**Artículo de investigación**

# Prerequisites for formation of modern management paradigms in terms of scientific knowledge evolution

## Prerrequisitos para la formación de paradigmas de gestión modernos en términos de evolución del conocimiento científico

## Pré-requisitos para a formação de paradigmas modernos de gestão em termos de evolução do conhecimento científico

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**Abstract**

Research on the issues relevant to understanding of the directions scientific knowledge is moving in in economics and management is an important component of the modern science. This knowledge is formed and summarized through scientific paradigms. An enormous impact management has on all types of economic activities determines the management paradigms importance when selecting the most effective way in socioeconomic development. The purpose of the research is to examine the prerequisites for occurrence of such paradigms in terms of scientific knowledge evolution in economics and management. The article proposes the author's management paradigm definition as scientific category and examines scientific and historical factors behind the formation of the classic management paradigm and reveals an organic link between management paradigms and socioeconomic development ones. In particular, the article analyzes the process of gradual transition from the classic management paradigm to innovation one. The author studies and compares the approaches taken by leading scientists in this field and determined dominating scientific models formed within innovation paradigm. The subject matter of such models studying and crucial modern science categories, i.e. innovation management,

**Resumen**

La investigación sobre los temas relevantes para la comprensión de las direcciones en que se está moviendo el conocimiento científico en economía y gestión es un componente importante de la ciencia moderna. Este conocimiento se forma y resume a través de paradigmas científicos. Un enorme impacto que tiene la gestión en todos los tipos de actividades económicas determina la importancia de los paradigmas de gestión a la hora de seleccionar la forma más eficaz de desarrollo socioeconómico. El propósito de la investigación es examinar los requisitos previos para la ocurrencia de tales paradigmas en términos de la evolución del conocimiento científico en economía y gestión. El artículo propone la definición del paradigma de gestión del autor como categoría científica y examina los factores científicos e históricos detrás de la formación del paradigma de gestión clásico y revela un vínculo orgánico entre los paradigmas de gestión y los de desarrollo socioeconómico. En particular, el artículo analiza el proceso de transición gradual del paradigma de gestión clásico a uno innovador. El autor estudia y compara los enfoques adoptados por los principales científicos en este campo y determina los modelos científicos dominantes que se forman dentro del paradigma de la innovación. El tema de tales modelos es el

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knowledge economy, intellectual capital, organizational capital, human capital and a number of other categories.

**Keywords:** Management paradigm, management theory evolution, economic theory evolution, classic management paradigm, innovation management paradigm, knowledge economy, intellectual capital.

estudio y las categorías cruciales de ciencia moderna, es decir, la gestión de la innovación, la economía del conocimiento, el capital intelectual, el capital organizacional, el capital humano y una serie de otras categorías.

**Palabras claves:** Paradigma de gestión, evolución de la teoría de la gestión, evolución de la teoría económica, paradigma de la gestión clásica, paradigma de la gestión de la innovación, economía del conocimiento, capital intelectual.

**Resumo**

A pesquisa sobre as questões relevantes para a compreensão das direções em que o conhecimento científico está se movendo na economia e no gerenciamento é um componente importante da ciência moderna. Esse conhecimento é formado e resumido através de paradigmas científicos. Um enorme impacto na gestão de todos os tipos de atividades econômicas determina a importância dos paradigmas gerenciais ao selecionar a maneira mais eficaz de desenvolvimento socioeconômico. O objetivo da pesquisa é examinar os pré-requisitos para a ocorrência de tais paradigmas em termos de evolução do conhecimento científico em economia e gestão. O artigo propõe a definição de paradigma gerencial do autor como categoria científica e examina os fatores científicos e históricos por trás da formação do paradigma clássico de gestão e revela um elo orgânico entre paradigmas de gestão e desenvolvimento socioeconômico. Em particular, o artigo analisa o processo de transição gradual do paradigma clássico de gestão para a inovação. O autor estuda e compara as abordagens tomadas pelos principais cientistas neste campo e determinou modelos científicos dominantes formados dentro do paradigma da inovação. O tema de tais modelos estudando e categorias cruciais da ciência moderna, ou seja, gestão da inovação, economia do conhecimento, capital intelectual, capital organizacional, capital humano e uma série de outras categorias.

**Palavras-chave:** Paradigma de gestão, evolução da teoria de gestão, evolução da teoria econômica, paradigma clássico de gestão, paradigma de gestão da inovação, economia do conhecimento, capital intelectual.

