DIGITAL TRANSFORMATION OF THE RUSSIAN ECONOMY: INCENTIVES AND BARRIERS

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Abstract. Today, digital transformation is one of the main drivers of economic growth. Businesses that can embrace flexible work models and adapt to change have more room for growth than ever. Russian companies have a unique chance to realize their potential in the course of the digital revolution and take their rightful place among the key players in the global market. Despite the presence of objective constraints, companies are transforming, and the state is developing new support mechanisms. The article discusses the main factors stimulating the introduction of digital technologies into the practice of Russian enterprises, as well as the barriers hindering the development of digitalization in Russia.

Keywords: digital technologies, digitalization, incentives, barriers.

Introduction. Digitalization is the most significant innovation in a globalized economy (Rogers 2003; Schot, and Geels 2008). Most organizations believe that by 2022, on average, half of their revenues will be generated in digital channels (Kulagin, Sukharevski, and Meffert 2019). Further, according to the estimates of the World Economic Forum, by 2025 the total economic effect of digital transformation in relation to business and society will exceed 100 trillion US dollars (Zhuravlev 2019). Three waves of digital transformation – significant influence on gross value added as an opportunity and a threat for industry: a) automotive logistics; b) mechanical & plant engineering, electrical engineering, medical technology & energy systems; c) chemicals aerospace (The Digital Transformation of Industry 2020).

In 2016, the founder and permanent chairman of the World Economic Forum, Klaus Schwab, wrote that we are on the verge of the Fourth Industrial Revolution (Industry 4.0), which will link the biological, physical, and digital worlds together, affecting all aspects of human life and activities. Now we can say that we have already entered this era: technologies that appeared several years ago are rapidly developing and becoming more complex. This includes, for example, 3D printing, blockchain, and machine learning (Schwab 2016).

Digitalization is actively penetrating all sectors of the economy, as a result, a digital regulatory environment is gradually being created (Masyuk, Bushueva, Bragina 2019). But some of the most notable changes are now taking place in industry (Skrug 2018). As a result, the term Industry 4.0 appeared (in a broad sense), which means a new level of development of automation of production and logistics networks (Digital economy: problems and consequences of modern technologies 2019). Industry 4.0 implies fully automated production, controlled by intelligent

systems in real-time and in constant interaction with the external environment, not limited by the framework of one enterprise (Zemnukhova 2018).

It should be noted that the introduction of digital technologies in any enterprise is almost always accompanied by conflict, the resolution of which is one of the main tasks in the implementation of digitalization (Masyuk, Bushueva, Vasyukova, and Mosolova 2018). In real life, no matter what sphere of the economy we take, the adoption of a managerial decision for the absolute resolution of conflicts is impossible, the most acceptable is the adoption of a quasi-optimal managerial decision based on local compromises (trade-offs). Examples of such solutions are given in a number of works (Bushueva, Korovin, and Masyuk 2013a, b; Masyuk, Vasyukova, Bushueva, Mosolova and Kozminykh 2016; Zhang, Stafford, Dhaliwal, Gillenson and Moeller 2014). The digital revolution entered a decisive phase in 2017 - every second inhabitant of the Earth connected to the Internet. According to the McKinsey Global Institute (MGI), in the next 20 years, up to 50% of production operations in the world can be automated, and in scale, this process will be comparable to the industrial revolution of the 18th and 19th centuries. (Hyysalo, Jensen and Oudshoorn 2016; Schwab 2016).

The Industrial Digital Agenda Initiative within the Eurasian Economic Union (EEU) was made possible by the implementation of similar initiatives in various states of the world, integration associations, in particular in the European Union, as well as in large transnational companies. Digital strategies were approved in the European Union - "Digital Europe 2020" (2010), Germany - "Industry 4.0." (2011), China - Internet Plus (2015). The autonomous non-profit organization "Institute for the Development of the Internet" (Russia), as part of the development of the "Strategy for the development of the Russian segment of the information and communication network of the Internet and related sectors of the economy" (2015) refers to 15 approved programs in the field of digital economy and development of the Internet economy in various countries (including the European Union, Germany, China, Japan, Brazil, USA, Great Britain, Estonia, Holland, Ireland, Sweden, Singapore, Philippines, Malaysia). Also the largest industrial and industrial companies in the world implement development strategies in the concept "Industry 4.0", "Internet +" (for example, Siemens, General Electric, SAP, Intel). In March 2015, international management consulting firm Roland Berger (The only leading consulting company of European origin 2018) published a report titled "Digital Transformation of Industry" 8 9, which indicated what digitalization of industry can bring Europe an additional 1.25 trillion euros in gross value added, or a loss of 605 billion euros.

In general, digital transformation is a significant restructuring of the business model of an organization using new digital technologies (Zhuravlev 2019). It leads to a fundamental rethinking of the current structure and a change in all processes, allows you to create new formats in working with partners, for example, consortia, as well as to adapt products and services to the needs of a particular client. The result should be the achievement of key results of economic efficiency by companies, optimization of business costs, and improvement of the quality of the service provided or the product produced.

