- The stage of the “Experience Economy”, which know-how is about bringing a real emotion and providing an unforgettable memory to the customer by integrating a strong dimension of customization.

It is worth noting that the set of the three elements (customization, emotion and memory) helps distinguish the concept of “experience” from that of “service” or “product”. It should be mentioned that emotions have a great impact; they allow to assign values to the various options or product attributes (Eshui, Klijn and Braun, 2014).

Among the tools developed by experiential marketing, is sensorial marketing. In what follows, we will develop examples of territories and brands having opted for this experiential marketing and used sensorial marketing:

- Fragrant cleaners at the Regie Autonome des Transports Parisiens (olfactory)
- Decoration of tramway units at Montpellier (optic)
- Tasting of pasteis offered by the region of Lisbon (gustatory)
- Background music played in Abercrombie & Fitch stores (acoustic)
- Grained surface of Vichy lozenges (tactile), (Bataf and Frochot, 2014)

These factors help broaden the diverse elements involved in the decision making process to build conceptual marketing as developed by Patat and Frochot (2014).

Gayet concludes that marketing should “re-enchante the act of purchasing by considering, in a certain way, that it is not the product that creates the experience but the experience that creates the product”. Which sends a strong and direct message to territorial marketers.

## **Towards A New Territorial Marketing**

### ***Delimitation of the concept of territorial identity***

Identity is usually a problematic, polemical, even explosive topic, because it is extremely connotative and can be easily “instrumentalized”, both politically and ideologically.

At first sight, the process of territorial identification refers to the spatial dimension since territories can be identified according to the criterion of size (regional, municipal, etc.). For Di Meo (2006), identity is thus represented “with mechanisms linked with space”. But not only. This researcher geographer also mentions at a more global scale the reason why “differential and territorial” identities are supported by cultural, religious and landscape factors. Hence the existence of a factory of identities sorted by a “hierarchical classification of affiliations” to the territory.

Consequently, territorial identity is a social phenomenon, resulting from relationships with others (Mead, 1963). It is a virtual entity to which people refer to explain who they are and through which they define themselves (Levi-Strauss, 1979). In territorial identity, it is the territory, as a spatial artefact holding cultural signs and endowed of significations, which fuels the construction of

meaning, of subject and of community. Reference to a specific space builds awareness of a collective uniqueness. The social and cultural singularity is reciprocally sustained by the same space singularity that it helps produce. Thus, territorial identity is assimilated to the procedures of symbolization, of spatial integration of the founding structures of collective life: myths and history, as a core and as boundaries (Segaud, 1983, Bonnemaïson, 2000).

The identity of the territory is then defined through a singularity that gives it the status of a proper object and a spatial object. As such, it falls first within an act of social categorization (Dubar, 1998), allowing to distinguish and differentiate in order to elaborate a future strategy of space.

We retain in our study the following definition: identity includes the acquired but also the constructed, it is an articulation between what the territory is today, what it was yesterday and what it wants to become tomorrow.

### ***An Identity Marketing***

In the ten new trends of territorial marketing expanded in this article, the aspects of this particular marketing lie on recent experiences and some territories call on several forms and various practices to shape their offer.

Nonetheless, practitioners and researchers are getting more aware of the importance of identity as a cornerstone for the development of these new trends.

In this perspective, identity is viewed, according to Gayet (2015), as a base underlying the meaning of the approach and on which stand elements as powerful as value and linkage. Nicolas Baygert (2014) thinks that identity is a set of signs expressing a collective effort (both private and public) and involving the active forces of a territory gathered around a common objective.

Along those lines, identity is perceived as a key pivot around which are constructed the strategy, the governance, the offer, the brand, the brand image of the territory as well as its communication. This identity has to be shared by a great majority of inhabitants, actors and stakeholders, which is not an easy task (Maynardier, 2011). Rochette (2012), for her own part, supports the idea that identity is a pre-requisite to the creation and deployment of a brand. To demonstrate her position, she cites the example of territorial brands having encountered a great success: Bretagne in 2008, Auvergne in 2010 and Alsace in 2012. According to her, identity is one of the territory's resources that is singular, non-imitable and non substitutable. However, the value attributed to this identity depends on the capacity of the decision-makers, the actors and the stakeholders to showcase it in front of consumers in search of that touch of authenticity.

On the other hand, since the individuals, when integrating a territory, project themselves and their future on it and see in it a place to achieve their projects, Maynardier (2011) raises another question, which is whether the experts and city managers, by evoking attachment to the territory, distinguish it clearly from the location potentiated for a project. Determination of the criteria of attachment to the territory and the elements defining identity is a major component in the strategy of competitiveness and territorial attractiveness, either endogenously or exogenously or both at the same time.

Meyronin (2015) confirms that identity has a central role in the strategy of attractiveness and adds that "no marketing strategy can succeed if separated from reality, and consequently here from what founds the identity of a territory". He also mentions on one hand the vital need of elected representatives and instances in charge of territorial marketing and attractiveness strategy to assert and/or re-invent this identity, and on another hand the necessity they have to foster, at the level of their inhabitants, a feeling of belonging to their territory.

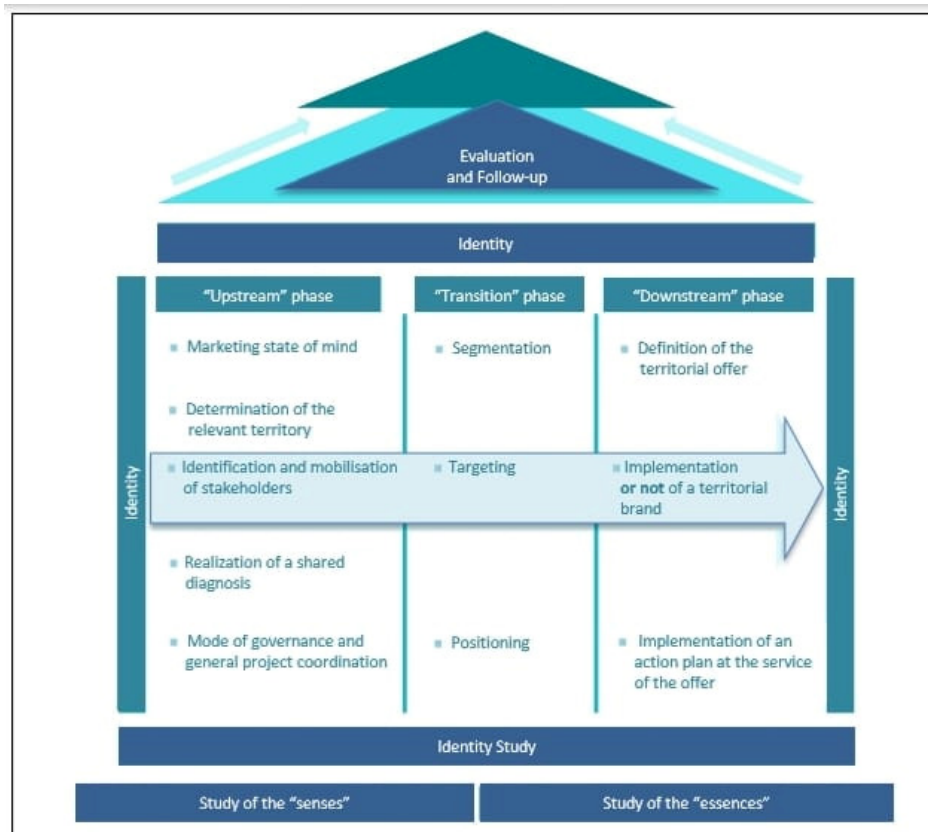
By adopting identity as a base, this new trend advocates the fact that identity forms the reservoir to the territory's values, and allows the territory to federate stakeholders, to develop its brand on solid grounds and to design an squared offer for inhabitants who will act as ambassadors, as well as for tourists and investors.

To sum up, an identity-based marketing will aim at facilitating exchanges both on the internal and the external levels, at drawing from the territory's values and then at informing the choices for the other marketing trends developed above.

***Zoom On the Marketing Approach Based On Territorial Identity***

The instances in charge of implementing the approach of territorial marketing must thoroughly prepare their strategies and commit to evaluate the action plan starting from the first year of implementation. Concurrently, they will call on specific control tools or techniques in a spirit of experience optimization. This could be done thanks to the interaction with the field feedbacks in the perspective of performance improvement for the following years.

The figure shown hereunder presents an overview of the steps followed in a territorial marketing approach. The one we are suggesting is divided into three main phases: a strategic phase, called "upstream phase", includes the determination of the relevant territory, the identification of stakeholders and the strategic diagnosis. The second phase is intermediary. This "transition phase" includes segmentation, targeting and positioning of the territory. The third phase, called "downstream phase", consists in outlining the territorial offer and breaking it down in a territorial mix marketing. This approach is initiated by the development of a marketing mindset and an identity profiling, which is a key step throughout the approach and has to be preceded by the fostering of an endogenous territorial governance.



**Fig. 1 : Territorial Marketing approach**

Overview of the new trends of territorial marketing

**Table 1 : The new trends of Territorial Marketing**

Trend	Main idea	Definition	Foundations	Examples
<b>Holistic marketing or integrated Marketing</b>	Based on territory project	Consists in tackling all functions and aspects of territorial marketing: its strategy, its financing, its positioning, its brand, etc.	<ul style="list-style-type: none"> <li>- Integration of the TMA (Territorial Marketing Approach) within the territory's project.</li> <li>- Integration of the TMA in the process of operational development.</li> <li>- Development of a territorial brand.</li> <li>- Emergence of a willingness to tune marketing coordination with a function of conductor, whose primary mission is to optimize marketing actions or tools, and/or to mutualize techniques and operations.</li> <li>-Developing a marketing strategy based on a big vent or a major facility.</li> </ul>	<p>« Barcelona Vision 2020 »</p> <p>Saint Etienne « 80 actions do boost Stephanoise attractiveness »</p> <p>« Amsterdam Marketing »</p> <p>Lyon / Colorado or the Michigan / Berlin / Brussels</p> <p>London (Olympic Games).</p> <p>Marseille (European Capital of Culture) and Brazil (Football World Cup)</p>
<b>Shared Marketing</b>	Formalising common and shared values	There must be a synergy between actors as well as a porosity between sectors to allow optimisation and mutualisation of resources.	<ul style="list-style-type: none"> <li>- Animation of a stakeholders network.</li> <li>- Stakeholders will naturally stick to the values they have participated in formulating.</li> <li>- The inhabitants have a great part of responsibility and identity is a foundation for these values.</li> </ul>	Bretagne region
<b>Citizen-based Marketing</b>	Involving the citizens	Citizens have started manifesting their willingness to take part in the development of their territories	- Today's citizens are involved in the strategies of attractiveness and territorial marketing, through meetings and Internet-based consulting	Alsace region has worked on its identity and its territorial attractiveness approach with more than 4200 residents thanks to its

			<ul style="list-style-type: none"> <li>- Territorial marketing doesn't aim at satisfying tourists and investors alone, but above all inhabitants.</li> <li>- Residents are both participants and recipients</li> <li>- Residents act as first ambassadors for their territory</li> </ul>	<p>blog and to social media.</p>
<b>Marketing based on hyper-segmentation</b>	Suggesting a squared offer to the customer.	The affinity-based segmentation and communicating with the customers in an adapted way gives better results.	<ul style="list-style-type: none"> <li>- The territorial offer is more and more segmented and personalized.</li> <li>- Participation of the customers to the elaboration of their own territorial offer thanks to the digital tools</li> </ul>	<p>Esprit Picardie : dividing a touristic offer in romantic week-end / family stay, etc.</p> <p>Alsace : developing affinity-based themes gathering a great number of individuals and creating leverage: « Christmas in Alsace », « The Road of Alsace wines », etc.</p>
<b>Excellence Marketing</b>	Developing key competencies	Excellence is no longer a choice, it has become a sales factor	<ul style="list-style-type: none"> <li>- Excellence and suggesting performing methods and solutions require to dare do things differently, to break with the existing and foster innovation.</li> </ul>	<p>Excellence can be found in clusters, governance, labels, sustainability, innovation, performing ecosystems, collaborative economy, territorial brand, smart city and real-time Client Relationship Management.</p>
<b>Creative Marketing</b>	Innovating for survival	The capacity to produce new and adapted ideas in the public field is not generated spontaneously, it has to be managed and supervised.	<ul style="list-style-type: none"> <li>- Creativity is based on three pillars :                             <ul style="list-style-type: none"> <li>* Climate : refers to an atmosphere of trust-building and autonomy ;</li> <li>* Competences : individual and collective ;</li> <li>* Processes : central element that grants and fosters participation of the many ;</li> <li>* Innovation and creativity are essential at all levels of the TMA</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Development of the strategy « Blue Ocean ».</li> <li>- UNESCO created in 2004 a network dedicated to the creative cities in order to build an alliance likely to exploit the creative, social and economic potential of local communities and promote it.</li> </ul>

<b>Digital Marketing</b>	Getting closer to the target	The preferred means for marketers that allows them to establish a direct relationship with their target.	<p>- Refers to the set of digital methods and practices.</p> <p>- Since the rise of digital marketing, Internet users have become consumers as well as journalists, videographers, photographers ; they share their experiences to the point of developing an expertise.</p>	Nowadays, the majority of territories uses digital marketing in their TMA.
<b>Customization Marketing</b>	Individualizing the communication	Adapts the actions of promotion and communication to the profile of each client	Places the clients at the heart of the approach in order to give them an offer both differentiated and personalized	Uses tools that allow direct and permanent contact with the customers, such as RSS, applications, maps and research engines
<b>Viral Marketing</b>	Transforming the client into a consultant	Allows the creation of leverage.	<p>- Aims at promoting an offer through a persuasive message that would be transmitted from a person to another. Called viral because the offer spreads like a virus.</p> <p>- Based on the leverage effects that try to organise the « virality » towards the set of marketing mix components.</p> <p>- Both a result and a bedrock for affinity-based marketing and customized marketing.</p>	The Excellence Branch « Lumière » of Lyon region with the cluster Lumière (considered as a textbook case in the field).
<b>Experiential Marketing</b>	Encouraging the targets to come back by triggering their emotions	Is based on personalization, emotion and memory.	- Re-enchants the act of purchasing by considering, in a certain way, that it is not the product that creates the experience but the experience that creates the product.	<p>Fragrant cleaners of RATP (olfactory)</p> <p>Decoration of the tramway units at Montpellier (optic)</p> <p>Tasting of Pasteis offered by the region of Lisbon (gustatory)</p> <p>Music played in Abercrombie &amp; Fitch (acoustic)</p> <p>Grained surface of Vichy lozenges (tactile)</p>
<b>Identity Marketing</b>	Considering identity as a base for all the previous trends.	Identity is a reservoir for the territory values.	- Identity is perceived as a key pivot around which are built the strategy, governance, offer, brand, brand image and communication of the territory.	Bretagne region in 2008

			- an identity-based marketing will aim at facilitating exchanges both internally and externally, at drawing from the territory's values and then informing choices for other marketing trends developed above.	Auvergne region in 2010 – Alsace region in 2012
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### Conclusion

Identity marketing allows to highlight the universal values of the territory, the ones that define what it is today and what it wants to become, while respecting what it was. Those strong territory values form the cement to all the new trends of territorial marketing. They use digital marketing as a transversal tool, since it contributes to the proper application of these trends and helps involve the citizens, thanks to the development of a “bottom-up” strategy, throughout the approach of territorial marketing: from the elaboration of the identity profile to the design of the offer. That approach must be imbued with innovative and creative spirit. As such, territorial marketing will focus on the complementarity of the new trends. It will represent, for all stakeholders, “the Good, the Beautiful and the Righteous”, as Plato put it, while insisting on the role of identity as a foundation for all territorial marketing considerations, which will be revolutionary in the practice of territorial marketing.

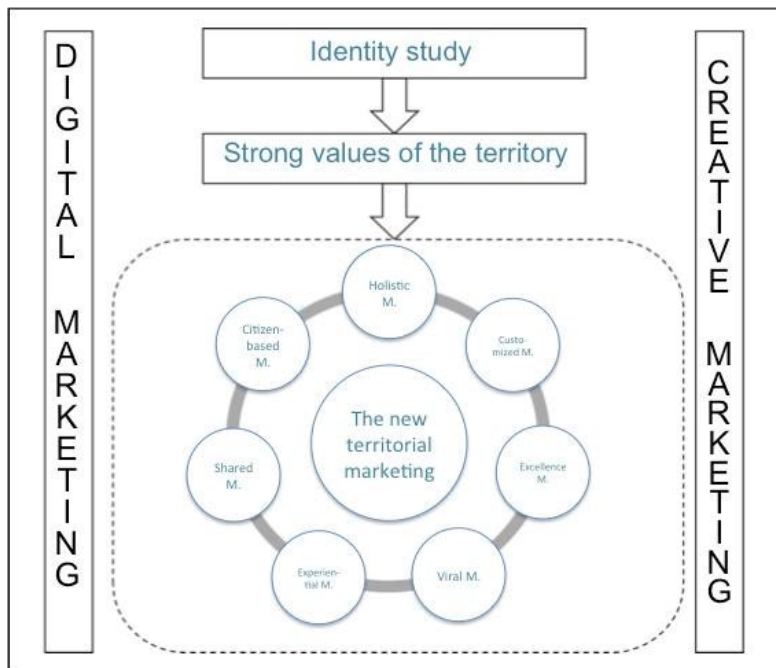


Fig. 2: The new territorial marketing

In the end, we insist that identity should be at the lead and at the beginning of every strategy and decision related to the territory » (Alaoui, Abakouy, 2017).

Drawing from its identity would thus allow the territory to stand out from its competitors by showcasing its values and cultivating its difference thanks to its authenticity. It would also help create a sustainable link with its inhabitants and turn them into ambassadors, give a security guaranty for investors since identity charts a historic path and highlights its future projects. Lastly, identity studies would form a promise of authenticity for the tourists attracted by the essence of the territories they visit. A question arises and remains in all territories : How can they strike a balance between their identity appeals and the increasing complexity of globalisation and which mode of governance could facilitate this mindset ?