## Introduction

Modern science studies the directions in socioeconomic development of countries and even countries groups on the basis of changes in economic development paradigms, since a socioeconomic policy in developed countries is based on the mainstream theories provisions. Being the result of long-term and complicated historical development, paradigms are formed by combining all useful features of the past experience with new knowledge based on the analysis of modern processes and phenomena (Kuzheva, 2015). A paradigm, which remain understudied but have a great potential for formation of national economies development stages, is a management paradigm.

In terms of its philosophical meaning, assigned to paradigm by Thomas Kuhn, an American philosopher and historian of science (Kuhn, 1969), a management paradigm could be imagined as a set of management theories, techniques, values and issues, which is shared by a country's scientific and management elites in a particular era. Management paradigm is a methodological phenomenon, ideology and set of behavioral patterns, technologies and methods used to manage social systems (Tsvetkov, 2016). Using this definition and the views of other leading scientists (Abalkin, 2001; Glazyev, 2016), the authors consider a management paradigm as one or more dominating management theories and concepts, which are universally recognized in a given economic situation during a certain period and direct social development in general or within a particular country. By combining and adjusting to a country's historical, cultural and political specifics, these management theories co-exist, interact, get mutually enriched, confront each other and act as "tension poles" in the

management field, thus creating various syntheses and mixed and transitional forms (Slonov, 2005).

The management paradigm concept is yet to obtain its common meaning in the modern science. It is obvious, however, that a change in these paradigms constitutes a phenomenon that is as objective as a change in ruling elites, since it determines the prerequisites and conditions for socioeconomic society transformations.

At present there are two parallel modern management paradigms, conventional and innovation ones. The purpose of the research is to examine the prerequisites for such paradigms occurrence in terms of scientific knowledge evolution in economics and management. The research's importance is due to the necessity to understand expressions of various paradigms, especially under the environment of postindustrial economy formation, which corresponds to innovation management paradigm.

## Methods

The theoretical and methodological basis of the article is the general provisions of modern economic and management science, in particular: modern neoclassical theory, theory of the world economy development, scientific labor organization concept, theory of capitalism genesis, innovative development concept, applied through the system analysis. Within framework of these theories, the most significant for science approaches to management in innovations, knowledge, and intellectual capital, which formed the modern innovation management paradigm, are considered.

The research is based on the system analysis methods, comparative studies, scientific abstraction and historiographical approach in unity with the dynamic approach.

The system approach use allows considering the research object specifics. The research is based on the classical conceptual apparatus, developed by the world science, which allows studying conditions of various management paradigms formation from the viewpoint of scientific knowledge evolution.

## Results and discussion

### Prerequisites for formation of the classic management paradigm

The sources of management paradigms as independent theory date back to as early as the era of capitalist mode of production development in the 19th centuries and attempts to explain a productivity growth as the main sign in capitalism genesis. Karl Marx (1818-1883), the German scientist who left behind extensive scientific heritage in the field of capitalist enterprise management, considered the link between capitalism property and management indispensable, having combined the production management process and the capital growth process. "The reason why a capitalist is a capitalist is not because he manages an industrial enterprise. Quite the opposite, he becomes an industry manager because he is a capitalist" (Marx, 2017, p. 311). As long as a capitalist seeks the ways to improve the capital efficiency, he is an entrepreneur as such. Then, a successful capital growth is always accompanied by the processes of management activity differentiation and authority's transition to a lower hierarchy level. "Like an army that needs its officers and sergeants, the workmen united by common work under the command of the same capital need industrial managers and overlookers, who, while the work is being done, command in the name of the capital" (Marx, 2017, p. 310). Thus, in large-scale production it is hired managers not capitalists who become conductors of capitalist activity and, accordingly, entrepreneurship development. Considering managers' role as overlookers led Marx to the thought on the inevitability of class conflicts, capitalism self-destruction and, as result, appropriateness of transferring industry management functions from particular individuals to the society, which will manage production in the public interest, in accordance with the public plan and with all of its members involved (Osipov & Embulaev, 2012).

Frederick W. Taylor (1856-1915), an American engineer and scientist, pointed out to the role scientific labor and management organization plays in economic development and took scientific management system as a basis for economic, social and technical progress in society (Taylor, 1991). Taylor's approach objectively led to the separation of terms "owner" and "manager" by justifying that production must be managed by adequate and appropriate people, i.e. professional managers.

Contrary to Marx's postulate on the inevitability of class conflicts and capitalism self-destruction, Taylor's theory allowed for principal possibility and achievability of establishment of harmonic (and even partner) relations between enterprise owners and hired workers due to their mutual interest in the labor productivity growth based on the intensification of training processes and knowledge accumulation (Sorochaikin, 2011). Thus, taylorism provided basis for the first, classic, stable management paradigm.