Method and Methodology. The main research method was the method of a systematic review of the activities of Russian enterprises, which makes it possible to determine the factors stimulating the introduction of digital technologies, as well as to identify the barriers arising in the way of this development in the Russian economy at the regional level.

Results. Industrial companies are the foundation of the Russian economy. The rapid start of mastering modern Industry 4.0 technologies, such as the Industrial Internet of Things, 3D printing, virtual reality, touch interfaces and the widespread use of new generation robots, will allow industrial companies to take advantage of the development of these areas "from scratch" and take the lead.

The active position of the state further spurs on the digitalization of all players in the national economy. The issues of using digital technologies in public administration are discussed in their works by many authors (Scholl, 2002; Stoker, 2006; Janssen, and Joha, 2006; Bharosa et al, 2012,2013; Stegmaier, Kuhlmann, and Visser, 2014; Garnov, Topchiy, and Kosheleva 2017) and etc. It should be noted that robots are also an integral part of digital transformation (Robot density rises globally World Robotics Industrial Robot 2018).

Russia has implemented the largest projects in the field of digitalization of public services, which are among the best in the world (Garnov, Garnova 2016). Successful projects include the federal portal of the State Service, digitalization of the Federal Tax Service, as well as projects of the Moscow Government: “My Documents”, “Parking lots”, “My Polyclinic”, and others.

In 2018, the Government of the Russian Federation launched national projects, one of which was the Digital Economy project, which includes a number of measures of state support for projects aimed at the formation and implementation of end-to-end digital technologies. Within the framework of the national project until 2024, in particular, it is planned to launch an electronic passport of the Russian Federation, a unified state cloud platform and infrastructure "Digital Profile" for the exchange of information between the state, citizens, and organizations; connect 97% of households to broadband Internet access, launch 5G communication networks, and 85% switch to domestic software in government organizations. The state plans to increase the cost of developing the digital economy in GDP by 3 times.

In Russia, it was possible to create large digital companies almost from scratch, and some of them achieved international fame. This is Tinkoff Bank - the world's largest online bank that does not have physical branches at all, digital portals and ecosystems of Yandex and Mail.ru services, the manufacturer of marine training complexes and electronic navigation systems Transas, the Avito electronic advertisement platform, the developer of digital solutions to ensure the security of "Kaspersky Lab" and many others. Digitalization also opens up great opportunities for traditional market players who are not digital companies by nature. “Severstal”, for example, being the largest player in the metallurgical sector, puts digitalization and the use of big data among its strategic priorities to achieve sustainable competitive advantage in the industry.

In developed countries, manufacturing companies have a high level of implementation of modern digital technologies, in this, they are still ahead of domestic companies. One of the reasons is the lack of a clear strategic vision of digital transformation and change management mechanisms in a number of Russian enterprises. You can also note the low level of automation of production processes and administrative functions (finance and accounting, procurement, personnel). For example, in 40% of companies, the processes are not automated.

However, this is also an incentive for a significant increase in indicators. According to an expert survey, Russian manufacturing companies are showing high interest in the topic of digital transformation. Thus, 96% of companies in the next 3-5 years plan to change the current business model as a result of the introduction of digital technologies, a third of companies have already launched organizational changes, almost 20% are already implementing pilot projects. For example, “KamAZ” has already launched a digital transformation program, which provides for a digital and continuous chain of processes, from the development stage to the after-sales service stage under life

cycle contracts. This makes it possible to produce new models of premium-class trucks, which are not inferior in characteristics to products of foreign competitors.

“Sibur” implements the concept of a “digital plant”, which provides for the digitalization of production and logistics processes. The company implements advanced analytics for predictive maintenance of equipment, digital twins in railway logistics to optimize the transportation process, as well as machine vision systems and unmanned aerial vehicles for monitoring production and conducting technical inspections. Ultimately, this will allow the company to reduce costs and reduce industrial safety risks.

As part of the transition from a traditional postal operator to a postal and logistics company with IT competencies, the “Russian Post” has already launched its own digital big data analysis platform for fleet management. Moreover, the company develops an ecosystem of services in the e-commerce market: from the automation of sorting centers to financial and courier services that make life easier for customers. Other large corporations also have successful digital transformation projects, for example, “Russian Railways”, “Rosatom”, “Rosseti”, “Gazprom Neft”, etc.

The massive transition to remote work due to the spread of coronavirus infection can also become an impetus for the more active digitalization of Russian companies. The ability to maintain uninterrupted and high-quality support of key business processes in the digital environment turns into a competitive advantage. Network interactions become especially relevant in such a situation (Katz, and Shapiro 1985; Zhang, Hu, Dai, and Li 2010). The so-called mobile assistants are becoming increasingly important (Reeves 2017; Klowait 2017; Lomas 2018; Moore, and Arar 2018; Guzman 2019 etc).