## Bibliography

- Abakouy, M. & Alaoui, Y. (2015), « L'identité de la Sociologie aux Sciences Sociales », *ACMS*
- Abakouy, M. Laghzaoui, F (2015), « Pratiques du Marketing Territorial au Maroc : Etude de l'Expérience de la Ville de Tanger », *Revista de Estudios Fronterizos Del Estrecho de Gibraltar*.
- Abakouy, M., Alaoui, Y. (2015). « Modélisation de la Démarche Marketing Territorial », *Revue de Management*, Vol (03), pp. 42-60.
- Alaux C. (2012), « Measuring the Brand Image of a City” Colloque International EGPA Bergen (Norvège), Public and non for profit marketing Study group, 5-8 Septembre.
- Alaux C. (2014), « Place Marketing Relationships : In Need of a New Strategy », Colloque International EGPA Speyer (Allemagne), Public and non for profit marketing Study group, 5-8 Septembre 2014.
- Alaux C. (2015), « Le Marketing Territorial Relationnel: une Approche Adaptée à l'Image de Marque des Petites Villes », dans Bourdeau-Lepage L. et Gollain V. Coord., « Attractivité et Compétitivité des Territoires: Théories et Pratiques», CNER.
- Amidou L., (2014), « Marketing des Réseaux Sociaux », 2<sup>ème</sup> édition, Micro Application.
- Bat W., Frochot I, (2014), « Marketing Expérientiel : Comment Concevoir et Stimuler l'Expérience Client », Dunod.
- Baygert N., (2014/3), « Le Nouveau Branding Wallon », *Outre-terre* (n°40), P.156-165
- Bonnemaison J. (1995), « Le Territoire, Nouveau Paradigme de la Géographie Humaine ? », Acte du colloque «Le Territoire, Lien ou Frontière ? », 2-4 octobre, Paris-Sorbonne, pp.1-4.
- Braun, E., Eshuis, J., & Klijn, E-H. (2014). «The Effectiveness of Place Brand Communication ». *Cities*, 41, 64-70.
- Braun, E., Kavaratzis, M., & Zenker, S.. (2013). « My City – My Brand: The Different Roles of Residents in Place Branding». *Journal of Place Management and Development*, 6(1), 18-28. doi: 10.1108 /17538331311306087
- Braun, E. (2008). « City Marketing: Towards An Integrated Approach ». (Ph.D. thesis), Erasmus
- Brenner, N. (2004). « New State Spaces: Urban Governance and the Rescaling of Statehood » : OUP Oxford.
- Chamard C. & al. (2014), « Le Marketing Territorial – Comment Développer l'Attractivité et l'Hospitalité des Territoires », De Boeck, 203 p.
- Di Meo G., (1998), « Extrait de Géographie Sociale et Territoire ». Editions Nathan
- Di Meo, G. (2009), « Le Rapport Identité/Espace. Éléments Conceptuels et Epistémologiques », dans Grandjean P., Construction identitaire et espace, L'Harmattan, Paris, pp. 19-39,.
- Dubar C. (1991) « La Socialisation ; Construction des Identités Sociales et Professionnelles », A. Colin, Paris (3e éd. 2000).
- Eshuis, J., & Klijn, E., (2012). « Branding in Governance and Public Management »: Routledge.
- Eshuis, J., Klijn, E.H., & Braun, E. (2014a). « Marketing territorial et Participation Citoyenne : le Branding, un Moyen de faire face à la Dimension Emotionnelle de l'Elaboration des Politiques ? » *Revue Internationale des Sciences Administratives*, 80(1), 153-174.
- Garcia M., De Peganow N., (2012), «Innovation Participative : Remettre l'Humain au Cœur de l'Entreprise », *Scrineo*, pp.77-81.



- Gayet J., (2016), « Pratique 31 / Développement d'Approches « Place Making » et Collaboratives du Marketing Territorial », dans *Place Marketing Trend, Chaire Attractivité et Nouveau Marketing Territorial*, pp. 309-313.
- Gayet.J. (2014) « Forum, Place Marketing, Attractivité, C., et Territorial, Nouveau Marketing Territorial ». *Place Marketing Trend*, 1–282.
- Holbrook M. & Hirschman E. (1982), “The Experiential Aspects of Consumption: Consumer Fantasies, Feelings and Fun”, *Journal of Consumer Research*, 9, 132-140.
- Levi-Strauss C. (1979), « Résumé des cours et travaux (1978-1979) », *Annuaire du Collège de France*
- Maynadier,B. (2011), « Marketing de la ville : entre les identités, des communautés de projet », *Cahiers ISERAM*, pp.1-16
- Mead, G. H. (1963). « L'Esprit, le Soi et la Société », trad. PUF, Paris.
- Meyronin B., (2015), « Marketing territorial – Enjeux et pratiques », Magnard – Vuibert, 3ème édition, 236 p.
- Meyronin, B (2006), « Marketing des Services Publics et Marketing des Territoires : Vers une Dynamique de Ré- Enchantement », *Atelier de L'association International De Management Stratégique, Stratégie, Espaces et Territoires*.
- Meyronin, B. (2008), « Marketing des Services Publics et Marketing Territorial: Vers une Dynamique de Ré enchantement? », *Economies et Sociétés, série Economie et gestion des services*, EGS, n° 9, 2.
- Meyronin, B. (2012), « Marketing territorial. Enjeux et pratique ». Paris : Vuibert. 2ème édition.
- Meyronin C. (2015), «La Marque Publique entre Nouvelles Pratiques et Valeurs Publiques», *Revue Internationale de Sciences Administratives*, Vol. 81(2), p 326- 345, (<http://ras.sagepub.com/>) ([www.cairn.info](http://www.cairn.info/)).
- Rochette C. (2015), «The Public Brand Between New Practices and Public Values ». *International Review of Administrative Sciences*, Volume 81 (2), p 326–345,
- Rochette C., Cassiere F, Lambey C., Lagrange S (2016), "Réinventer l'Agence Bancaire de Demain : Mise en Œuvre d'Un Processus d'Innovation Collaborative", *Revue Française de Marketing*, n°259, p. 101-119.
- Rochette C., Lebrument C., Fenies P., (2016), « Identification des Enjeux pour les Parties Prenantes et les Acteurs Engagés dans la Construction d'une Marque Région », *Revue Gestion et Management Public*, vol 4, n°3, avril-mai, p. 91-108
- Salome J., (2003), « Pour ne plus Vivre sur la Planète Taire », Albin Michel, pp. 303-304.
- Segaud M., Levy P. (1998), « Anthropologie de l'espace ». Paris : Centre Pompidou.

## How Important is Social Media Advertising in the Consumption of Bio Products by Romanian Consumers?

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### Abstract

Starting with the 2000s, one can observe the extensive increase of Romanians' interest in bio products and for a healthy diet and lifestyle, especially given the significant number of parents preoccupied in a healthier diet for their children. With the increase in demand for such products, different manufacturers and sellers have entered the market and used several promotion techniques to differentiate themselves from competitors.

Due to an active and dynamic lifestyle, the time constraint people are facing daily drives them to acquire these types of products from online retailers.

In order to see whether online advertising influences the buying decision process, we conducted a survey among 75 respondents that highlighted the importance of online marketing in choosing the source of purchase for these types of foods.

**Keywords:** social media, bio food products, health.

### Introduction

Social media represents a new and cheaper way for organizations to promote their products and increase awareness on the market (Neti, 2011). Thanks to new technology and online social media promotion opportunities, organizations can interact with their existing clients in order to better understand their needs and also attract new consumers and increase their portfolio.

Social media channels such as Facebook, Twitter, Instagram and YouTube are frequently used by organizations in developing strategies to promote their products to the target public. However, companies aren't the only ones using these social media channels, but consumers also search for information regarding different products online.

A research from U.S. showed that 88 percent of the respondents 18-29 years old have minimum one social media account and also that social media represents their easy way to inform about their concerns (Alhabash et al., 2017). Alhabash et al (2017) also mentioned that social media advertising can be defined as the amount of „*online content designed with a persuasive intent and/or spread via a social media platform that allows online users to access, share, engage with and co-create.*”

In this paper we conducted a research which helped us identify the level of importance of social media advertising when it comes for Romanians to buy bio and organic food products. Also, we aimed to analyze how do respondents react to online advertising and whether they are predisposed to be influenced in the process of purchasing the promoted products in the online environment.

## **Bio and organic food in Romania**

The problem of obesity faced by everyone all over the world is so serious that “*the youth of today may, on average, live less healthy and possibly even shorter lives than their parents*” (Olshansky et al., 2005). According to a wide range of studies published on the Internet, apparently Romanians are aware of how bad the obesity problem is, not only for their children, but also for themselves.

In the last 5 years there has been an increase in Romanians' interest in their lifestyle and nutrition, so there is an increasing demand for bio products on the Romanian market, especially since the rate of obesity has significantly increased among children.

It is obvious that people prefer eating tasty, delicious fast food products to unpleasant-tasting ones they think bio food product are. Even if there are some foods that taste unpleasant, particularly those that are good for our health (Raghunathan et al, 2006), Romanians learned over the years how to combine healthy aliments in order to obtain delicious food dishes.

Moreover, given the fact that there is an ascendant trend of bio food products in Romania, their qualities and benefits are being widely promoted on social media channels. A brief analysis of these qualities shows that:

- Eating bio food products means eating healthy fats - considering that in most products there is fat, it is much healthier to consume fats from organic foods
- Money stays within the local economy, especially in summer and autumn seasons when in Romania there are plenty of fruit and vegetable crops
- Life expectancy is higher for those who consume organic products, especially for those who are consuming bio food since their childhood.

Fortunately, the climate and soil in Romania allow the planting of many types of fruits and vegetables, so that Romanians are quite at hand to buy organic products directly from the source, especially as in recent years farmers allowed buyers to collect their own fruits and vegetables from trees or gardens.

Evidence proves that buying and consuming unhealthy food, in particular, and eating fewer vegetables and fruits is strongly linked to the socioeconomic status (SES) (Appelhans et al., 2012)

It can be observed that unfortunately, it is cheaper to consume frozen dishes or fast food products, than to go and buy fresh ones and cook them. Even if the working time of the Romanians has increased in the last years and they have less free time, it is being appreciated that their awareness of the importance of a healthy diet has grown and as a consequence they have started to consume more and more bio and organic food products.

## **Social media advertising in Romania**

The new *Global Digital 2018 Report* by We Are Social and Hootsuite shows that there are currently over 4 billion people around the world using the Internet. More than half of the world's population has at least one social media account. The latest data shows that nearly a quarter of a billion new users came online for the first time in 2017. For example: Africa recorded the fastest growth rates, the number of Internet users around the world continent rising more than 20 percent from year to year. It can be said that the significant rise of social media users may stimulate manufactures to invest more resources in the online advertising.

Referring to the marketing area, in recent years, social media has become a better and cheaper form of marketing than traditional marketing, changing the possibilities in which consumers evaluate, choose and share new information (Patino, Pitta, & Quinones, 2012). Most often used social media channels are: Facebook, Twitter, Instagram and YouTube are often used by many organizations.

Because of the easiness of sharing information one to another via social media platforms, big organizations that are using social media channels as a way to promote themselves should always update their sites with the latest information and offers they have, in order to keep posted their customers.

According to Parsons (2011) „*Social media is about relationships; it is about the connections between organizations and people*”, so we can say that social media channels represent not only a way to inform and collect information about products you are interested in, but also a way to communicate with other users.

In 2016, Social Media Marketing Report highlights the most important five advantages of digital social media marketing and among them we can list: „*increased exposure, increased traffic and development of loyal fans, marketplace insight, and generated leads*” (Stelzner, 2016, p. 17). These benefits are the main objectives of all sellers on the market, representing a highway to earn market share, profits and notoriety in social media. In order to achieve them, companies are using a variety of marketing strategies.

In Romania, even though in recent years we have seen a significant increase of the people’s interest in bio products, there is unfortunately no direct increase in social media advertising for the bio products sellers. There is social media advertising for organic food products, but not as intense as the demand requires. However, we can estimate due to the significant increase in the consumption of organic products, there will be also an increase in social media advertising of the producing companies.

It is important for bio food producers to invest in social media advertising, especially given that there is a growing interest in these products and there is also a massive increase in digital users that makes promoting through social media a sure way to increase sales and generate profits for organizations.

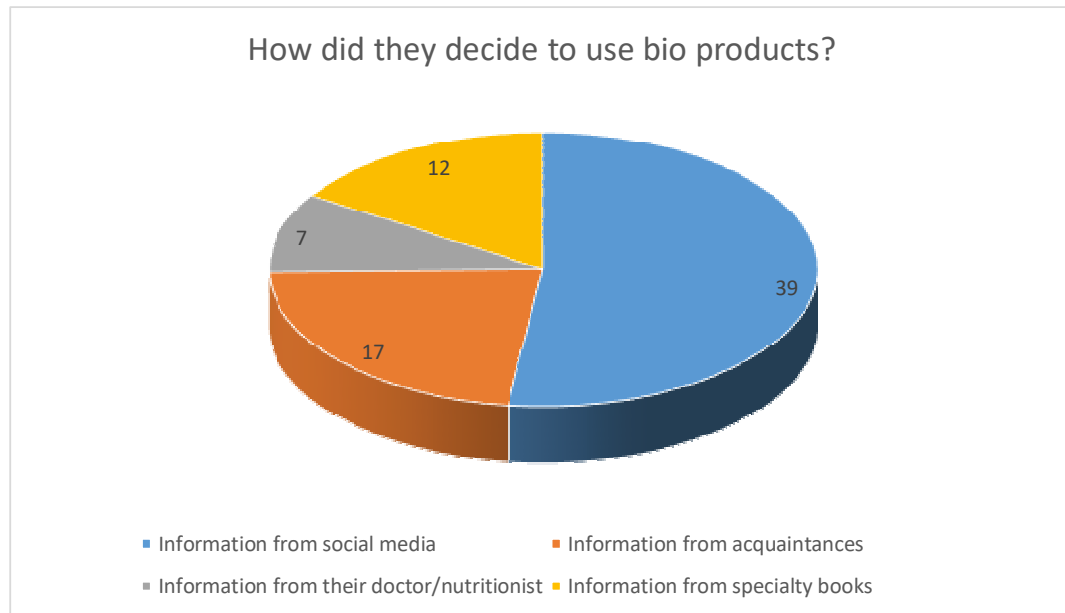
### **Qualitative Research**

We have conducted a survey among 75 respondents, Romanian consumers of bio products, in order to identify the impact that social media has in their life style and the main sources of groceries buying.

In the survey, the respondents were asked if social media is an important factor in choosing bio products versus the classic sources of information. Moreover, we have analysed the percentage of Romanian consumers that have been eating bio products due to online advertising.

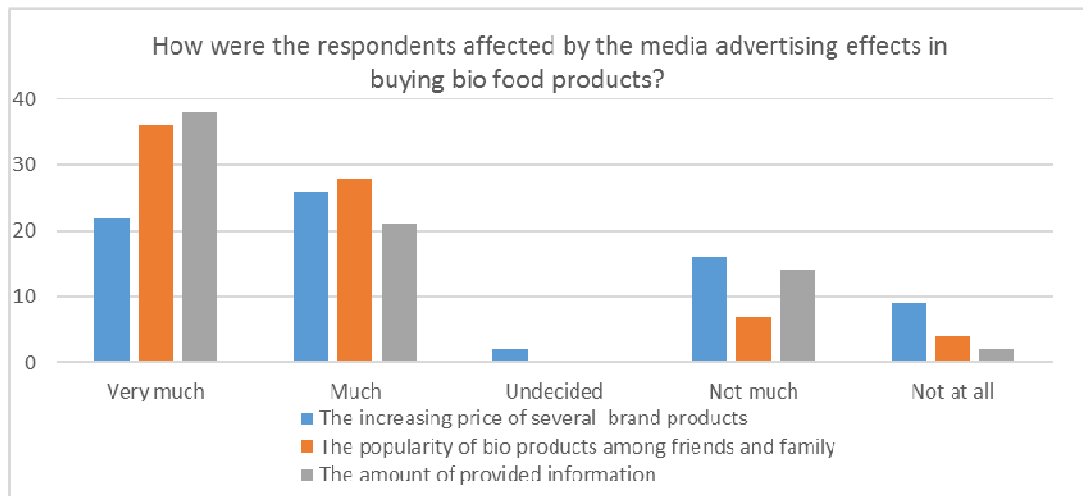
Also, we have analysed which was the most important factor in choosing bio food products and how were consumers being affected by the price increase due to the increase of demand.

The respondents were also asked if they teach their children about the importance of organic products and the health benefits of these products.



**Fig. 1: How did the respondents decide to use bio products?**

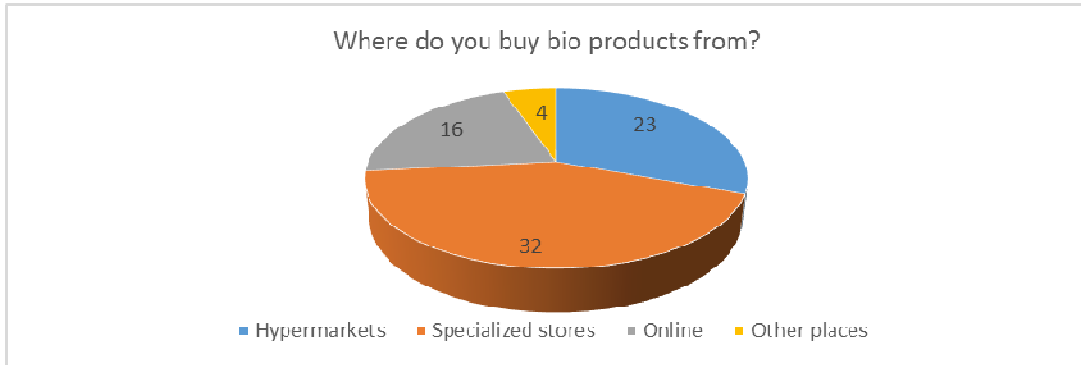
The results showed that 52% of the respondents were informed from the social media advertising by the benefits of consuming bio food products. They also mentioned that media advertising and the Internet offered them a big quantity of information and also other people opinion about the important of eating organic food. Also, 23% of the respondents declared that the information they received from acquaintances and relatives had an important role in their choice of bio-products. Out of 75 respondents, 12 people (16%) declared they gather knowledge of bio and organic food from science books, while only 9% of the respondents talked to a doctor or a nutritionist before buying and consuming that type of food.