**Management paradigms and socioeconomic development paradigms in и 20th and 21st centuries**

Contemporary emergence of marxism and taylorism, i.e. split in the views of owners' role in management, predetermined the ideological basis for socialism justification, on the one hand, and further capitalism development, on the other hand. It formed essentially different point of views of ownership relations and state's role in the economy and also determined dramatically different state economic management paradigms. In terms of organization management, however, the classic management paradigm, which identified labor productivity growth as the main management purpose, turned out to be very resilient for both capitalist and socialistic production modes. True, Taylorism methodologies providing for structuring and workflows standardization, strict control over their execution and reward/penalty system seemed to guarantee a solution to any management issues (Tsvetkov, 2016).

Extensive studies of organizational and management issues conducted in the 20th century transformed management into a crucial field of global science and gave it acute social and economic importance. The classic management paradigm was interdependent on and organically merged with the neoclassic economic theory, which was formed in the late 19th century as affected by laissez faire views and remains dominant nowadays. The classic economic paradigms perfectly corresponded to the capitalism era, and in modern world, free and regulate marked economy due to its simplicity and its seemingly obvious prerequisites, with the major ones being exceptional rationality of economic choice, limited resources and need to reach the balance on the market mechanism basis (Cowan, 2004). Methodological power and transparency of the neoclassic paradigm and its logically perfect mathematical tools made it very resilient and easy-to-use by numerous scientists during analysis of particular economic processes and phenomena. Yet nowadays some experts argue that this process has turned into infinite citation of the details in complex socioeconomic systems without visible success, while the development of new social existence models is required (Golovanov, 2012). The neoclassic theory and its derivatives are subject to criticism by foreign and domestic scientists, who essentially demand new mainstream in economic theory (Blaug, 2004; Yerznkyan, 2004; Hodgson, 2008; Kirdina, 2013). As response to the neoclassic paradigm that no longer met the needs of economic and social progress in the second half of the 20th century, a number of theories emerged that either competed with the neoclassic theory or substantially supplemented and extended it. The most important ones include post-industrial society theory, evolution paradigm, institutional and evolution paradigm, innovation paradigm and multicultural paradigm (Slonov, 2005; Hodgson, 2008; Moroz, 2011; Vojcehovskij, 2016; Tsvetkov, 2016).

Each of the foregoing theories presents its own factors for change in the economic development trajectory and shifts the emphases of economic management in its own specific way. Alternative management approaches are based mainly on knowledge, personal and professional qualities of managers, human factor and, finally, human resources. Thus, innovation management paradigm is formed, with its various components subjected to thorough examination as the most corresponding ones to the post-industrial type of economic development (Lazarev & Krasova, 2018).

**Innovation management paradigm: specific nature of scientific approaches**

According to conventional wisdom, the innovation paradigm foundation was laid by Joseph A. Schumpeter (1883-1950), the well-known Austrian economist. His concept combines economic justification of management's entrepreneurial function with presentation of entrepreneur's psychological portrait. Schumpeter considered an entrepreneur as the main factor behind capitalism development and described entrepreneurship as a process of "creative destruction". In his book "Theory of Economic

Development" an entrepreneur is defined as an innovator, a key player in the management system. Its functions are to execute innovations, which play major role in the capitalist economy development, and ensure economic growth (Schumpeter, 2008; Osipov, 2017).

According to Peter Drucker's views (1909-2005), an American scientist, managers' innovation activity provides basis for society development. A manager, who has mastered the methods of innovation activity, turns manager-entrepreneur carrying out "management revolution". In Drucker society the main factor behind labor productivity growth is an adequate and scientifically justified management, i.e. management based on the strict knowledge of regularities and production process dynamics: the knowledge applied to labor organization ensures explosive growth of its productivity (Drucker, 2006).

John K. Galbraith (1908-2006), an American scientist, established the emergence process in the corporate technostructure as a boundary for emergence of "the new industrial state". Corporate technostructure is a set of a large number of scientists, engineers and technicians; distribution, advertising and sales experts; public relations experts, lobbyists, lawyers and other professionals. The technostructure shifted the decision-making processes from the capital owners by monopolizing the knowledge required for decision-making and it is managers who control the technostructure based on modern technologies and planning methods. Galbraith turned universally recognized ideologist of liberal reformation and justified the capitalism transformation concept in his books "The New Industrial State" (1967) and "Economics and the Public Purpose" (1973) (Galbraith, 1976. P. 155).