Leaders of Russian companies consider the lack of technological competencies, lack of knowledge about technologies and suppliers, and lack of financial resources as the main constraints to digital transformation. Despite this, some companies are already successfully overcoming existing barriers: experimenting with new digital technologies to improve the efficiency of current business models, collecting significant amounts of data necessary for deploying digital services, initiating organizational changes, including the creation of specialized divisions within companies to raise the level of corporate technological competencies, as well as, together with specialized scientific and educational institutions, they launch practice-oriented programs for training (Berezin 2019).

The Analytical Center under the Government of the Russian Federation (hereinafter referred to as the Analytical Center) conducted a survey of the regional executive authorities (hereinafter referred to as the ROIV) of the Russian Federation. Questions were asked about the problems in the regions in the implementation of projects for the development and implementation of digital technologies and the development of the digital economy in general. The survey was conducted in August - September 2019 (Barriers to the development of the digital economy in the constituent entities of the Russian Federation 2019).

Information was requested on the following groups of barriers:
- regulatory barriers
- administrative and managerial barriers
- financial barriers,
- the level of development of information infrastructure,
- training of personnel for the digital economy,
- barriers in the development of projects in the field of "end-to-end" digital technologies,
- information barriers,
- additional barriers (other).

As part of the survey, responses were received from 70 constituent entities of the Russian Federation, of which 3 constituent entities indicated that there are no barriers to the development of the digital economy at the regional level *. The key barriers to the digitalization of the economy at the regional level of the ROEI include difficulties in training competent personnel in the digital economy (18.8%

of responses about barriers out of the total number of barriers indicated by the ROEI), barriers in the field of legal regulation (17.3%) and difficulties in financial support of the regional budgets (16.9%). In addition, the ROIV indicated the presence of administrative and managerial barriers (16.0%), difficulties in the development of information infrastructure (13.9%), the presence of information asymmetry (11.1%), and barriers to the implementation of projects based on "end-to-end" digital technologies (6.0%) (Table 1).

Table 1: Key barriers to the implementation of the digital economy in Russian regions

Barrier name	%
Difficulties in training competent personnel in the digital economy	18.8%
Barriers in the field of legal regulation	17.3%
Difficulties in financial support of the regional budgets	16.9%
Administrative and managerial barriers	16.0%
Difficulties in the development of information infrastructure	13.9%
The presence of information asymmetry	11.1%
Barriers to the implementing projects based on end-to-end digital technologies	3.1%
Other	2.9%

Discussion. When introducing digital technologies, it is important to take into account high-quality planning of business needs and assess the effects of implemented solutions in the process of the digital transformation of the company, as well as ensure a high speed of project implementation, which is a determining factor in a competitive market. By the way, in foreign practice, the key factors for the success of digital transformation were the focus on changing the business model, the creation of a competence center under the leadership of the CDTO (digital transformation manager), and the stimulation of complex transformations in key business units.

Russian manufacturing companies expect from the state, first of all, support for the implementation of technological solutions, as well as the formation of specialized educational programs and the development of an innovation ecosystem and technological entrepreneurship. Therefore, the task of the state is to create a basis for providing support in the development of digital technologies and their comprehensive implementation in the real sector of the economy.

Conclusion. Digital transformation is changing the face of the economy and is the basis for high rates of economic growth. Now Russia is noticeably lagging behind many developed countries in terms of the pace of digital transformation of the industry. At the same time, Russia has excellent opportunities to become a leader, relying on the existing technological and intellectual potential. As expected, Russian companies focus primarily on the digitalization of business processes and data-driven management, as well as customer experience management. These directions are basic for transformation and directly affect the main operating activities of the organization. Areas that remain underestimated make an important contribution in the long term in innovation potential and competitiveness companies - human capital development and competencies (digital culture) and create their own new products (R&D). Digital transformation involves the transition of an organization into a new state of permanent changes. To bring these changes to life a trained team and digital culture. In addition, many employees commented that insufficient attention to the development of competencies increases stress levels and decreases efficiency transformations. Many organizations are already planning their budgets for 2019 today, and it is high time for them to focus on funding key aspects of driving digital transformation initiatives. To move forward successfully, digital leaders must share lessons learned and actively learn from their peers. An era is opening before us, filled with gigantic opportunities and tremendous challenges, but requiring the unification of our knowledge. Hopefully, by 2025, we can significantly advance our digital change, transformation, and modernization initiatives. It can be concluded that one of the main reasons for the lag is the lack of investment resources; a regulatory framework that does not meet modern requirements; Digital divide; lack of qualified personnel, etc. We are confident that the measures implemented by the state will help increase the interest and involvement of business and society in digital transformation processes and will allow them to quickly adapt to modern requirements in the Russian and global markets.

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