**Fig. 2: How were the respondents affected by the media advertising effects**

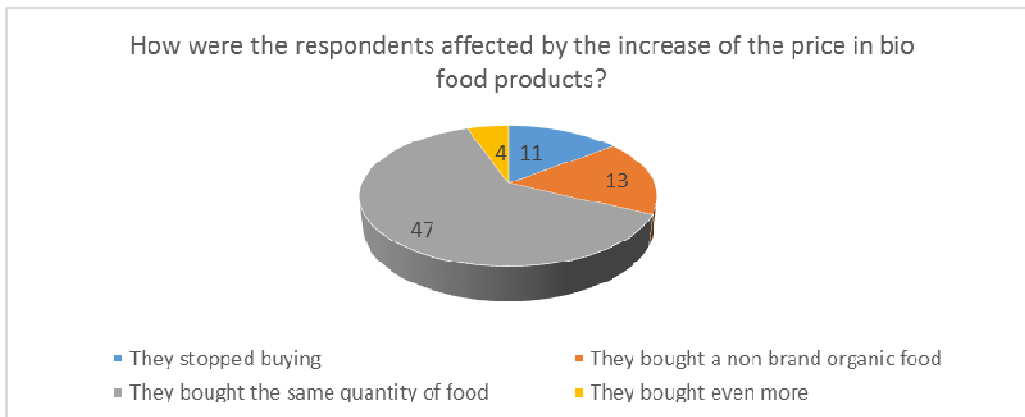
Through the analysis of the obtained results, we can conclude that Romanians are influenced by social media advertising in their decision to consume bio products. The amount of information on social media platforms represents a driver in the decision making process and of the buying behaviour.

At the same time, respondents have not been significantly affected by the rise of branded products prices, as a result of intense promotion and demand in social media.



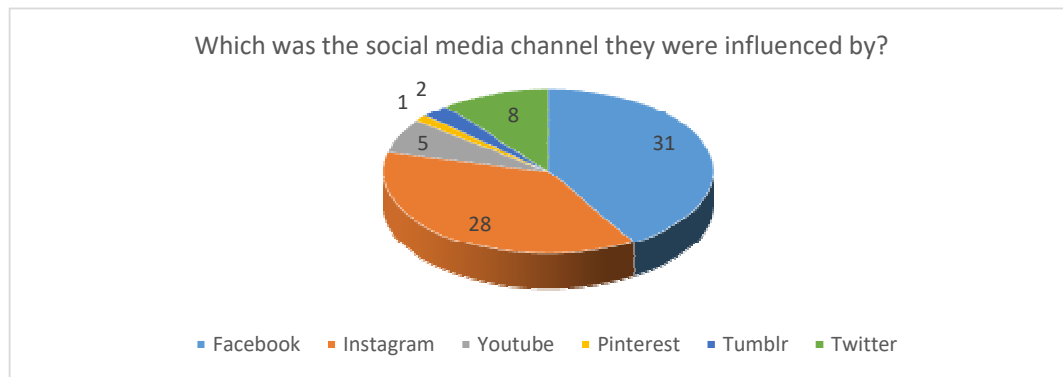
**Fig. 3: Where do the respondents buy their bio food supplies from?**

More than 30 respondents answered that their favourite place to buy bio supplies is represented by specialized store, where they can be guided. They also declared that they learned how to combine various fruits or vegetables in order to obtain a delicious bio food dish. 23 of respondents prefer to shop in hypermarkets, because there they can buy all the groceries they need, 16 people said they prefer to order bio products online and only 4 prefer to take their supplies from other places, like their own garden or neighbours.



**Fig. 4: How the respondents were affected by the increase of the price in bio food products**

Analysing the trend in the price of bio food products we noticed that it increased with 2-12% versus last three years, so we asked respondents to tell how their buying behaviour was affected by this increase. The majority of them (47 respondents) continued to buy the same quantity of bio food products, 13 of them preferred to buy a non-branded organic food, replacing their favourite brand with a more affordable one, 11 of the respondents stopped buying bio products and only 4 of them bought even more than they did before.



**Fig. 5: Which was the social media channel they were influenced by in buying bio food?**

In terms of information sources, the most important media channel for the respondents is Facebook, which was preferred by 31 people, 28 choosing Instagram, 8 of them Twitter, 5 Tumblr, and only one responded was influenced by the Pinterest application. They were informed about the benefits of using organic products from these social media channels and all of the respondents used them at least once in order to inform or ask different opinions regarding the products they are using or they have used.

## Conclusions

The increase in the number of obese children and the number of illnesses due to inappropriate nutrition has led to an increase in the attention of Romanians are paying to consumed foods they are consuming. Due to that factor, in the last five-six years the demand for bio products has significantly increased on the Romanian market.

Social media has become a better and cheaper form of marketing than the traditional ones, so that not only Romanian consumers are interested in it, but also companies, in order to let better promote their offers to consumers. Unfortunately, the increase of consumption level in bio products is not directly proportional to the increase of the social media advertising of these products, but it is expected to become.

From conducted surveys' results analysis it can be noticed that Romanians' favourite place to shop is represented by the specialized stores, where they can be guide and informed how to combine various fruits or vegetables in order to obtain a delicious bio food dish.

In the qualitative research it was possible to point out that even if there has been an economical increase that has led to rising bio food prices, Romanians kept on buying healthy food.

Since the upward trend of social media use of information, communication, promotion, and the upward trend in the consumption of bio products have been analysed, it can be deducted that in the future there will be an intense social media advertising for these types of products.

## References

Alhabash, S., Mundel, J. and Hussain, S.A (2017), 'Social Media Advertising – Unraveling the Mystery Box', *Digital Advertising* 3, 285-288.

Alonso, E.B., Cockx, L., and Swinnen, J., (2018), 'Culture and food security', *Global Food Security*, 125-131.

Appelhans, B.M., Milliron, B.-J., Woolf, K., Johnson, T.J., Pagoto, S.L., Schneider, K.L., Whited, M.C., Ventrelle, J.C., (2012), 'Socioeconomic status, energy cost, and nutrient content of supermarket food purchases', *Preventive Medicine* 42, 398–402.

Group, E., 2016, '6 Health Benefits of Eating Organic Food', *Global Healing Center- Live Healthy*. [Online]. [Retrieved October 25, 2018], [www.globalhealingcenter.com/natural-health/6-health-benefits-of-eating-organic-food/](http://www.globalhealingcenter.com/natural-health/6-health-benefits-of-eating-organic-food/).

Mhurchu, C.N., Eyles, H., Yanna, J., and Blakely, T. (2018), 'Do nutrition labels influence healthier food choices? Analysis of label viewing behaviour and subsequent food purchases in a labelling intervention trial', *Appetite* 121, 360-365.

Neti, S. (2011), 'Social Media and its Role in Marketing', *International Journal of Enterprise Computing and Business System*, Vol. 1, 104-106.

Olshansky, S.J., Passaro, D.J., Hershov, R.C., Layden, J., Carnes, B.A., Brody, J., Hayflick, L., Butler, R.N., Allison, D.B., and Ludwig, D.S. (2005), 'A Potential Decline in Life Expectancy in the United States in the 21st Century', *The New England Journal of Medicine* 352, 1138-1145;

Parsons, A. (2011), 'Using Social Media to Reach Consumers: A Content Analysis of Official Facebook Pages', *Academy of Marketing Studies Journal*, 17(2), 27-36.

Patino, A., Pitta, D. A., and Quinones, R. (2012), 'Social Media's Emerging Importance in Market Research', *Journal of Consumer Marketing*, 29(3), 233-237.

Pechey, R. and Monsivais, P. (2016), 'Socioeconomic inequalities in the healthiness of food choices: Exploring the contributions of food expenditures', *Preventive Medicine*, 203-209.

Raghunathan, R., Naylor, R. W., and Hoyer, W. D. (2006), 'The unhealthy tasty intuition and its effects on taste inferences, enjoyment, and choice of food products', *Journal of Marketing* 70, 170–184.

Smith, A. and Anderson, M. (2018), 'Social Media Use in 2018', *Pew Research Center: Internet, Science & Tech.* [Online]. [Retrieved October 25, 2018], <http://www.pewinternet.org/2018/03/01/social-media-use-in-2018/>

Stelzner, M. (2016), 'The 2016 Social Media Marketing Industry Report', *Social Media Examiner*. [Online]. [Retrieved October 12, 2018], [www.socialmediaexaminer.com/socialmediamarketingindustryreport2016.pdf](http://www.socialmediaexaminer.com/socialmediamarketingindustryreport2016.pdf).

Suzuki, S. and Park, J. (2018), 'Consumer evaluation of healthy, unpleasant-tasting food and the post-taste effect of positive information', *Food Quality and Preference* 66, 107-110.

Wolters, E.A., and Steel, B.S. (2016), 'Sustainable futures: Healthy lifestyles, obesity, and access to food in U.S. counties 2012', *Agriculture and Agricultural Science Procedia* 8, 73 – 80.



## **Social Media influence in Romanian's choice of touristic destinations: the case of Portugal**

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### **Abstract**

Country image occupies an increasing role in the context of globalization, becoming a key element in the economic and cultural course of each nation. The disappearance of virtual barriers between countries is intensified by the expansion of mass means of communication driven by the fast expansion of the World Wide Web.

Portugal positions itself in a specific way across the globe, in terms of elements such as culture, civilization, economy, locals' behavior, natural and anthropic resources.

Understanding how each nation is being perceived in the international context is a first step in the broadest existing project, namely to ensure global peace, to guarantee a healthy development of the economy, education and of the standard of life at country level and worldwide.

Romanians represent the biggest community of EU members in Portugal (Immigration and Borders Service, 2017), being the most representative for an opinion mining. The purpose of this paper is to investigate the importance of Social Media for Romanians in choosing Portugal as a touristic destination.

The paper "Social Media influence in Romanian's choice of touristic destinations: the case of Portugal" aims to determine the global perception of Romanian Internet users, members of online communities, about the Portuguese territory, in order to identify effective methods and strategies for promoting the image of this country.

**Keywords:** Social Media, tourism, decision-making process

### **Introduction**

*"As narcissism becomes more normalized...the posting of travel experiences on social media becomes a more prominent primary motivation for travel"* (Boley et al., 2018).

In the context of globalization, the image of a country occupies an increasingly important place in the mind of international consumers, becoming a challenging element in the economic and cultural course of each country. The disappearance of barriers between countries and peoples is mainly driven by the expansion of the different means of communication both inside and outside borders. Moreover, the increase of interdependence between nations provide a strategic role to word-of-mouth information spread on the Internet.

Each country positions itself in a specific way in the minds of consumers all around the globe in terms of elements such as culture, civilization, economy, locals' behavior, natural and anthropic resources. Understanding how each nation is being perceived by international consumers is a first

step in the broadest existing project, namely to ensure global peace, to guarantee a healthy development of the economy, education, health, tourism and, implicitly, of the standard of living.

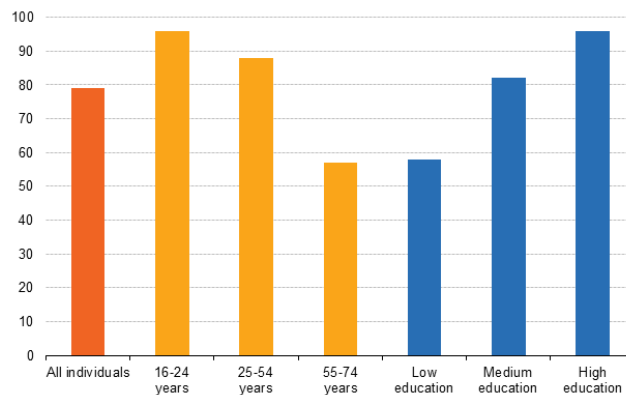
Differences in perception among the world's states are firstly due to geographic positioning on the five continents: Europe, America, Asia, Africa, Oceania, and secondary factors such as historical, religious and economic development.

On the other hand, certain nations, such as Portugal, have specific characteristics, less known to other peoples. It is of major importance to know the international image of the country in order to shape and develop effective promotion strategies with the ultimate goal of improving relations between states and global communication in the informational and technological contexts of the 21<sup>st</sup> century.

## Literature Review

The travel industry is an information-intense industry and any change involving technology and consumer behavior impact the distribution availability and use of travel related information, being of major importance (Xiang, Gretzel, 2010). Over time, the technological advancements proved to simplify the development of tourism (Hjalager, 2013).

Because of its large penetration among youths and adult consumers (in 2016, 83% of households in Europe had permanent connections to the Internet from which 79% have used it regularly) (Ec.europa.eu, 2018), the age groups more prone to travelling, the Internet has an increasing contribution to the tourism industry.



**Figure 1: Individuals who used the internet on average at least once a week, by age group and level of formal education, EU-28, 2016 (% of individuals)**

Source: Ec.europa.eu, 2018

The Internet is facilitating the way in which consumers get informed of available sellers' offers, becoming easier for them to respond to those offers (Spann, Tellis, 2006). Spann and Tellis (2006) agree that the heavy usage of the Internet by worldwide consumers has helped them make more rational buying decisions than they used to take in the pre-Internet era.

In the purchase decision making process, the search for information about a certain product or service was remodeled as a result of the appearance and expansion of the Internet. Besides reducing uncertainty and perceived risk, Information Communication Technologies augment the quality of travels (Buhalis, Law, 2008). The more information and advices consumers find in their research on a trip, the better their needs can be satisfied (Buhalis, Law, 2008).

One of the advancements in Information Communication Technology is the development of Web 2.0, in which the websites became dynamic platforms allowing users to generate content and in this way telling their own experience (Baggio, Costa, 2008).

When searching for a place to visit, consumers are actually looking to buy experiences. As Kotler (1997) specified, the importance of the information source in the purchase decision process depends on destination type and on buyers' personal preference. Usually, the tourist obtains the vast majority of touristic information related to the destination place from commercial sources. On the other hand, the most credible information sources are the personal ones. Through commercial sources, the consumer gets informed of the place, of places' characteristics, while public and personal sources (advices, opinions) play the determinant role in the decision making process.

In general, we can talk of two types of motivation that enable the tourist to take a decision to visit a specific destination: the 'push' and the 'pull' factors, namely the intrinsic and extrinsic motives (Hamid et al., 2016).

Consumers are initially searching for information about touristic destinations from internal and external sources. The internal search is a process of retrieving in consumers' own memory the data stored throughout the years, information that could serve in initialising the purchase decision process (Catoiu, Teodorescu, 2004). In the external search for information are being utilized multiple sources, such as: consumers' experience, personal sources – family, friends – and marketing sources (Catoiu Teodorescu, 2004).

Therefore, potential tourists gain knowledge through means that communicate the destinations' overall image from social, political and economic standpoints. This data is being transmitted by sources inside or outside borders that have interacted with that place: tourists, social or political organizations, economic agents and institutions.

Consumers who are in the phase of choosing what place/country to visit have less knowledge of the destination than the ones who are planning to revisit it. While in case of a revisit, the past experience holds an important role in the decision process, in the case of the first visit the image that specific destination has in the mind of the potential tourists is being represented by a mix of beliefs and attitudes based on word-of-mouth, pictorials and advertisement (Les Lumsdon, 1997).

Online purchasing intentions reflect objective-based behaviors, for example: planifying the process of information search about the destination even before taking the decision to visit it (Schlosser, White, Lloyd, 2006). In fact, in their research, consumers are trying to find the answers to specific questions related to anthropic, human, financial, economic and cultural resources of the place they choose as travel or business destination.

In this context, the Internet stimulated both rational and emotional decisions. If rational decisions are being driven by the display of exact information about the place of interest, emotional buying decisions are mostly triggered by emotions associated with destination's image in the mind of the traveler. Certain elements of the place might evoke positive or negative emotions to consumers during the travel decision making process (Zhao, Wang, Han, 2015).

Travel industry is facing a new consumer, that has access to information and can easily share own beliefs and views, past experiences, comments, opinions and suggestions on Internet platforms, forming connections, influencing potential consumers and their choice of touristic destination (Miguéns, Baggio, Costa, 2008). *“Traditional Word of Mouth (WOM) has turned into E-WOM”* (Chatzigeorgiou, 2017).

A type of media frequently used nowadays is the Social Media: *“Social Media is best defined in the context of the previous industrial media paradigm. Traditional media, such as television, newspapers, radio, and magazines, are one-way, static broadcast technologies. [...] New web technologies have made it easy for anyone to create—and, most importantly—distribute their own content”* (Zarella, Zarella, 2009).

As Chatzigeorgiou (2017) presents, 67% of persons that were using the Internet in 2017 had a Social Media account in which they logged at least once per day. Among these, 50% of consumers of age

between 16 and 74 years were using the Internet to interact with people via social networks. Moreover, 74% of social media users decide what good/service to purchase based on social media.

In the Web 2.0 era of social media, advertisement of destinations from official sources is decreasing its impact while tourists are becoming more involved in social media activity (Li et al., 2017).

Social media is fastly reshaping the communication patterns, changing the way people share and utilize information. Social platforms enable utilizers to share ideas, life experiences and advices in a broader way, to communicate in new and interactive manners. As Li, Robinson and Oriade (2017) notes, the most dominant source of information to travel planners are the web-based materials.

Therefore, social media has become a ubiquitous tool in the development of marketing and promotional strategies, as well as in the analysis of their impact on consumers (Hamid et al., 2016). This type of media gives the tourists the opportunity to provide feedback in an interactive and fast way, expressing their beliefs and opinions as well as describing their overall experience in a specific place and even influencing potential tourists.

*“Virtual communities are gradually becoming incredibly influential in tourism as consumers increasingly trust better their peers, rather than marketing messages. A Virtual Travel Community (VTC) makes it easier for people to obtain information, maintain connections, develop relationships, and eventually make travel-related decisions”* (Buhalis, Law, 2008).