Galbraith's unquestionable achievements include, among other things, the introduction of the term "intellectual capital" to the management's scientific vocabulary (1969). However, Thomas Stewart, an American publicist and economist, commenced more detailed study of this category nature in 1991. Stewart's book "Intellectual capital", published in 1997, describes the crucial issues of the economy, where knowledge and information are major production resources. The scientist defines intellectual capital as a set of patents, processes, management skills, technologies, experience and data on consumers and suppliers. In regard to the enterprise management the scientist clarified that the intellectual capital was the cumulative amount of knowledge possessed by all company staff, which ensures its competitiveness, i.e. knowledge that obtains its tangible form (Stewart, 2007).

Apart from Galbraith and Stewart, a number of scientists from different countries studied the issues relevant to the knowledge economy and intellectual capital management, with most of them sharing similar views on this issue. For example, L. Edvinsson defines a intellectual capital category as knowledge that may be converted into value (Edvinsson, 2000). In the paper "Intangible assets" J. Daum wrote that the intellectual capital was structured knowledge and abilities based on the links and carrying potential for developing and creating value (Daum, 2002).

Modern scientists normally identify three main elements within the intellectual capital structure: human capital, relationship capital (consumer and client capital) and structural (organizational) capital. These elements may have various interrelations between each other. For example, in the "Scandia Value Scheme" model the human capital includes competences and abilities of the company staff (Edvinsson, 2000). The structural capital includes the items accumulated by the company as result of performance by managers and employees. The structural capital splits into client capital, i.e. value presented by relationships with clients and organizational one. In this model the organizational capital comprises innovation capital (patents, license agreements etc.) of the image and reputation, which determine company's value to a large degree (trademarks, brand marks) and process capital (company's infrastructure, information technologies, software, workflows etc.).

Another widely-known intellectual capital structure is given by K.E. Sveiby in his book "The intangible assets monitor". Sveiby used the term "intangible assets" in the meaning of intellectual capital. In this classification the intellectual capital category splits into external part, internal part and competences of the entity staff. The external structure is a consumer capital that includes positive relationships with consumers, suppliers, competitors and government bodies. The internal structure is an organizational capital, notably patents, copyrights, software, industrial designs, data bases, corporate culture schemes and other intellectual property items. The staff competences are human capital that includes the

education level, professional experience and competences, communicative skills, general ethical level etc. (Sveiby, 1997).

The model described in the "FiMIAM: financial method of intangible assets measurement" by I. Rodov and F. Leliaert also splits the intellectual capital into three parts: human capital, client capital and structural capital. Each of these parts includes a number of intellectual capital items. In particular, professional competences, reputation, experience, capabilities and skills are identified in the human capital. At the same time some categories turn out to be at so-called crossing of the terms: for example, clients' loyalty refers both to human capital and client capital; trademark and brand belong both to structural capital and client capital; know-how simultaneously belong to three components of the intellectual capital (Rodov & Leliaert, 2002).

Thus, each element of the intellectual capital has its purpose and functions. In numerous management models the organizational, or structural, capital means company's organizational opportunities for responding to modern market challenges by using and transforming data. The organizational capital is company's property to large degree and may be relatively independent subject of exchange and additional capital acquiring. The consumer or client capital means links and stable communications with the counterparts, information about counterparts and client policy (Shashlo, Petruk & Korostelev, 2018).
As for the human capital theory, it is relatively recent section in the modern economic theory and management paradigm. It came a long way from defining its fundamental terms to development to approval of comprehensive management methods at various levels for the purpose of effective use and the human potential execution.

**Conclusions**

Thus, even nowadays an educated, professionally developed and creative human, who is personally interested in prosperity of its entity and society, is considered as the main resource of economic development (Slonov, 2005). As a subject of management control, a profit-seeking entity or economic system aiming at the equilibrium were replaced by knowledge (information). Under these conditions the management provides methodological foundation for effective information management aimed at achieving the results (products, technologies etc.) that will be the best for society. Specifically, the management is a set of operations for rational streamlining, arrangement and information (knowledge) systematization for the purpose of establishing the most effective way to apply it in the public interest.

Despite an obvious appropriateness of shifting away from the classic management paradigm due to the accumulation of a critical mass of the tasks that cannot be solved within its framework, no unified alternative theory has been created yet. The main idea that replaces the conventional management concept, i.e. innovation management paradigm, with its signs and features are subjects to both foregoing and many other studies, currently exists as a theoretical structure and is implemented piecewise (Tsvetkov, 2016). At the same time, the innovation paradigm clearly shows the future management direction development and acts as a foundation for developing the methods and tools of the newest management mainstream.

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