Social media channels such as blogs, social networks, virtual communities, social posts, collaborative tagging and media files distributed on social platforms and applications are being heavily used by online travelers to share their travel experience, comments, travel facts and opinions that serve as information for all other users (Xiang, Gretzel, 2010).

The Internet allows global access to a web site. This enables information to circulate across borders, but it also means that it can experience cultural inconsistencies between the website and the visitor. Cultural congruence refers to the translation of a website into the native language of the visitor; providing local content; and allocates location in country-specific data: postal codes, national currency, etc (Steenkamp, Geyskens, 2006).

Therefore, when a place wants to attract a category of purchasers, such as tourists, that destination must represent this category in a very detailed way and thorough appropriate communication channels in order to achieve its purpose.

## **Methodology and Research Design (Methods)**

With the growing number of online platforms and user-generated content, this study aims to investigate the importance of social media among the sources of information Romanians take into account when choosing Portugal as a touristic destination. For this purpose, a descriptive research using the quantitative approach was devised. We used field data from a survey distributed among people aged 18 and 54, who have an Internet connection and are active Internet users.

The selection criterias were the following:

- present interes in planning to visit Portugal or have already visited Portugal;
- made at least one travel in the last year in foreign countries;

For this purpose the study was devised to pursue the following research questions and hypoteses:

RQ1: To what extent do Romanians want to visit Portugal?

H1: A small number of Romanians want to visit Portugal.

RQ2: What are the things people look for when it comes to choosing Portugal as a turistic destination?

H2.1: Romanians are mostly interested in findings about destinations' landmarks.

H2.2: Most of Romanians who travel abroad consider that country's reputation plays a very important role in choosing it as a turistic destination.

RQ3: What are the main sources of information on Portugal from turistic point of view?

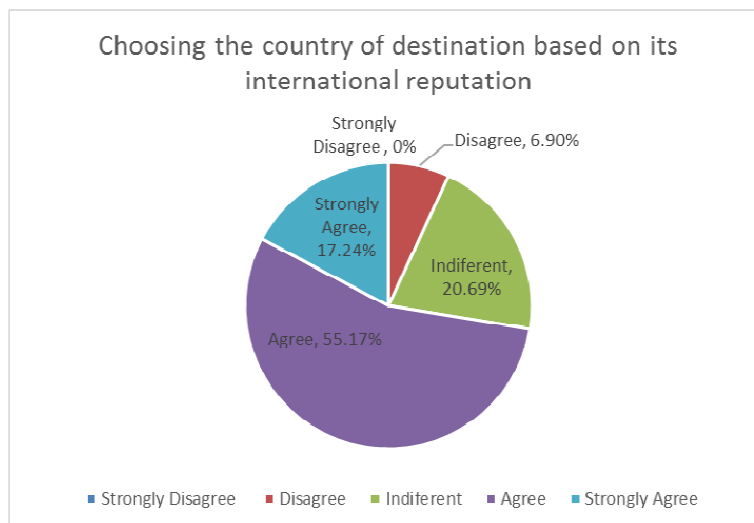
H3: Romanians get informed on Portugal as a touristic destination mostly through travel agencies and travel brochures.

The data were collected thourgh an online questionnaire as the research instrument, posted on the survey website: <http://www.esurveyspro.com/Survey.aspx?id=68d45c69-7b5c-486b-943d-46130129f80f>. The questionnaire was conducted in August 2018 in a random subset of Internet Romanian users. The survey link was sent via Facebook, the most popular social network worldwide (Statista, 2018), to 150 users from which 118 users completed the questionnaire, achieving a response rate of 79%.

## Research Findings

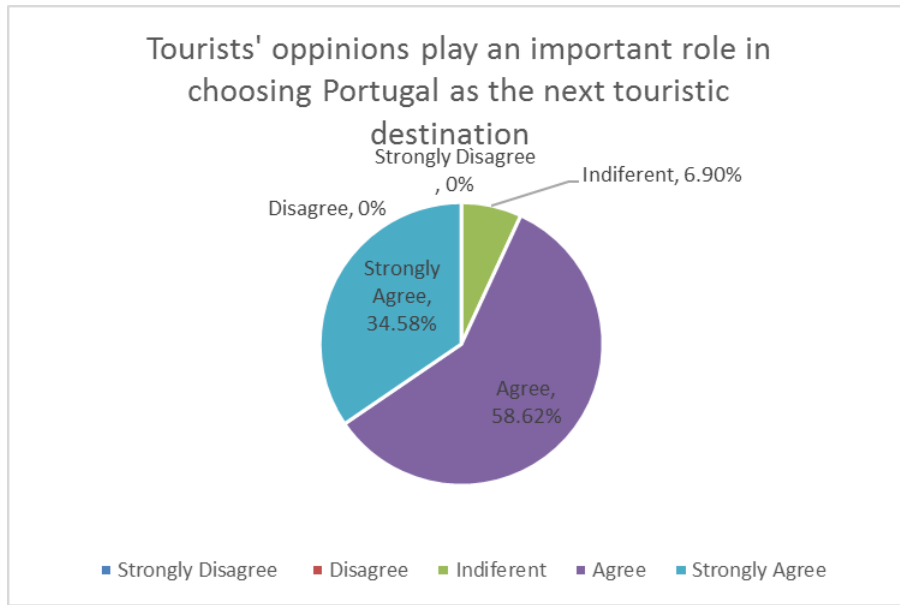
The online questionnaire was sent to people aged 18-54, though a social media platform (Facebook). Only persons who presented interes in visiting Portugal were taken into account for this research, being selected thorough the answers to the selection questions. Among respondents, 37.93% have travelled to Portugal. Almost 90% responded that they travel once, twice or three times per year and they want to make the next trip in the following 6 months. All of them search for information when it comes to planning a trip/vacation to another country (in this case Portugal).

When it comes to the decision making process and the considered criterias, 17.24% strongly agreed and 55.17% agreed that the countrys' international reputation is a major decision criterias, while only 6.9% disagreed.



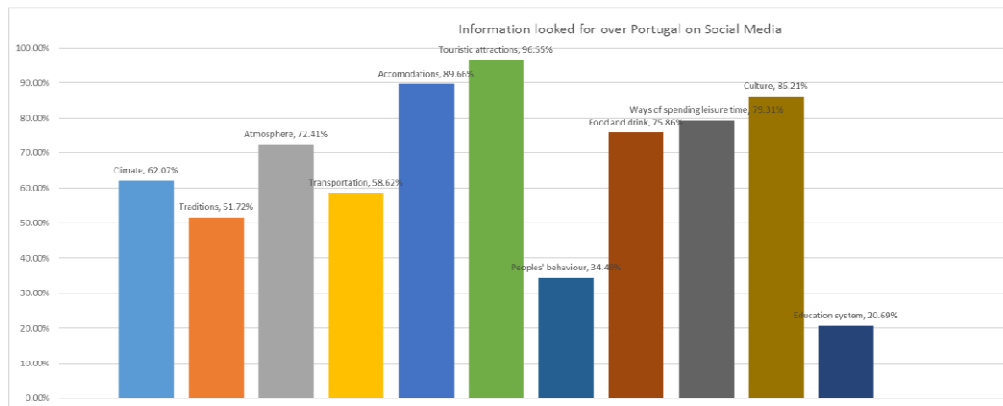
**Figure 2: Importance of countrys' international reputation in the decision making process**

As tourists play a role in shaping destinations' image amog potential buyers, the results of the study showed that the advices and impressions of the people who already visited the country play an important role in choosing that country as a touristic destination. Almost 93% of respondents agreed and strongly agreed that they take into account what it is being said of Portugal from the point of view of the tourists.



**Figure 3: Tourists’ oppinions importance in choosing Portugal as the next touristic destination**

On the one hand, when it comes to the sources of information regarding the next touristic destination, the Internet plays a special role, having an importance of almost 60%. The second source of information is represented by relatives and friends. On the other hand, touristic agencies are of low importance (9%). Regarding Social Media information, namely what is being presented on Facebook, YouTube, Instagram, Pinterest and personal blogs, people mostly look for information related to Portugals’ touristic attractions, accommodation, culture, ways of spending leisure time, food and drink.



**Figure 4: Categories of information Romanians’ look for on Social Media (Facebook, YouTube, Instagram, Pinterest, personal blogs) over Portugal**

All the information respondents are looking for is being generated from the distribution channels they trust the most. The aspect investigated in this study is the source of information that presents the highest level of trust to Romanians in choosing Portugal as next touristic destination.

As a result, Social Media channels (social networks, YouTube, blogs and forums) are more important for tourists than official sources of information (official country websites, official travel agencies). The highest level of trust was given to YouTube (30.86% of respondents chose Youtube as a trusted

information source), followed by Facebook (24.83% of respondents chose Facebook as a trusted information source).

**Table 1: Scoring of information sources in terms of assigned trust**

Trusted information sources	Average
Social network Facebook	24.83
YouTube	30.86
Blogs, Forums	13.45
Websites containing official information of the country	30.86
Travel agencies websites	0

### **Discussion and Conclusions, Limitations and Implications**

The results of the study provide interesting findings. With regards to the first research question, Portugal represents one of the upcoming touristic destinations for most Romanians (Hypotethis 1 isn't confirmed). When it comes to the things people search for when it comes to choosing Portugal as a turistic destination, Portugal's landmarks hold the first place, therefore confirming Hypotethis 2.1. Another aspect that is being revealed is that most of the Romanians who are travelling abroad consider that country's reputation plays a key role in the process of choosing that country as turistic destination, thus confirming Hypotethis 2.2. The main sources of information that Romanians trust and take into account when they want to gather knowledge of the travel destination are Social Media Platforms (Hypotethis 3 isn't confirmed).

The present study is a first step in understanding on what Portugal representative organisations and ministries need to focus when it comes to tourism industry and to ways of attracting foreign travelers, by taking into account the fast developments in technology (namely Social Media) and their influence on consumers' buying behavior.

*“Social media seems to offer the information and the solutions users need to design their own travel packages, replacing thus the jobs of the tourism agencies specialists”* (Engvall et al., 2012).

Countries are more than just business environments; they reflect people, culture, heritage, architectural values and the atmosphere that surrounds all these elements. Thus, countries are valued today in the light of all component elements, which are constantly changing. While people's history can not be eradicated, instead, the culture, the people and the heritage can experience changes of greater or lesser importance due to the rapid pace of global development. Even a minor change in a country can highly affect the way it is being perceived by international stakeholders.

Countrys' reputation is of significant importance in their decision to travel, reputation that is being developed on Social Media platforms, containing current or past travelers opinnions, suggestions and advices from their travel to Portugal.

The image of a country is formed throughout the years and is constantly developing every single day. As each component faces frecquent changes, as economics, policies and social life are developing, peoples' perception of a particular country either deteriorates or improves and becomes more complex.

Further research needs to be developed for each country in order to understand international consumers' perception of touristic destinations in those countries. An important objective is to scientifically unravel the mechanism by which consumers are driven to choose specific places/countries as their next touristic destination. In this context, Social Media seems to provide the key of unlocking consumers' minds.

## References

- Boley, B., Jordan, E., Kline, C. and Knollenberg, W. (2018), 'Social return and intent to travel', *Tourism Management*, 64, pp.119-128.
- Buhalis, D. and Law, R. (2008), 'Progress in information technology and tourism management: 20 years on and 10 years after the Internet — The state of eTourism research', *Tourism Management*, 29(4), pp.609-623.
- Cătoi, I. and Teodorescu, N. (2004), *Comportamentul consumatorului*, Uranus, București.
- Chatzigeorgiou, C. (2017), 'Modelling the impact of social media influencers on behavioural intentions of millennials: The case of tourism in rural areas in Greece', *Journal of Tourism, Heritage & Services Marketing*, 3(2), pp. 25-29.
- Ec.europa.eu. (2018). "Archive: Internet access and use statistics - households and individuals - Statistics Explained". [Online]. [Accessed 1 Sep. 2018]. Available at: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Internet\\_access\\_and\\_use\\_statistics\\_-\\_households\\_and\\_individuals&oldid=379591](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Internet_access_and_use_statistics_-_households_and_individuals&oldid=379591)
- Hamid, ZA, Wee, H, Hanafiah, MH & Asri, NAA 2016, 'The effect of social media on tourists' decision to travel to Islamic destination: A case of Malaysia', *Heritage, Culture and Society: Research agenda and best practices in the hospitality and tourism industry - Proceedings of the 3rd International Hospitality and Tourism Conference, IHTC 2016 CRC Press/Balkema*, 10 October 2016, Bandung, Indonesia, 501-506.
- Hjalager, A. (2013), '100 Innovations That Transformed Tourism', *Journal of Travel Research*, 54(1), pp.3-21.
- Immigration and Borders Services. (2018). *Comunitatea românească | AMBASADA ROMÂNIEI în Republica Portugheză*. [Online]. [Accessed 1 Sep. 2018]. Available at: <https://lisabona.mae.ro/node/797>.
- Kotler, P. (1997), *Marketing places in Europe*, Financial Times Management, London.
- Lumsdon, L. (1997), *Marketing for tourism*, Macmillan, Basingstoke.
- Miguéns, J., Baggio, R., Costa, C., 2008, 'Social media and tourism destinations: TripAdvisor case study', *IASK ATR 2008 (Advances in Tourism Research 2008)*, Aveiro, Portugal, 26–28 May 2008.
- Schlosser, A., White, T. and Lloyd, S. (2006), 'Converting Web Site Visitors into Buyers: How Web Site Investment Increases Consumer Trusting Beliefs and Online Purchase Intentions', *Journal of Marketing*, 70(2), pp.133-148.
- Spann, M. and Tellis, G. (2006), 'Does the Internet Promote Better Consumer Decisions? The Case of Name-Your-Own-Price Auctions', *Journal of Marketing*, 70(1), pp.65-78.
- Statista (2018), "Facebook users worldwide 2018". [Online]. Statista. [Accessed 1 Sep. 2018] Available at: <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>.
- Steenkamp, J. and Geyskens, I. (2006), 'How Country Characteristics Affect the Perceived Value of Web Sites', *Journal of Marketing*, 70(3), pp.136-150.
- Xiang, Z. and Gretzel, U. (2010), 'Role of social media in online travel information search', *Tourism Management*, 31(2), pp.179-188.



Zarella, D. and Zarrella, A. (2009), *The Social Media marketing book*, O'Reilly, Beijing.

Zhao, M., Wang, J. and Han, W. (2015), 'The impact of emotional involvement on online service buying decisions', *NeuroReport*, 26(17), pp.995-1002.

## **Approaches to Subsidized Agricultural Insurance in The Republic of Moldova**

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### **Abstract**

The paper proposes an analysis of agricultural crop harvesting in particular their self-sufficiency. The research objective is the negative influence of the climate on the development of the agricultural structure generated by the drought, storm, hail, etc. The objective of the study is to study the agricultural producers how they use their own powers to fight natural calamities and to ensure that the authorities support the risks and crises in agriculture. The total public expenditure (Member State and co-financing from the EU) that has been allocated for insurance, mutual funds and income stabilization, in the context of rural development programming for the 2014-2020 period.

**Keywords:** insurance, agriculture, risk.

### **Introduction**

In the Republic of Moldova, only a few insurance companies provide insurance services for risks in agriculture. And that's because the field is not attractive, as the insurance premiums are very high and the farmers do not have to pay. Moreover, insurance companies do not offer a full risk insurance package for farmers, but a selective one.

Agricultural activity in general, closely linked to climatic conditions controlled by man, by living organisms, the powerful economic interests of all parties involved so pronounced etc, it is considered as one of the highest risk level. Typically, this assessment include both natural hazards and economic ones. Proceeding from this finding objective, modern agriculture in all countries have a well-defined object of insurance. Mechanism and contemporary instruments to ensure agricultural sector is widely diversified, taking as a basis for specific geographic diversification structure phyto sectors and / or livestock, the economic opportunities of participants in the insurance etc.

## **Result and discussion.**

The insurance mechanism in agriculture is stipulated in the Law on Subsidized Insurance of Production Risks in Agriculture, which, according to the Deputy Minister of Agriculture, is more on paper. Under the law, insurance premiums are set as a percentage of the insured amount, according to the degree of risk, for each of the agricultural goods. At the same time, insurance premiums include the insurer's management costs, which can not account for more than 10% of the premiums.

The law also says that the subsidies for insurance premiums benefit the following agricultural producers:

- who have registered agricultural holdings at the town hall as well as animals, birds, bee families and fish belonging to them;
- which maintain agricultural crops, animals, poultry, bee families and produce fish according to approved technologies, take measures to prevent pest diseases and pests and keep track of the work done.

The amount of the subsidy shall be determined on the basis of calculated insurance premiums, according to the insurance tariffs provided for in the special agricultural production insurance conditions and shall constitute 50% of their value for all agricultural producers.

Every year, the Government approves the decision on how to allocate funds from the producers' subsidy fund, for more support measures for farmers, including for stimulating production risk in agriculture. For the year 2017, subsidies for stimulating the insurance mechanism in agriculture are, as in other years, 300,000 lei for one and the same producer.

At the same time, insurance companies offer different packages for farmers. For example, if a company provides additional services in the event of excessive drought, hailstones, lowering of temperatures below the biological resistance of plants, agricultural drilling or dust storms. Specifically, they offer insurance wine crops in case of damage due to drought, insufficient heat, excessive humidity, moisture, rot, frost, degerării, falling hail, washing water or insufficiently them, and as a result illness or fire.

Policies covering agricultural risks include drought, torrential rains, hail, floods and different types of frost. The former vary according to the type of culture as well as the risks covered and constitute, on average, 3-5% of the insured amount. Concerning "Moldasig" SRL, the compensation for a loss amounts to the total loss of the insured loss minus about 20%. The beneficiaries of the market are mainly farmers. The Moldovan agricultural insurance system is strongly subsidized by Government. Subsidy premiums include the risk of drought, hail, floods, storms, frost, as well as forced slaughter of animals and domestic birds. The goods subsidized include sugar beet, corn, sunflower, tobacco, vegetables, wheat, autumn rapeseed, barley, vine, orchards, grapes, fruit crops and animals. The data

in this table reflects the volume of subsidized premiums as well as the amount planned in the budget for these grants for the years 2010, 2015 and 2017. Where agricultural insurance will gain popularity among farmers, the current concept of the Moldovan agricultural risk transfer system will require an increase substantial expenditure of the state.

**Chart 1.State subsidization of insurance in agriculture.**

Indicators	Years		
	2010	2015	2017
Subsidies (in % of premium costs)	50% - 60%	80%	70%
Amount allocated from the budget for grants (million lei)	3,7	15	25

Source: National Human Development Report in the Republic of Moldo

**Chart.2 Insurance premiums established by LLC "Moldasig" for agricultural risks**

Agricultural culture	Winter frosts,% of the insurance amount	Spring frosts,% of the insurance amount	G5rindin,% of the amount of7 insurance	Excessive drought,% of insurance amount
Autumn wheat	5		3	6
Autumn Barley	5		3	6
Rape	6		3	6
Sunflower			5	6
Soy			4	6
Sugar beet		3	3	6
Maize (berries)			4	6

<b>Orchards (fruits)</b>		<b>7</b>	<b>5</b>	
<b>Grapes</b>		<b>7</b>	<b>5</b>	
<b>Vegetables</b>		<b>5</b>	<b>5</b>	<b>6</b>
<b>Tobacco</b>		<b>3</b>	<b>5</b>	<b>6</b>

The insurance period is governed by the said law, the insurance contract depending on the crop insured and the risks included in the insurance. The insurance period ends from the time of the harvest of the insured crops or in other terms stipulated in The insurance amount (the cost of the crop harvest) is determined by the understanding between the parties, depending on crop productivity, on the fulfillment of all technological requirements, the area of the crop and the cost of production.

- Insurance tariff

The insurance price is set by the Insurer according to the basic tariffs for each culture, depending on the insured risk and the probability of its production. The insurance price, after coordination with the Insured, is used in the calculation of the insurance premium.

Determining and calculating the damages to the insurance of agricultural crops. After receiving the opinion on the production of insured risk, a commission is formed with the mandatory participation of the representative of the Insurer, the Department of Agriculture and Food Industry, the Department of Emergency Situations and the Insured. The Commission shall determine the level of influence of the risk to the affected crop crop by an established method.

If the assessment of the damage is impossible at the moment, then the act indicates the next term, usually it coincides with the harvesting of the agricultural crop. The final calculation and the payment of insurance indemnities are made after the harvest is completed. Payment of insurance payments from low temperatures, dust storms and seed drills shall be made on the affected areas immediately after the act of establishing the damages has been completed.

If the assessment of the damage is impossible at the moment, then the act indicates the next term, usually it coincides with the harvesting of the agricultural crop. The final calculation and the payment of the insurance compensations are made after the completion of the harvest. The payment of insurance compensations produced by the low temperatures, dust storms and the sowing of the seed shall be carried out on the affected areas immediately after the act of establishing the damage has been completed.

## **Conclusions**

1. Adoption of the Law on Subsidizing Production Risks in Agriculture, which provides for state subsidies to ensure agricultural and livestock production has generated the need for insurance companies to be involved in the development of the agricultural insurance market. These companies are the National Insurance Company "Moldasig" and "Moldcargo" SRL.
2. Not all natural calamities (frosts, torrential rains, etc.), including risks economic, can be countered by applying physical instruments. Instruments can only be applied as a result of de facto losses of agricultural production, whereas physical instruments may not admit such losses. Hence the need for well-structured symbiosis of both physical and economic instruments of the agrarian sector.
3. The potential of agricultural insurance in Moldova remains untapped, because the vast majority of agricultural producers continue to ignore agricultural insurance.

## **BIBLIOGRAPHY**

1. ACSA „Managementul riscurilor dezastrelor în republica Moldova”, Chişinău 2007;
2. Raportul Naţional de Dezvoltare Umană în Republica Moldova, capitolul 10, 2009-2010;
3. [www.statistica.md](http://www.statistica.md)

## **Innovative-Investment Activity Management Accounting**

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### **Abstract**

The paper focuses on the information flows formed by the management accounting system in the process of innovation and investment activity. The authors develop of a management accounting system model, which allows the monitoring and analysis of innovative-investment costs and makes management decisions. The methodological approach to the formation of the management accounting system proposed in this article will allow to solve a number of tasks related to the management and control of innovative and investment activity of an enterprise including ensuring the efficiency of accounting. The availability of such information will allow to carefully consider and make a final decision, taking into account the possible financial risks of a company. Innovative and active enterprises should be able to manage their costs at all stages of a new product life cycle. The solution of this problem contributes to the organization of management accounting and cost control and financial results by direct cost and standard-cost systems.

**Keywords:** investment management, innovation, accounting, analytical support.

### **Introduction**

The main factor of sustainable development of regional economies is the formation of a new mechanism of innovation and investment processes management at all levels of management. However, the activation of this mechanism is impossible without theoretical understanding of the problems of information and analytical support in this area.

The existing information infrastructure does not provide reliable and high-quality support of the innovation and investment process. Studies have shown that the majority of enterprises can not make

quality management decisions related to the innovation and investment development, due to the lack of sufficient efficiency and methods and means of processing the required information imperfections.

In these circumstances, an extremely important task, facing the national science and practice, is the formation of such information, which would objectively and promptly reflect the economic situation within the enterprise, carrying out innovation and investment activities, aimed its leadership at the choice of the most effective ways of development and optimal management decisions.

## **Background**

Until now, information-analytical maintenance of management of innovation and investment activity is reduced to the calculation of the following indicators: net present effect (NPV), the index of ROI (IR), internal rate of return (IRR), modified internal rate of return (profitability) (MIRR), payback period (PP), the accounting rate of return (ARR), etc. (Alikaeva, 2003; Alikaeva, 2017, Altudov et al, 2017).

However today this is not enough. Enterprises engaged in innovation and investment, need to learn how to manage their costs to innovative products to bring profit. It is profit that ultimately serves as the main condition for the competitiveness and viability of an innovation and investment enterprise.

In its turn, cost management is possible only within the framework of management accounting. It is management accounting that is intended to give the management an accurate and objective picture of the situation in the enterprise. Without such information it is impossible to manage innovation and investment processes in the enterprise effectively.

Only by forming alternative thinking among domestic managers, the possibility of an ambiguous approach to solving management problems, we can expect that innovation and investment projects, within a particular enterprise, will begin to bring maximum profit in the shortest possible time.

This is especially true for the Kabardino-Balkarian Republic on the territory of which the largest Russian innovative and investment project "Ethane" is implemented, with a total value of RUB 15.7 billion. Production of "Ethane" is aimed at the production of innovative clean polymers and it has a strong import substitution orientation.

It is clear that the management accounting system of a particular enterprise depends on many factors: the nature of products, the scale of the company and business, as well as the human factor - the position of the top management and CEO, the relationship between the departments. However, despite this, within the framework of management accounting, the following cost management systems are identified, which many scientists propose to implement regardless of certain activity factors.

Such management accounting systems include "direct costing" and "standard cost", which are based on the organization of separate accounting of variables and fixed costs, and the use of its advantages in order to improve management (Gedgafova et al, 2014; Shidov, 2017).

## **Materials and Methods**

The division of costs into fixed and variable in the domestic accounting practice was carried out in order to plan tasks to reduce the cost of production, analyze the causes of deviations from established standards, to study the trend of certain types of costs to a more or less uniform change depending on the volume of production, to develop methods for alternative analysis. The issue of the need to use the considered group



at the organization of cost accounting was polemized in the special literature. In this regard, there were two diametrically opposite points of view. One group of scientists (I. A. Lamykin, S. M. Kamenetsky, V. I. Korsunov, I. Poklad, etc.) considered it possible to use such a group only in planning and economic analysis. Thus, Poklad noted that such a subdivision of costs "has no significant practical importance for accounting and calculation of production costs. However, it plays an important role in the economic analysis of production costs, the cost of marketable products and certain types, groups of products and semi-finished products" (Gedgafova, 2001). Another group, considering this feature of classification in General connection with the system of accounting and costing, stressed that the division of costs into fixed and variable "allows to attribute more accurately to direct and indirect costs, to form a comprehensive article of calculation, taking into account the degree of proportionality of individual costs to the number of products and services. All this contributes to improving the accuracy of production costs calculation" (Ivashkevich, 1974); "increases the analytical possibilities of the accounting and creates preconditions for optimization of the number of decisions" (Chumachenko, 1971).

In our view, the issue of the area of application of this grouping was debatable due to the fact that accounting and analysis in our country developed in parallel, independently from each other for a long time. Accounting data were used mainly for external reporting, on which the analysis was based. Both accounting and analysis had little impact on the decision-making process at the enterprise level.

The current development of the economy is fundamentally changing the situation. The shift towards predominantly innovative management and management practices has led to a close integration of accounting and analysis. Mutual penetration of one science into the sphere of another and their synthesis influenced the creation and functioning of an integrated information system of enterprise management, providing managers with the data necessary for planning, monitoring, evaluation of business operations and management decisions. In turn, the question of the purpose of dividing costs into fixed and variable is considered to be exhausted.

In modern conditions, characterized by increased competition, the struggle of markets and the search for new market segments, increasing the cost of development, development and production of new products, advertising, market research, etc., the classification of production costs for fixed and variable are of paramount importance.

Among the important areas of application of this division of costs will indicate its need to study the cost behavior, determine the relationship between volume, cost and profit, calculating the point of critical production, operational planning and control of costs and other management objectives.

When classifying the costs of constants and variables, it should be born in mind that there are costs that, in a certain situation, decision-making can be either constant or variable. The answer to the question of whether these costs should be considered fixed or variable depends primarily on the length of the period considered for decision-making. It is known that in a long period all costs become variable.

Meanwhile, scientific research and calculations have led to the conclusion that in the manufacture of innovative products being attributed to the constant costs meets the following conditions:

- 1) the absolute value remains unchanged when production volume increases or decreases with respect to a given area of relevance and a given time (usually a separate planning period);
- 2) the costs are inversely proportional to the quantity of production and the work performed, per unit of output;

- 3) distributed on structural divisions indirectly, often on the basis of the direct administrative decision;
- 4) control over their occurrence is mostly carried out by the administration of the enterprise.

The variables must include costs that are characterized by the following features:

- 1) in absolute value, they are changed together with the change in production volume within a certain relevant level and within a selected period of time;
- 2) per unit of variable volume, they are relatively constant;
- 3) accurately and easily determined by structural units;
- 4) control over their condition and behavior is carried out by production managers.

As for the conditional variable costs, it is difficult to determine their characteristic features. However, we argue that this group should include expenses, the amount of which is determined by the degressive and jump-like dependence on the volume of production. It is either costs as directly on technological process, and on General production and General economy needs of the enterprise, or the constant in nature expenses having temporary character.

Including both constant and variable components, conditionally variable costs can be divided between these two categories using the methods of correlation and regression analysis, mathematical statistics, graphical methods, which are well studied and detailed in the works of domestic and foreign authors (Drury, 2014; Ivashkevich, 1974; Nikolaeva, 1993; Stukov, 1988; Antony, 1965; Horngren, 1987; Mellerowicz, 1977).

Meanwhile, some groups of scientists point to a certain conditionality of such a division, stressing that in practice it is difficult to draw an exact line between fixed and variable costs, since their dependence on the volume of production is sometimes expressed insufficiently. Challenging such an argument, V. B. Ivashkevich notes that in order to judge the nature of the relationship between costs and volume of production, there is no need for an ideal accuracy of dividing costs into constant and variable ones. It is important to establish the presence or absence of such a trend for specific conditions of production and a certain point in time [9]. At the same time, in our view, certain conditionalities arising from the differentiation of costs by the degree of their dependence on the volume of production are quite acceptable, since they are much smaller than the information and analytical losses that can be incurred, ignoring such a division. Moreover, the office's needs have resulted in an accurate measurement of the accuracy of accounting information as a relative measure, prioritizing the prompt and timely receipt of information.

## **Results and Discussion**

We share the position of Nikolaeva (1993), according to which "the nature of the behavior of costs (constant or variable) depend on the relevant production situation in which decisions are made". The stated point of view corresponds to the views of American scientists, according to which "any costs can be constant or variable depending on the purpose for which they are made" (Horngren, 1987). In this regard, to study the nature of the level dependence of the costs absolute amount on the volume of production, it is advisable to group the costs by cost locations and compare them with the each site volume production, workshop and other business unit.

An important feature of the proposed approach to costs is a group that is possible to determine and control the financial result, not only after the end of the production cycle, but also at the end of each stage of the production process, as well as the centers of responsibility. In addition, increased data capacity accounting system and expands analytical framework to address critical enterprise economic problems at various levels of management.

In addition, only sharing the cost of a constant and a variable part (as outlined above), you can use a system of "direct costing" and "standard cost".

The term "direct costing" (from the English direct costing – account of direct costs) appeared in 1936. It was introduced by the American scientist D. Harris. However, this title according to most researchers fail because they do not fully reflect the essence of the system (main in direct costing - the organization of separate accounting of variable and fixed costs, and the use of its advantages in order to improve management efficiency). More accurately reflects the essence of the system concept "variable costing" (account variable costs).

Meanwhile, the term "direct-costing" appeared not by chance. In the early stages of the practical application of the system, only direct costs (all variable) were included in the cost price and indirect costs were written off directly to the financial results. As a result, the total amount of variable costs coincided with the amount of direct costs, which was reflected in the name of the system.

Currently, direct costing provides costing, not only in terms of direct variable costs, but also in part of variable indirect costs. Therefore, there is some conditionality of the name. At the same time, this system is called differently in different countries. For example, in Germany and Austria for this purpose, the term *teilkostenrechnung* (*grenzkostenrechnung*), that is, a given partial (boundary) cost or *deckungsbeitragsrechnung* – a contribution of margin accounting; in the UK direct costing is called marginal costing – an accounting for marginal costs; in France - *la comptabilite 'marginale* – a marginal accounting (Gedgafova, 2001).

Domestic researchers, analyzing this accounting system, operate with such concepts as "accounting of limited cost" (Stukov, 1988), "accounting of proportional cost" (Tkach, 2004), "accounting of truncated cost" (Paly, 1990), etc.

Studying various aspects of the accounting of variable costs system organization in the countries with developed market economy and analyzing experience of its application in the foreign accounting, it is possible to come to a conclusion about ambiguity of a direct costing: on the one hand it is a characteristic of administrative accounting subsystem from the point of view of the considered costs completeness, - direct costing itself is a management accounting system based on the classification of fixed and variable costs and includes cost accounting by type, place of origin and carrier, accounting for the results of production activities, as well as cost-benefit analysis and the adoption of management decisions on this basis.

As an alternative to a system that takes into account the total cost (usually aimed at improving the calculation), the system of accounting for variable costs is aimed at improving the current control of costs for each individual type of finished product, as well as improving the methods of management decisions, the ability to adjust them depending on changes in market conditions and other external factors. It is no coincidence that in the works of foreign scientists, this system is interpreted as "cost management" or "enterprise management".

A distinctive feature of the costing system for variable costs is the reference to the product of only those costs that depend on the degree of the production capacity use of the enterprise (or rather, the volume of production due to the available machine capacity). Fixed costs in this case are not related to inventory of finished goods and are not recorded in the volume of work in progress. Thanks to the specified features of the considered system, accounting focuses on the process of implementation; the underlying accounting principles meet the needs of market research. It should be noted that systems that take into account the full cost of production are oriented to production, and their accounting principles meet the needs of reflecting the production process technological aspects.

The main evaluation indicator in direct costing is the marginal profit, also called the contribution to the coverage. Margin profit is calculated as the difference between realized income and variable costs; it is used to cover fixed costs and generate profit. Fixed costs (as highlighted above) are treated as a single unit in this accounting system and are not measured against specific items. This allows to simplification an accounting. The simplification is achieved by reducing accounting to modeling changes of one variable, namely cost variables, depending on changes in volume and structure of production. This fact gives the management "exceptional economic importance in modern accounting, as it allows to control the efficiency of internal management, analyzing the development of variable costs, according to which current decisions are made" (Mellerowicz, 1977).

The main advantage of the direct costing system is that it can be used to study the relationship and interdependence between production, cost and profit (break-even analysis). As a result, it becomes a powerful tool for making optimal management decisions when considering many analytical tasks.

The aim of the break-even analysis is to determine what will happen to the financial result if a certain level of production changes. This information is very important for managers, as one of the most important variables affecting a total income, total costs and profit is the volume of production. Based on this, the study of the relationships between production, cost and profit should be paid a special attention, because the knowledge of this dependence allows managers to answer the following questions: at what level of production the company works break-even; how many units of production must be sold to obtain the planned amount of profit; what profit can be expected at this level of production, etc.

Solving such problems is especially important for innovation and investment enterprises, as the application of the break-even analysis model will help to identify the level of capacity utilization that will ensure break-even production of an innovative product (we are talking about determining the critical level of production, in which there will be neither profit nor loss, that is, the break-even point).

In order to calculate the break-even point, you can use the following mathematical dependence:

$$V = C/M, \quad (1)$$

where V - is the volume of production of an innovative product, from which the costs of its production will be fully covered by the income from the sale;

C – total amount of fixed costs for the period;

M – specific margin profit.

It should be borne in mind that changes in both the sale price and the average variable costs will lead to a change in the margin profit (or margin profit ratio), and, therefore, to a change in the break-even point.

By calculating the break-even point, the innovation and investment enterprise will be able to plan the volume of production and sales of an innovative product that will bring him profit.

Meanwhile, the multi-stage (multi-layer, multi-block, multi-segment) accounting of marginal income, is widely used in the practice of industrialized countries. It has significant prospects for the current control of the profitability of an innovative product.

Multistage accounting of coverage amounts involves the division of a fixed cost block and the distribution of its parts between the total amount of a product, the place of origin of the costs or the whole division of the enterprise. As a result, the quality of management decisions optimizing the production program is improved, since in this case the "contribution" of each division of the enterprise, the place of costs origin to the formation of the production result becomes evident. In addition, the information of multi-stage cost accounting facilitates more accurately the control of costs in the places of their origin, allows to determine the results of intra-economic activities of the innovation and investment enterprise individual departments.

For enterprises engaged in innovation and investment activity, a five-level scheme for accounting of marginal income can be proposed (Table 1):

**Table 1. Scheme for accounting of marginal income.**

Sales proceeds - Variable costs
= Marginal revenue 1 (amount of coverage 1) Constant costs for each type of product (costs that will not be if you abandon this product)
= Marginal revenue 2 (the amount of coverage 2)
The amount of contribution margin 2 – Fixed costs for each product group of products (the costs of which will not, if we abandon the entire product group of products)
= Marginal revenue 3 (amount of coverage 3)
The amount of contribution margin 3 - Constant costs of teams (plots)
= Marginal revenue 4 (amount of coverage 4)
The amount of contribution margin 4 - Constant costs of workshops (production units)
= Marginal revenue 5 (amount of coverage 5)
The amount of contribution margin 5 - Permanent costs of the enterprise
= Output

Considering the use of the "direct-costing" system on innovation and investment enterprises, it is necessary to take into account the current need for its organization, mainly due to the General

requirements of setting management accounting in order to implement effective management. However, despite the increasing importance of information generated by the use of this system (on the basis of which many management tasks are solved), the calculation of reduced costs is possible only in the conditions of internal reporting. Even in developed market economies, where variable costing is of paramount importance, neither the Company of professional accountants nor the tax administration approve the method of limited cost calculation for external reporting and tax purposes application (Horngren & Foster, 2005).

A parallel system of "direct costing" for the innovative investment enterprises should implement the "standard-cost" system, which originated from USA in early XX century.

It is based on the following fundamental principles:

- provisional regulation of costs and the calculation of the regulatory cost per unit of output;
- preliminary control of expenses on the basis of primary documents and fixing of deviations from regulations at the time of their emergence with simultaneous identification of the reasons and responsible persons. The deviations between the actual and standard costs arising in each accounting period are completely written off on financial results of the enterprise, thereby showing influence of deviations on profit (loss) of the enterprise;
- daily information on deviations from the norms.

It is believed that this system contributes to the efficiency of cost management and control, as it requires a detailed study of all the production, administrative and marketing functions of the enterprise, resulting in the development of the most optimal approaches to management while reducing costs. "Standard-cost" system involves the establishment of cost centers and allocating responsibility for costs with specific leaders whose work is carefully monitored.

In addition, standard costs serve as the best criterion for estimating actual costs. The establishment of cost standards is an important condition for improving the efficiency of the production process and the quality of work, which is important in terms of innovation and investment projects.

The established standards should be extremely accurate, as well as provide information that can be used to verify the actually achieved results to identify trends in the innovation and investment enterprises. Analysis and control of deviations are the main tools of the system "standard-cost".

For enterprises engaged in innovation and investment activity, we have developed an algorithm for the analysis of losses and deviations in profit system "standard-cost".

This algorithm is an example of "ETANA", Ltd., which produces an innovative pure polymer. The production chain of this product consists of two parts – the liquid phase and the solid phase. The developer of the liquid phase is the company Uhde Inventa-Fischer AG. The solid phase was developed by Bühler.

Estimates of the cost center responsible for the liquid phase for the upcoming planning period are presented in Table 2. This stage involves the use of two types of raw materials: terephthalic acid and ethylene glycol (purified antifreeze).

The estimates determined by the planned size of production is 10,000 kg. Data on the costs of production - standard.

**Table 2 : Estimated cost of the liability centre for the forthcoming planning period\***

Cost items	Amount, rubles
Basic materials:	
terephthalic acid (2000 kg × 19 rubles per kg)	38,000
ethylene glycol (1000 kg × 42 rubles per kg)	42,000
<b>Subtotal:</b>	<b>80,000</b>
The labor of production workers (30 hours × 300 rubles. per hour)	9,000
Indirect costs:	
variables (200 rubles per 1 hour of labor of production workers)	6,000
the constant (400 rubles for 1 hour of labor of production workers)	12,000
<b>Subtotal:</b>	<b>107,000</b>

\* Part of the data is conditional, as it is a commercial secret of LLC "ETANA".

At the end of the planning period, the management accounting system reports on the implementation of the estimates. It turned out that instead of the planned output of 10,000 kg, 9,000 kg were actually produced in the Table 3 data on the actual costs of the analyzed responsibility center for the production of 9 000 kg are presented.

**Table 3 : Performance Report of the responsibility centre\***

Cost items	Amount, rubles
Basic materials:	
terephthalic acid (1,905 kg × 20 rubles per kg)	38,100
ethylene glycol (1,025 kg × 40 rubles per kg)	41,000
<b>Subtotal:</b>	<b>79,100</b>
The labor of production workers (28 hours × 320 rubles per hour)	
Indirect costs:	8,960
variables	5,200
permanent	11,600
<b>Subtotal:</b>	<b>104,860</b>

\* Part of the data is conditional, as it is a commercial secret of LLC "ETANA".

Comparison of the data of the two tables leads to the conclusion that the responsibility center allowed deviations from the standard costs of:

- 1) the use of raw materials;
- 2) the use of the wages of the main production workers;
- 3) indirect costs.

The purpose of the standard-cost system is to calculate these deviations correctly and in a timely manner.

At the first stage deviations on the used raw materials are analyzed.

Standard cost of raw materials consumed depends on two factors:

- 1) the standard price of raw materials;
- 2) a standard consumption of raw materials per unit of output.

Deviation of actual costs from the standard under the influence of the first factor (commodity prices) can be calculated using the following mathematical relationship:

$$\Delta C = (\text{Actual price per unit} - \text{standard price per unit}) \times \text{Number of the purchased raw materials} \quad (2)$$

Based on the data of Tables 2 and 3, we will determine the size of deviations of the actual costs from the standard prices for raw materials.

$$\Delta C_{\text{terephthalic acid}} = (20 - 19) \times 1905 = +1905 \text{ rubles - an adverse deviation (N), because this position is over-estimated in comparison with standard costs.}$$

$$\Delta C_{\text{ethylene glycol}} = (40 - 42) \times 1025 = -2050 \text{ rubles - a suitable deviation (F) funds are saved due to the cheaper actual purchase of ethylene glycol against standard costs.}$$

Calculation of deviations is not the main aim. The enterprise is obliged to disclose the reasons for the unfavorable deviations, so that in the future responsibility for them is assigned to the head of the corresponding center of responsibility. So, overrun at the price of terephthalic acid is unlikely to be associated with the activities of the production department. Rather, it is a miscalculation in the work of another center of responsibility - the procurement department, which did not properly plan the purchase of terephthalic acid. For example, a smaller lot was bought at a higher price or the right time for market research was missed, so raw materials were purchased at the last moment at an overpriced price. In these cases, this adverse deviation will be controlled for the procurement department, and therefore it will be the responsibility for the overrun. The reason for the overspending, which is not controlled by the purchasing department, can be an objective increase in prices for terephthalic acid on the market, caused, for example, by inflation. The second factor, affecting the physical size of the spending is the specific consumption of raw materials, i.e., the cost per unit of output.

The formula for calculating the deviation of actual costs from the standard for the use of raw materials can be presented in the following form:

$$\Delta U = (\text{Actual consumption of raw materials} - \text{Standard consumption of raw materials}) \times \text{The standard price of raw materials} \quad (3)$$

Then by terephthalic acid we have:



$$\Delta U_{\text{terephthalic acid}} = (1905 - 1800) \times 19 = +1995 \text{ rubles} - \text{an adverse deviation } (N).$$

For ethylene glycol:

$$\Delta U_{\text{ethylene glycol}} = (1025 - 900) \times 42 = +5250 \text{ rubles} - \text{an adverse deviation } (N).$$

It can be addressed to the head of the center of responsibility (workshop) in cases where the cost overruns associated, for example, with non-compliance, technological and labor discipline, violation of the parameters of the production process, non-compliance with schedules of preventive maintenance of equipment, etc.

If the overrun of raw materials is associated with low quality, then the responsibility for that is vested in the Department of procurement (the purchase of poor quality raw materials) or to the head of the warehouse (in violation of the parameters storage).

Next the total flow of terephthalic acid from the standard rate deviation is calculated, taking into account both factors.

It is formed under the influence of two factors:

- 1) a low deviation ( $\Delta C_{\text{terephthalic acid}}$ ) - (+ 1905 rubles) (N);
- 2) the use of raw materials deviation ( $\Delta U_{\text{terephthalic acid}}$ ) - (+ 1995 rubles) (N).

$$\Delta S_{\text{terephthalic acid}} = +3900 \text{ rubles } (N).$$

Similar calculations are possible for ethylene glycol. The total deviation in this case will be:

$$\Delta S_{\text{ethylene glycol}} = +3200 \text{ rubles } (N)$$

It consists of:

a low deviation ( $\Delta C_{\text{ethylene glycol}}$ ) - (- 2050 rubles) (F);

- 1) the use of raw materials deviation ( $\Delta U_{\text{ethylene glycol}}$ ) - (+ 5250 rubles) (N).

The second stage of calculations is to identify deviations of actual work from the standard and determine the causes of their occurrence. The total amount of gross wages for hourly wage depends on the number of hours worked and wage rates. Accordingly, the amount of deviation of the actually accrued salary of the main workers from its standard value is determined by two factors – the deviation of the wage rate and the deviation in the number of hours worked, i.e. labor productivity.

The deviation in the wage rate ( $\Delta Wr$ ) is defined as the difference between the actual and standard wage rates multiplied by the actual number of hours worked:

$$\Delta W_r = (\text{Actual wage rate} - \text{Standard wage rate}) \times \text{Actually worked time} \quad (4)$$

Based on the data presented in table 1 and 2, we have:

$$\Delta W_r = (320 - 300) \times 28 = +560 \text{ rubles (N)}$$

Does it depend on whether this is an unfavorable deviation from the head of the responsibility centre? It depends if unskilled work is performed in the shop by highly skilled workers, and therefore paid at an increased rate. It does not depend if the administration of the enterprise was forced to raise wages to the staff of the shop due to the strike of workers trade unions, inflation or other objective reasons.

Deviation of labor productivity ( $\Delta W_{ip}$ ) is defined as follows:

$$\Delta W_{ip} = (\text{Actual spent time in hours} - \text{Standard time on actual output}) \times$$

$\times$  The standard hourly wage rate. (5)

Actual time was 28 hours (Table 3). Standard complexity is calculated according to Table 2 on the basis of the following details: expected output - 10000 units, this labor standard volume - 30 hours. Consequently, the complexity of the standard is equal to 0,003 hours.

Hence the deviation of labor productivity will be:

$$\Delta W_{ip} = (28 - 0,003 \times 9000) \times 300 = +300 \text{ rubles (N)}$$

The reasons for these deviations can be both objective (independent from the activities of the section chief) and subjective (depending on the activity of the head shop) character. Objective factors - poor quality of raw materials, result in dramatically increased labor costs of basic workers. In this case, the responsibility falls to the head of the supply department. Among other objective reasons - the lack of skilled workers, the poor quality of equipment repair, not prosperity in the organization of labor. For all these flaws in the production administration of the enterprise is responsible.

Examples of subjective reasons may be a violation of labor discipline in the shop, poor work organization, etc.

Finally, the aggregate deviation of the actual gross wages and salaries of its standard value is determined  $\Delta S$ :

$$\Delta S = 560 + 300 = +860 \text{ rubles (N)}$$

The calculations show that it was formed under the influence of two factors:

- 1) the deviations in the rate of wages ( $\Delta W_r$ ) - (+560 rubles) (N);
- 2) the deviation productivity ( $\Delta W_{ip}$ ) - (+ 300 rubles) (N).

In the third phase the deviations from the norms of actual indirect costs are calculated. For ease of analysis, we divide them into fixed and variable parts and using the data in table 4.

**Table 4 : Estimated and actual indirect costs, rubles**

N	Indicators	By estimate	Actually
1.	Fixed indirect costs	12,000	11,600
2.	Variable indirect costs	6,000	5,200
3.	Production in normo-hours	30	27
4.	The standard rate of allocation of fixed indirect costs for standard-hour (page 1/page 3)	400	-
5.	The standard rate of distribution of variable indirect costs for standard-hour (page 2/page 3)	200	-

The first two indicators are taken from the estimates and the report on its implementation (Table 2 and Table 3).

Then the norm-hour indicator is introduced and the output (estimated and actual) is estimated in norm-hours. Norm-hour is the time that must be spent on the production of a unit of production in the most efficient operation of the enterprise.

Production in norm-hours (third indicator) is calculated as follows. From estimates it is evident that the production of 10,000 units of products require 30 hours of work, i.e. normal time to release one of the product is 0.003 hours. Actual output – 9,000 units, which is 27 norm-hours  $(0,003 \times 9000)$ .

The standard rate of distribution of fixed costs – a private division of the estimated fixed indirect costs of production in normal hours:  $12000/30 = 400$ . This means that one labor hour is necessary 400 rubles of fixed indirect costs.

The normative rate of variable indirect costs distribution is calculated in a similar way:  $6000/30 = 200$ , i. e., 1 norm-hour, which corresponds to 200 rubles variable indirect costs.

These rates are needed to further adjust of the estimated costs to the actual output achieved.

Deviations of constant indirect costs ( $\Delta IE_c$ ) are defined similarly to the previous calculations – as the difference between actual indirect costs and their estimated value, adjusted for the actual release. The actual value of fixed indirect costs – 11,600 rubles.

Further the value of fixed overhead costs are calculated, that was to match estimated volume production. To do this, the actual output of standard-hours multiplied by the overhead allocation rate:  $27 \times 400 = 10800$  rubl.

Hence, the deviation of the actual constant of indirect costs from the estimated ones are:

$$\Delta IE_c = 11600 - 10800 = +800 \text{ rubles (N)}$$

This deflection is influenced by two factors:

- 1) due to deviations in output ( $\Delta q$ );
- 2) due to the deviation of the actual fixed costs to estimated ( $\Delta s$ ).

The influence of the first factor is estimated by the formula:

**$\Delta q = (\text{Estimated output in norm} - \text{hours} - \text{The factscal output in norm} - \text{hours}) \times \text{The standard rate of allocation of fixed indirect costs}$**

. (6)

In numerical terms, it will be:  **$\Delta q = (30 - 27) \times 400 = +1200 \text{ rubles (N)}$** .

The second factor is estimated as the difference between the actual and the estimated fixed costs:

**$\Delta s = 11600 - 12000 = -400 \text{ rubles (F)}$** .

Similar calculations are performed on the variable indirect costs ( $\Delta IE_v$ ). To do this, use the following Institute formation (table 3):

- actual output in norm-hours - 27;
- the rate of distribution of indirect variable costs - 200;
- actual variable indirect costs - 5200.

Therefore, the deviation will be:

**$\Delta IE_v = 5200 - 27 \times 200 = -200 \text{ rubles (F)}$** .

What are the possible causes of deviations of actual indirect costs to the estimated? It was found that the indirect variable costs are dependent on the labor-time of main production workers.

Therefore, the first reason can be a deviation of the actual working time from the main production workers estimated ( $\Delta T_i$ ). The size of this deviation is given by:

**$\Delta T_i = \text{Actual variable costs} - \text{Estimated variable costs, adjusted for the actual release products (7)}$** .

Actual variable overhead costs – 5,200 rubles, the actual work time of production workers - 28 hours (table 2). It is estimated that 1 hour of work of production worker is 200 rubles indirect variable costs. Consequently, the size of the deviation is:

**$\Delta T_i = 5200 - 200 \times 20 = -400 \text{ rubles (F)}$** .

To clarify the causes of the deviation analysis is necessary for each item of variable costs.

The second reason for the deviation is that the actual indirect costs differ from the estimated ones. This deviation is called the deviation of indirect cost variables by efficiency ( $\Delta IEV_g$ ) and is calculated by the formula:

$$\Delta IEV_g = (\text{Actual working time} \\ - \text{Working time at a rate adjusted to the actual output}) \times \\ \times \text{Standard rates indirect variable costs (8)}.$$

In this example, a deviation variable costs performance will be:

$$\Delta IEV_g = (28 - 27) \times 200 = +200 \text{ rubles (N)}$$

Thus, the calculated above cumulative adverse deviation of actual variables of the estimated indirect costs ( $\Delta AIE_g$ ) is formed under the influence of two factors:

- 1) deviation of variable overheads ( $\Delta T_i$ ) - (- 400 rubles) (F);
- 2) deviation efficiency ( $\Delta IEV_g$ ) - (+ 200 rubles) (N).

The purpose of the calculations performed above are analysis and monitoring of management responsible for a liquid phase process for the manufacture of the innovative pure polymer. Similar calculations should be carried out at the shop responsible for the solid phase.

With the results of the analysis, the company's management will have the necessary information for monitoring costs and profits.

## Conclusion

In summary, it should be emphasized that the construction of a system of management accounting innovation and investment activity of the enterprise is a creative process. Proposed in this article, the methodological approach to the formation of intra-organizational management accounting system will help to solve a number of problems related to the management and control of innovation and investment activity of the enterprise, including the provision of accounting efficiency. An effective system of management accounting will allow to evaluate the status of the innovation and investment at any time, and to decide on further implementation or suspension of innovation and investment projects.

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## References

Alikaeva, M.V. (2003), Investment policy branches of the industrial complex (theory and methodology). The thesis for the degree of Doctor of Economic Sciences. Saint-Petersburg.

- Alikaeva, M.V., Shomahova, K.A., Urusov, T.R. (2017), Innovative component of the regional economy. *Economy and Entrepreneurship*. № 4-2 (81-2), 254-257.
- Altudov, J.K., Kazieva, B.V., Gedgafova, I.Y. (2017), Improved methods of analysis of the structure of current assets of organizations in a cluster of diversification and transformation of the regional economy. *Vector economy*. 10 (16), 29.
- Altudov, J.K., Shidov, A.H., Gedgafova, I.Y. (2017), Improvement of information support of innovation and investment activity in the conditions of transformation of regional economies problem // Problems and prospects of economic development of regions. *Collection of papers of All-Russian scientific-practical conference dedicated to the 45th anniversary of the Institute of Economics and Finance*, 36-39.
- Gedgafova, I.Y. (2001) Information support of management of production costs in the wine industry enterprises. The thesis for the degree of Candidate of Economic Sciences. Saint-Petersburg.
- Gedgafova, I.Y., Shogentsukova, Z.H., Nagoya, A.B. (2014), Development of regulatory cost accounting method in modern conditions. *Basic Research*. 11-7, 1589-1593.
- Drury, K. (2014), Introduction to the management and production accounting. Trans. from English. ed. SA Tabalinoy. Audit, UNITY, 560.
- Drury, K. (2011), Cost Accounting standard-method costs. Translated from English. ed. N.D. Ėriashvili. Audit, YuNITI, 224.
- Ivashkevich, V.B. (1974), Accounting problems and calculation of production costs. *Finance*, 138.
- Ivashkevich, V.B. (1999), Management accounting in the enterprise information system. *Accounting*. 4, 99-102.
- Kerimov, V.E. (2011), Organization of the administrative account on the system "standard cost". *Audit and Financial analiz*. 3.
- Nikolaeva, S.A. (1993), Features of cost accounting in a market: the system "direct costing": Theory and Practice. *Finance and Statistics*, 128.
- Paly, V.F. (1990), Self-supporting and self-financing income: Issues recording and analysis. *Finance and Statistics*, 191 p.
- Stukov, S.A. (1988) Production accounting and control system. *Finance and Statistics*, 223.
- Tkach, V.I., Tkach, M.V. (2004), Management accounting: international experience. *Finance and Statistics*, 138.
- Charles, T. Horngren, Foster, J. (2005), Accounting: Administrative aspect. *Finance and Statistics*, 416.
- Chumachenko, N.G. (1971), Accounting and Analysis in US industrial production. *Finance*, 240.
- Schank, J., Govindarajan, V. (2009), Strategic Cost Management. *Micro Business*, 288.
- Shidov, A.H., Gedgafova, I.Y., Dolishte, B.Z. (2017), Information support of the adoption of innovative investment solutions through data systems "standard cost". *Economy and management in terms of digitalization: state, problems*, 399-406.

Jay, K. Shim, Joel G. Siegel (2006), Management methods cost and cost analysis. *Filin*, 344.

Shirobokov, V.G. (2008), Formation of costs and revenues in the management accounting system. *Economics of agricultural and processing enterprises*. 7, 25-27.

*Yarugova, A.* (1991), Management accounting: the experience of developed countries. *Finance and Statistics*, 240.

Anthony, R.N. (1965), *Planning and Control Systems: A Framework for Analysis*. Boston: Harvard University Press, 270.

Horngren, Ch.T., Kaplan, R.(1987), *Relevance Lost: The Rise and Fall of Management Accounting*. Harvard Business School Press, 456.

Mellerowicz, K. (1977), *Neuzeitliche Kalkulations Verfahren*, 6 Avf. R. Haufe Ver., Freiburg in Breisgau.

# **The Use of Domain Analysis to Enhance Validity and Reliability of Qualitative Studies: End-Users Adoption of e-government Services Case Study**

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## **Abstract**

The aim of this paper is to describe a range of validity and reliability strategies used in an e-government adoption qualitative study. The paper explains how using a range of validity and reliability strategies contributed to minimizing the possible qualitative researchers' bias that are usually associated with the qualitative research paradigm thus enhancing the credibility of the study results. In addition, the paper presents the qualitative data analysis technique (Domain Analysis) which was used to analyze the study's qualitative data. Further, the paper explains how this technique contributes towards producing valid and reliable results. The information presented in this paper would be of interest to IS researchers who are interested in adding rigor to their own qualitative enquires.

**Keywords:** E-government, Domain Analysis, qualitative, data analysis, research methods.

## **Introduction**

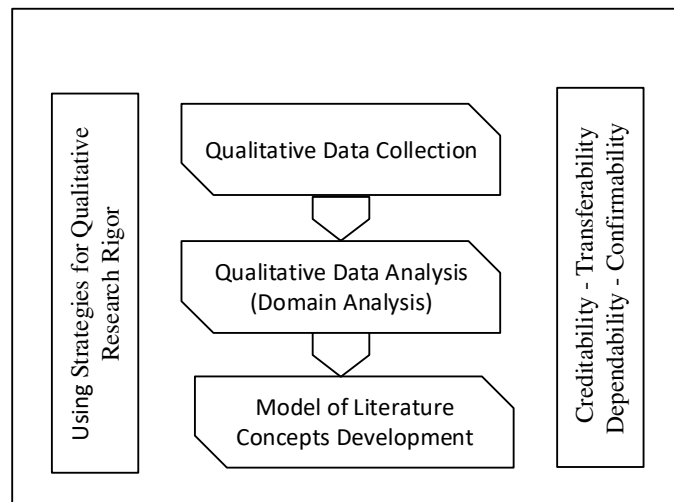
As IS researchers continue to investigate end-users acceptance of computer-based systems; many researchers relied on qualitative data to develop a deeper understanding of end-users behavior and attitudes towards these systems.

Shah and Corley (2006) argue that qualitative methods of data collection are powerful, particularly when used to "build new or refine existing theories" (p. 1821). Also, DiCicco-Bloom and Crabtree (2006) commented on the merits of qualitative studies highlighting the importance of qualitative interviewing as one of the most commonly used data collection methods in qualitative studies. Furthermore, Smith and Osborn (2008) argue that the use of interviews in qualitative studies allow researchers to reach novel areas that are not possible to reach without using this approach. The concept of ethnographic interviewing as a major qualitative data collection is not new in social sciences as it was first introduced by Spradley (1979). Spradley states that there are two "distinct but complementary" (p. 78) processes involved in ethnographic interviewing: rapport building and eliciting information. According to Spradley, rapport refers to a harmonious relationship between researchers and informants which implies establishing a sense of trust between the two parties to enable the free flow of information during qualitative interviews. The next section present a case study of a recent qualitative study that was conducted to in Abu Dhabi, UAE.

## **The Study Background, Data Collection and Analysis**

Kabbar (2016), used mixed methods research approach to develop and validate a model that summaries the factors that influence the adoption of e-government services by end-users in Abu Dhabi, UAE. The study employed qualitative approach during the first phase of the study to build the study's theoretical model from scratch. The approach followed to conduct the qualitative study is summarized in Figure 1.





**Figure 1: Qualitative Study Approach**

### Data Collection

The researcher used two round of semi-structured qualitative interviews to collect data from the study participants as this method of data collection not only enabled the researcher to collect structured qualitative data but also the use of semi-structured approach reduces the likelihood of interviewer bias during the process of qualitative data collection (Mitchell and Jolley, 2007). Throughout the interviews, the researcher was conscious of the four stages of rapport development suggested by Spradley: apprehension, exploration, cooperation and participation. Because a harmonious relationship of trust and acceptance between a researcher and the research participants allows for the free flow of information during an interview, the researcher followed the three principles suggested by Spradley (1979) that facilitate the rapport-building from the eliminating apprehension to reaching full participation. First, the rapport building started well before the first interview took place. At the initial contact time with a participant, the researcher took every possible effort to inform the participant about the study aim and objective. At the time of the first interview, the participant was reminded about the aim and objectives of the study. In addition, the interviews duration, types of questions involved, the researcher’s contact details and background. Second, during the interviews the researcher restated the key phrases and terms used by an informer (obviously without irritating them) to demonstrate an interest in what s/he contributes, conveying that his/her contribution is valuable, and presenting a non-judgmental attitude on the part of the researcher. Third, the researcher avoided asking questions that could be interpreted by the participants as judgmental, such as “why would you do that?” or “what do you mean by that?” at this stage of the interview.

In addition, to further facilitate the rapport-building process, the researcher conducted the interviewees at a place where the participants felt more comfortable (e.g. their homes, workplaces, any public places of their choice). Also, at the start of each interview, the researcher asked what Spradley (1979) describes as grand tour questions such as “Can you tell me about your computing background” and “what do you generally use computers for?”, to enable the participants to move from the exploration to the cooperation phase of the process. Some of the probing techniques suggested by Bernard (2013) such as (silence, echo, verbal agreement, and ‘tell-me-more, u) were used to elicit further information from interviewees.

It was notable that the speed at which rapport was developed varied from one informant to another. While with some informants’ rapport was established quickly right from the beginning of the first interview, this took longer with other participants where the cooperation/participation stage of the process was reached towards the end of the first interview or, in rare cases, at the start of the second interview. At the end of each interview, the researcher asked each participant about his/her feelings regarding the interview to determine the stage of the rapport-building process that had been reached.

Once the researcher had sensed that an interviewee had reached the cooperation/participation stage, a more free discussion began to take place and informants started to assume “the role of teaching the ethnographer” (Spradley 1979, p. 83), at which stage valuable information about the interviewees’ experiences with e-government was elicited.

Before rapport was established, the researcher was cautious not to ask what interviewees might consider as sensitive questions such as their concerns when dealing with government, and any issues they had experienced in previous encounters with government.

As each interview progressed, and in most cases after fifteen to twenty minutes into the interview, most participants began to take a more assertive role and introduced new information. In some cases, they even offered analytical views, reasoning and sometimes judgments about topics raised during the interview such as the success or failure of e-government services.

After the first interview was completed, the recorded interviews were transcribed and returned to the participants to examine. While taking this measure prolonged the study duration because of the rather time consuming transcription and validation processes, it was necessary to take this step to validate the accuracy and the completeness of the information collected as well as to avoid interviewer data coding errors, this mitigates any possible interviewer bias identified by Robson (2002) as potentially affecting data reliability and validity of a qualitative study (Barriball & While, 1994). Giving participants the opportunity to check and make changes to the transcripts served two purposes. First, it verified and authenticated the information provided during the interviews as reliable, accurate and representing what the interviewees intended. Second, it empowered the interviewees to become more than just passive responders to questions. This opportunity enabled the interviewees to expand on, correct, verify and/or discuss the information and opinions given during the interview.

### **Analytical Method Used**

Data analysis is referred to as a “systematic search for meaning” (Hatch, 2002. P. 148). To ensure that the data was analyzed systematically, the transcribed data was analyzed using Domain Analysis technique suggested by Atkinson and Abu El Haj (1996). This technique is well suited for this study as it is based on the Spradley’s (1979) widely adopted qualitative research approach which also informed the interview process. The Domain Analysis technique was selected because the technique helps researcher in better understanding the qualitative data as well as the relationships among domains (Leech and Onwuegbuzie, 2007).

The approach of coding the transcribed data was based on identifying the ‘units of meaning’ found in an interview text rather than following a line by line coding approach. This approach was adopted following Howell-Richardson and Mellar (1996) recommendation that the researcher should bear in mind the purpose of the participants’ remarks therefore whenever the purpose of the remark changes a new unit of meaning is created. In addition to the recommendation of Dey (1993) that the underlying consideration when coding should be given to the relevant ‘unit of meaning’ which is conveyed by content rather than form syntactical structure such as words, sentences or paragraph (Henri, 1991).

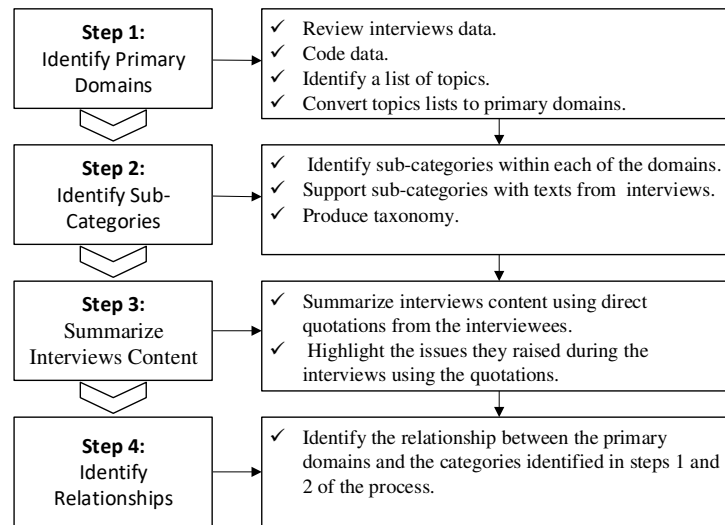
The Domain Analysis technique, as described by Atkinson and Abu El Haj (1996), is a four-step analysis technique. The first step requires the researcher to identify the primary domains which reappear in the discourse of each interview. Atkinson and Abu El Haj (1996) recommend that the researcher familiarize her/himself with the data and then code the interview text to identify a list of topics that emerged from the interview. The lists of topics produced by all interviews can then be collated to produce a preliminary list of the broad primary domains.

Once the primary domains are established, the second step in the Domain Analysis process is to identify sub-categories within each of the domains. This is achieved by organizing the texts obtained from the interviews into the primary domains, thereby allowing the sub-categories to be identified

directly from the interviewees' own statements. Using the interviewees' own words will indicate the issues that are most important to them rather than reflecting what the interviewer thinks important, thus giving the interviewees a "voice" (Denzin, 2010). The results of this step are presented as a taxonomy of sub-categories. To double-check that the categories under which the researcher has placed the qualitative data do reflect the topics of importance to interviewees, the taxonomy was given to informants to check and verify.

The third step in the process, as noted by Atkinson and Abu El Haj (1996), involves summarizing the interview content according to the key issues identified in the previous two stages. The results of this step are presented as direct quotations from the interviewees that highlight the issues they raised. Inevitably, there were some cases where classification was difficult because the quotation could possibly apply to more than one category; these were noted for future reference.

The final step in the Domain Analysis method is to identify the relationship between the primary domains and the categories identified in steps one and two of the process. The difficult-to-classify quotations identified in step three were particularly significant in this step as these indicated a relationship between given domains. The domain Analysis processes is illustrated in Figure 2.



**Figure 2: Domain Analysis Process**

After the completion of the Domain Analysis of the interviews, a model of the literature concepts was constructed. The constructed model gives an overall picture of the relationships between the different literature concepts in terms of influence. The model was then verified in follow-up interviews with informants who confirmed that the model reflected their experiences. None of those who did the follow-up interviews disagreed with the domain categories or the relationships between the domains, refer to Kabbar and Dell (2016) for full details about the model.

Indeed, Atkinson and Abu El Haj (1996) contributed a detailed guidelines that explains how qualitative data can be effectively analyzed using Domain Analysis nevertheless, the authors do not offer similar guidelines to deal with the *validity* and *reliability* issues of qualitative studies. The following section of the paper discusses the strategies used to ensure the validity and reliability of the results obtain from the study under consideration.

### Strategies Used to Negate Possible Qualitative Research Validity and Reliability Issues

Seale (2002) argue that an exposure to, or awareness of any well thought out methodological discussion, including the validity and reliability of qualitative research, is likely to enhance qualitative studies quality. In addition he stated that “if there is one thing that produce poor studies, it is a researcher who is blind to the methodological consequences of research decisions” (Seale 2002, p. 108). Hence, the study under consideration has been informed by Lincoln and Guba’s (1985) qualitative studies trustworthiness constructs as well as constructs’ implementation strategies suggested by Shenton’s (2004).

Lincoln and Guba (1985) suggest that the worth of a qualitative study is established by its trustworthiness. They devised four constructs suited to the naturalistic paradigm namely: Credibility (refers to confidence in the 'truth' of the study results), Transferability (refers to showing that the results can be applied in other contexts), Dependability (the results are consistent and could be repeated), and Confirmability (refers to the degree of neutrality or the extent to which the study results are formed by the study participants and not researcher own bias).

Among many other qualitative researchers, Shenton (2004) acknowledged Lincoln and Guba’s trustworthiness constructs and states that these constructs have won considerable favour in ensuring the rigor of qualitative studies. Shenton suggested a number of useful strategies that researchers can follow to meet Lincoln and Guba’s constructs. A summary of these strategies is shown in Table 1.

The researcher utilized the recommendations given by Lincoln and Guba (1985) and the suggestions provided by Shenton (2004) to establish the credibility of the study under consideration by: 1) selecting a well-established research method (in the form of the procedures employed in the data collection and analysis) that has been used in similar projects; 2) making sure that the researcher had a prolonged engagement with the study participants; 3) using Shenton’s recommendations on recruiting informants to meets the purposive sample criteria of this study; 4) collecting data from wide range of informants in different time and space dimensions (Denzin, 2010 & Cooper 2001) to achieve data sources triangulation; and by 5) providing thick descriptive data thus achieving the *transferability* recommended by Lincoln and Guba. In addition, the *Dependability* and *confirmability* constructs are established by leaving behind the recommended ‘audit trail’ described Lincoln and Guba (1985) which shows the structured, systematic and rigorous approach followed during data collection, analysis and reporting outcome of the qualitative phase (see Table 1) . The ‘audit trial’ in the study under consideration, and hence the study’s dependability and confirmability of the study, is established by: providing detailed detailed description of the methods and procedures used in conducting the semi-structured interviews; describing the analytical method used in details as well as describing how the analytical method was carried out to culminate the findings of the study.

**Table 1: Strategies for Qualitative Research Rigor**

Quality Criterion	Possible Provisions Made by Researchers
Credibility	Adoption of appropriate, well recognised research methods Development of early familiarity with culture of participating organisations Random sampling of individuals serving as informants Triangulation via use of different methods, different types of informants and different sites Tactics to help ensure honesty in informants Iterative questioning in data collection dialogues Negative case analysis Debriefing sessions between researcher and superiors Peer scrutiny of project Use of “reflective commentary” Description of background, qualifications and experience of the researcher Member checks of data collected and interpretations/theories formed

	Thick description of phenomenon under scrutiny Examination of previous research to frame findings
Transferability	Provision of background data to establish context of study and detailed description of phenomenon in question to allow comparisons to be made
Dependability	Employment of “overlapping methods” In-depth methodological description to allow study to be repeated
Confirmability	Triangulation to reduce effect of investigator bias Admission of researcher’s beliefs and assumptions Recognition of shortcomings in study’s methods and their potential effects In-depth methodological description to allow integrity of research results to be scrutinised Use of diagrams to demonstrate “audit trail”

Source: Shenton (2004, p. 73)

In addition, Leech and Onwuegbuzie (2007) recommended that qualitative researchers use at least two of the seven commonly used qualitative data analysis tools: (1) methods of constant comparison, (2) keywords-in-context, (3) word count, (4) classical content analysis, (5) Domain Analysis, (6) taxonomic analysis, and (7) componential analysis, in order to triangulate qualitative study results and thus improve the rigour and trustworthiness of the results. While the analytical method used in the study under consideration satisfies this recommendation (by using the Domain Analysis and the taxonomic analysis) the researcher decided also to use the classical content analysis as an additional analytical tool in one of the Domain Analysis steps to add more rigour to the process. The motivations for performing classic content analysis are: 1) to validate the preliminary list of primary domains obtained from step one of the Domain Analysis process by crosschecking each primary domain listed with the dataset to ensure that the concept is routed in the data; 2) to reveal the preliminary primary domains that are the most important to the interviewees.

## Conclusion

This case study described the methodological approach used in a qualitative study that investigated the adoption of end-users of e-government services. The paper presented a number of strategies used to mitigate the possible validity and reliability issues that are usually associated with qualitative studies. The strategies used focused on two areas: 1) the procedures and protocol used during data collection; 2) the use of a robust qualitative data analysis technique (Doman Analysis). The paper also explained how using these strategies contributed towards validity and reliability of the results obtained.

## References

- Atkinson, S., & Abu El Haj, M. (1996). Domain analysis for qualitative public health data. *Health Policy and Planning*, 11(4), pp. 438-442.
- Barriball, K. L., & While, A. (1994). Collecting data using a semi-structured interview: a discussion paper. *Journal of Advanced Nursing-Institutional Subscription*, 19(2), 328-335.
- Bernard, H. R. (2013). *Social research methods: Qualitative and quantitative approaches*. Los Angeles: SAGE.
- Cooper, C. (2001). Not just a numbers thing: Tactics for improving reliability and validity in Qualitative Research. Research Methods Division, *Academy of Management*, 6.
- Denzin, N.K. 2010, "Moments, mixed methods, and paradigm dialogs", *Qualitative Inquiry*, Vol. 16, no. 6, pp419 – 427
- Dey, I (1993). *Qualitative Data Analysis: A User-Friendly Guide for Social Scientists*. Routledge New York, NY, ISBN: 041505852X.

- DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, 40(4), 314-321.
- Hatch, J. A. (2002). *Doing qualitative research in education settings*. Albany: SUNY Press
- Henri, F. (1991). Computer conferencing and content analysis. In A. Kaye (Ed.) *Collaborative learning through computer conferencing: The Najaden papers*, (pp.117-136). London: Springer-Verlag
- Howell-Richardson, C., & Mellar, H. (1996). A methodology for the analysis of patterns of participation within computer mediated communication courses. *Instructional Science*, 24(1), 47-69. doi:10.1007/bf00156003
- Kabbar, E. & Dell, P (2016). A Demand-based e-government Adoption Model (DeAM). In the *Proceedings of the International Conference on Electronic Governance and Open Society: Challenges in Eurasia - EGOSE2016* (pp. 67-76), St. Petersburg, Russia - November 22 - 23, 2016. ACM, New York, ISBN: 978-1-4503-4859.
- Kabbar, E.F (2016). *Modeling end-user adoption of e-government services in Abu Dhabi*, PhD thesis, Curtin University, Perth, Australia, URI: <http://hdl.handle.net/20.500.11937/48583>.
- Leech, N. L., & Onwuegbuzie, A. J. (2007). An array of qualitative data analysis tools: A call for data analysis triangulation. *School Psychology Quarterly*, 22(4), 557-584.  
<http://dx.doi.org/10.1037/1045-3830.22.4.557>
- Lincoln, Y.S. & Guba, E.G. (1985) *Naturalistic Inquiry*. Newbury Park, CA: Sage.
- Mitchell, M. L., & Jolley, J. M. (2007). *Research design explained*. Belmont, CA: Thomson Wadsworth.
- Robson, C. (2002). *Real World Research*. Oxford: Blackwell.
- Shah, S., & Corley, K. (2006). Building Better Theory by Bridging the Quantitative? Qualitative Divide. *J Management Studies*, 43(8), 1821-1835. <http://dx.doi.org/10.1111/j.1467-6486.2006.00662.x>
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), 63-75. doi:10.3233/efi-2004-22201
- Smith, J. A., & Osborn, M. (2008). Interpretative phenomenological analysis. In Smith (Ed.) *Qualitative psychology: A practical guide to research methods*, p.51-80,
- Spradley, J. (1979) *The Ethnographic Interview*. Holt Rinehart & Winston, New York.

## **The Local Action Groups – Key Actors of the Rural Development**

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### **Abstract**

The Romanian rural space faces many difficulties, which are the causes for the disparities between different regions of Romania. For reducing these disparities, one of the solutions is developing and implementing of local development strategies, having as a starting point, on one side, the identified needs at the local level and on the other side the existing potential, customs, culture and local traditions.

Involving the local community, establishing links between citizens, activities and territories, set up in the form of "local action groups" will contribute to the rural space development, this evolving for the benefit of their own territories. The construction of such a local partnership may involve three major categories of members, public and / or private, who can organize and manage collectively the public funds: local authorities, economic agents and the community members.

In this way the rural areas development is established and coordinated by the local partnership which represents the decision factor and will also have the evolution responsibility in time.

The present work aims to highlight the importance of collaboration between people, the entrepreneurial initiatives support, implementation of integrated action and networks creation for the local products capitalization: food, environment or tourism, having one single goal: the common good of community and at the same time the rural economy diversification and development..

**Keywords:** rural development, local action group, partnership, strategy

### **Introduction**

The LEADER Program is an approach that provides new opportunities for rural development, setting the basis for identifying local needs, enhancing development capacity and implementing local development strategies for preserving rural and cultural heritage, developing the economic environment and improving the organizational skills of local communities.

LEADER comes from "Liaison entre actions de développement rural". As the name suggests, it is a method of mobilizing and promoting rural development in local rural communities, and not a fixed set of measures to be implemented. Experience has shown that Leader can make considerable changes in the everyday life of people in rural areas. It can play an important role in encouraging innovative responses to old and new rural issues and becomes a kind of "laboratory" to strengthen local capacities and to test new ways of meeting the needs of rural communities.

LEADER encourages rural territories to explore new ways to become or remain competitive, to capitalize on their assets and to overcome the difficulties they might encounter, such as an aging population, low levels of provision services or absence of employment opportunities. Thus, the LEADER Program contributes to improving the quality of life in rural areas, both of farmers' families and of the wider rural population.

## Results and Discussions

The fundamental concept behind the LEADER approach is that, given the diversity of European rural areas, development strategies are more productive and more effective if they are decided and implemented locally by local actors using clear and transparent procedures and benefiting from support appropriate public administrations and technical assistance necessary for the transmission of good practice.

The difference between leader and other more traditional rural policy measures is that it shows "how" and not what "to do". The leader approach can be summarized in seven key features. They are described separately, but it is important to consider them as a toolbox. Each feature complements the others and interacts with them positively, with durable effects on the dynamics of rural areas and their ability to solve their own problems.



**Fig. 1: The features of the LEADER concept**

Source: Leader approach: an elementary guide, European Commission



A Local Action Group should associate public and private partners, be well balanced, and represent local interest groups that are derived from the various socio-economic sectors in the area. At the decision-making level, private partners and associations must form at least 50% of the local partnership.

Local action groups can be set up ad hoc to access Leader help or rely on existing partnerships. Equipped with a team of specialists and decision makers, the LAG is an organizational model that can influence the development of strategies in a positive way. Over time, the role and responsibilities of local action groups have also evolved in some Member States as the Leader approach became more and more popular.

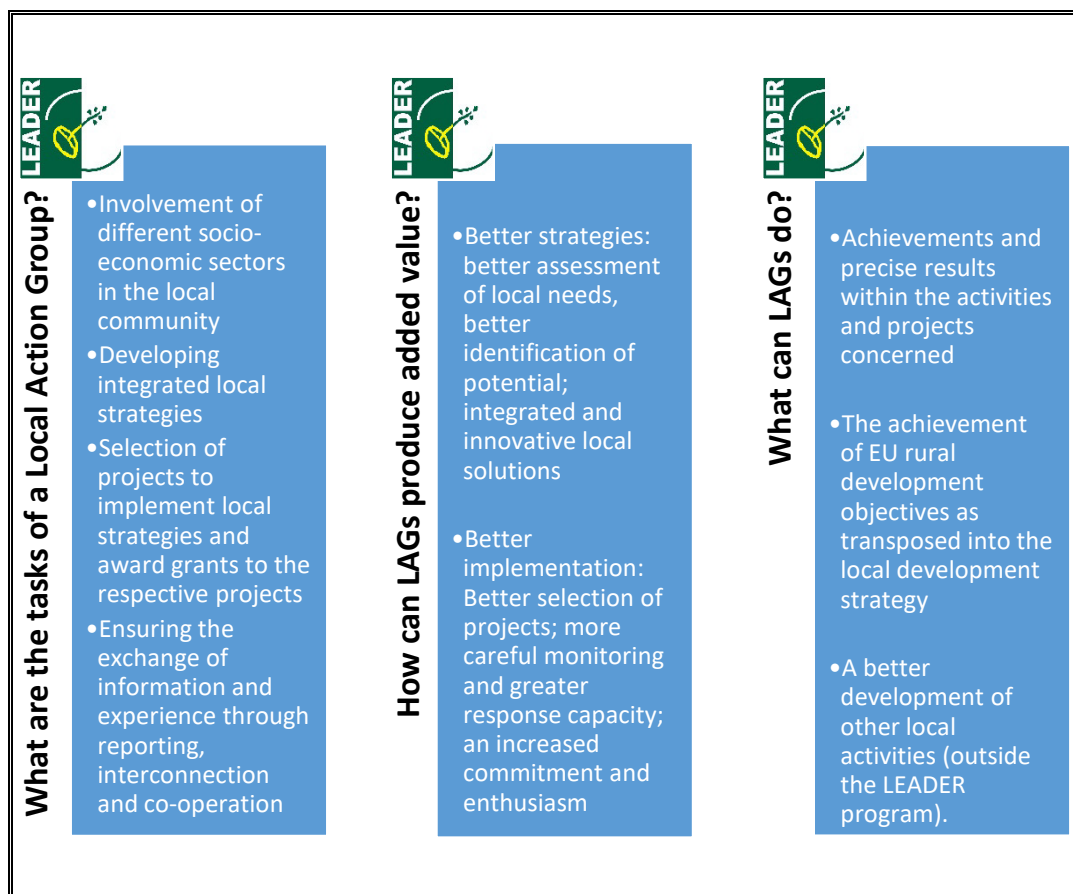
Local action groups decide the direction and content of the local rural development strategy and make decisions on the various projects to be funded. Actual payments are made by a paying authority, which deals with public funding, and not with the LAG, based on the selection of projects by the LAG.

In Romania, the programming period 2014-2020 have been selected for funding and are working a total of 239 Local Action Groups.

The most active rural actors in local initiatives are:

- Professional organizations and unions (representing farmers, professionals outside the agricultural sector and micro-enterprises);
- Professional associations;
- Citizens, residents and their local organizations;
- Local political representatives;
- Environmental associations;
- Providers of cultural and community services, including the media;
- Women's associations;
- Young people.

## The Role of Lags in Implementing the LEADER Approach



**Fig. 2: The role of LAGs in implementing the LEADER approach**

*Source: Implementation of the Leader approach for rural development, European Court of Auditors*

The assumption on which the Leader approach is based is that there is added value compared to traditional downstream implementation. The upcoming approaches and the interaction between different sectors at local level should mobilize the local potential. Local groups should be best placed to identify local and innovative local solutions to local issues that they can have a greater response capacity.

Participation in local decision-making should generate enthusiasm and increased engagement, and can thus lead to better, more sustainable rural development at local level. Achieving community involvement through the bottom-up approach can also lead to a less tangible impact, such as capacity building and local empowerment.

## **Implementation by LAGs LEADER features**

### ***The Ascending Approach***

The upward approach aims to encourage participation in local rural development through the involvement of the local community, social and economic interest groups and representatives of public and private institutions. The local community should be involved in the process of identifying the most relevant local strategy and implementing the activities (projects) needed to meet the objectives of the local strategy.

### ***Local public-private partnerships***

One of the key features of the Leader approach is that decision-making should not be a matter for public authorities but a wider local partnership in which the local government is involved but does not hold the majority vote. Community involvement can be enhanced by giving all local stakeholders the opportunity to make part of the LAG and ensuring that all key local actors are represented.

### ***Local development strategies focused on the area***

The area-based approach requires LAGs to define and implement a development strategy based on the particular situation of the area concerned, based on its strengths and weaknesses. To maximize the potential of this approach, LAGs should translate their own needs and perspectives into local objectives and implement their strategies by focusing on these goals.

The objectives of the LAGs should define precisely the results they intend to achieve locally through their strategies, thus providing a precise framework and clear guidelines for the day-to-day management of the programs as well as a basis for the management performance.

### ***Innovative and multi-sectorial approaches***

The intention is that Leader represents an innovative approach. LAGs should devise and implement their strategies in a way to stimulate and achieve rural development at local level through innovative solutions to old and new rural issues. LAGs can bring added value by undertaking different actions than other programs or the activities of local authorities. Projects which fall within the normal activities of local authorities or are eligible under other programs should therefore be funded by the Leader programs only in exceptional cases duly justified in the light of a specific need.

### ***Network interconnection projects and cooperation projects***

Interconnection through networks involves the exchange of experience and aims to transfer best practices, disseminate innovation and capitalize lessons learned. Cooperation projects, involving two or more LAGs, can bring additional added value by creating critical mass and complementarity, making it possible to obtain results that a LAG entity could not individually obtain.

## **The quality of financial management of LAGs**

### ***Efficiency of funds spent in the form of grants***

By awarding grants, the LAGs spend funds from the EU budget. Consequently, it should ensure that the grants awarded are the most effective use of public funding. The Financial Regulation provides for the EU budget to be used in accordance with the principle of effectiveness, the latter being defined as the best ratio between the resources used and the results obtained.

One of the risks to the effectiveness of any grant program is that the promoter could have carried out the project even if it did not benefit from a grant, which results in the "ballast" effect: the additional effect produced by the grant is null. Compared to entities running programs on a top-down approach, LAGs should be better able to assess the risk of ballast effect due to the knowledge of local conditions and the contacts they have with the promoter concerned during the preparation of the grant application. A strong indication of the "ballast" effect occurs when the promoter has already started the project before the LAG decides whether to award or not the grant in question.

Another risk that affects efficiency is that promoters may not want projects to be implemented at the lowest costs that can deliver the required quality. This risk increases when the grant covers a significant part of the costs of the project.

### ***Fair and transparent procedures***

LAGs employ public funds when selecting projects, but do not have to respond to these funds in accordance with the principles of democracy. Consequently, the degree of transparency needs to be greater and LAGs should be able to demonstrate that they have systematically applied appropriate procedures.

### ***Operational efficiency***

LAGs record operating costs: staff remuneration, office administration, travel, advertising, etc. For the sake of efficiency, these costs should be limited and should be in the budgets approved by the Managing Authorities. The fact that the LAGs have local staff in local offices responsible for managing a small number of projects should also allow them to have a better response than would be possible in the case of a regional managed program or national. This should result in a faster processing of financing applications and payments, as well as a reduced need for bureaucratic procedures.

## **Conclusion**

Changes in the agricultural sector as a result of the reform of the Common Agricultural Policy, increased consumer demand, environmental pressures, the rapid spread of new technologies, population aging and rural depopulation are only some of the factors affecting rural areas and require the implementation of a targeted program to build public-private partnerships and capitalize on local (physical, human and financial) resources to develop and implement local development strategies.

Local strategies should be the core of the Leader approach, and they must provide the partnership with the *raison d'être* and represent the promise of added value obtained through local solutions designed specifically to meet local rural development objectives.

The local action group must:

- To gather together around a common project the relevant interest groups in a particular area;
- Be autonomous in decision-making and have the ability to look at local resources from an original perspective;
- Correlate the different measures;
- Take advantage of the opportunities offered by the different local resources;
- Be open to innovative ideas;
- Be able to relate and integrate different sectoral approaches.

LAGs address rural issues from a global perspective based on development strategies. In addition to local partnership, strategy is an essential element. This should take into account issues related to sustainable development and build on the potential endogenous development of the selected area. The main purpose of the strategy is to create long-term development policies, and each strategy is based on a detailed analysis of the situation in the area, where development potential and possibilities need to be clearly identified. Each strategy must contain:

- Characteristics of the area (geographical, economic, demographic, sociological, and description of previous actions).
- SWOT analysis (development potential of the area).
- Vision of area development (theme chosen and objectives, priorities, target groups, expected results).
- Operating strategy (bottom-up approach, timetable, innovative actions, transferability of actions and activities).
- Harmonization with the development programs of other LAGs.

## References

- [1]. Turek Rahoveanu A., Turek Rahoveanu Agdalena (2013), *Socio-economic development prospects of rural areas in the context of application of LEADER Program in Romania*, Scientific Papers Series : „Management, Economic Engineering in Agriculture and Rural Development”, Vol. 13; Issue 4, pg. 295-302
- [2]. Turek Rahoveanu A. (2012), *"LEADER approach" - an opportunity for rural development*, Agrarian Economy and Rural Development (AERD'12), Vol. 3, pg. 355-362
- [3]. \*\*\* Site-ul Ministerului Agriculturii și Dezvoltării Rurale – [www.madr.ro](http://www.madr.ro);
- [4]. \*\*\* *Abordarea Leader: un ghid elementar*, Comisia Europeană, ISBN 92-79-02057-9
- [5]. \*\*\* *Raportul special nr. 5: Implementarea abordării Leader pentru dezvoltarea rurală*, Curtea de Conturi Europeană, ISBN 978-92-9207-895-9
- [6]. \*\*\* *Ministerul Agriculturii și Dezvoltării Rurale, Programul Național de Dezvoltare Rurală 2014-2020*
- [7]. \*\*\* [www.ec.europa.eu](http://www.ec.europa.eu)
- [8]. \*\*\* [www.afir.info](http://www.afir.info)