European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com

e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2021.04.02.49

GCPMED 2020
Global Challenges and Prospects of the Modern Economic Development

DIGITAL TRANSFORMATION OF RUSSIAN COMPANIES: PROBLEMS AND WAYS TO OVERCOME THEM

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Abstract

Business digitalization is carried out through the penetration of innovative technologies into traditional sectors of the economy, ensuring the competitiveness of Russian corporations in the global market due to the introduction of new technologies: big data analytics, machine learning, artificial intelligence, virtual and augmented reality technologies, etc. The purpose of this work is to analyze trends in the digital transformation of Russian companies. The relevance of this problem is confirmed by the high demand of Russian enterprises for digital technologies, while the Russian consumer market is lagging behind the global one. This article analyzes the materials of consulting companies and analytical centers, as well as current data and indicators that characterize consumers of digital projects. The authors consider the most popular digital technologies for implementation, the degree of their distribution among Russian enterprises, and planned investments in these technologies. Digitalization of the economy and business is hindered by a number of problems – social (lack of qualified personnel, etc.), economic (high cost of digital transformation), regulatory (lack of standards in the field of digital technologies) and technical (security problems, etc.), in this regard, this study reveals the barriers that Russian companies face on the way to digital transformation, and suggests practical ways to overcome them that Russian enterprises can apply, it also outlines actions on the part of the state to accelerate the transition of the Russian economy to digital development platforms. Special attention is paid to the impact of the global coronavirus pandemic on the digital transformation of Russian companies.

Keywords: Business digitalization, digital economy of the Russian Federation, digital transformation, innovative technologies

https://doi.org/10.15405/epsbs.2021.04.02.49
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eISSN: 2357-1330

1. Introduction

Entrepreneurship occupies an essential place in the development of the economy of any state, it allows you to implement social and economic functions. Digital technologies that have emerged over the past decade contribute to improving the efficiency and opportunities for rapid competitive development of enterprises. In this regard, today the main trend in the development of the economy of any country is its transfer to the digital channel, i.e. the creation of the so-called "digital economy". For most large Russian enterprises, the process of digital transformation is associated with the introduction of new technologies that have become available to businesses in recent years. The main prerequisite for the penetration of digitalization in Russia was the reduction in the cost of technologies and computing power, as well as the increase in the availability of high-speed data transmission. For example, there is a steady decline in the cost of sensors (components of IOT systems) from $ 0.95 in 2008 to $ 0.44 in 2018, as well as the cost of storing information: on average, from $ 0.12 per 1 GB in 2009 up to $ 0.028, which is a driver for the introduction of technologies such as big data, artificial intelligence, etc. (Abdrakhmanova et al., 2019). Thus, now digital transformation is a real opportunity to increase labor productivity and business development. However, this does not exclude such a problem that many Russian companies that are not related to the IT sector of the economy face, as the lack of the necessary competencies to assess the advantages of the digital economy and the use of its positive effects. This is largely due to the fact that a common barrier to Russian business is the lack of financial resources and qualified personnel, which is why these companies need to take into account and apply the recommendations developed in this work.

2. Problem Statement

In this work, the authors set themselves the task of researching and reviewing the most popular digital technologies in the global consumer market. The authors analyzed the prevalence of these digital solutions among Russian companies, including in the context of Russian economic sectors, based on the survey "Digital technologies in Russian companies" conducted by KPMG in 2019. The results showed that the majority of Russian organizations-respondents plan to implement separate digital technologies, and therefore the authors revealed the directions and volumes of planned investments. In this work, the authors revealed the possibilities of improving the efficiency of economic processes through the digital transformation of the main business processes. The most important task of the authors is to identify existing barriers to the introduction of digital technologies by Russian enterprises. The authors developed practical methods for solving the problems of digital transformation, as well as revealed the ongoing changes in the system of legal regulation of the digital economy in the Russian Federation. Due to the fact that at the moment the most influential external factor for any company is the global pandemic of the COVID-19 coronavirus infection, the authors analyzed its impact on the digitalization process of Russian organizations.

3. Research Questions

Digital technologies that have emerged over the past decade contribute to improving the efficiency and opportunities for rapid competitive development of enterprises. That is why the digital transformation

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of entrepreneurship is an important condition for Russia's adaptation to new market conditions. Thus, the digitalization of Russian business will allow domestic companies to increase their competitiveness and resist the challenges of the external environment. The relevance of the topic is due to the possibility of using foreign experience of business digitalization in the Russian reality. This paper focuses on such research issues as analyzing the prevalence of digital solutions among Russian companies, identifying positive aspects of the use of these technologies and barriers faced by Russian organizations, as well as offering recommendations on how to overcome them. These questions focus on the following digital technologies that are most in demand in the global consumer market:

1. Robotization (RPA) – robotization of office processes that reduces the duration of manual routine operations and increases operational efficiency by releasing the payroll and reducing operating costs (KPMG, 2019).

2. The technology of big data analysis and predictive analytics allows analyzing large volumes of information and making forecasts based on them. In addition, this case includes the functions of statistical modeling, analysis of historical indicators, and planning of results. Thus, this technology increases the speed and quality of big data processing, which affects the efficiency and productivity of enterprises (Akter et al., 2020).

3. Chatbots are computer programs that run inside an application and imitate text and speech. They are used to perform the functions of support, information retrieval and interaction with the various requests at a high rate (KPMG, 2019).

4. The technology of artificial intelligence (AI) designed to perform the complex tasks by computers by simulating the process of human decision of other intellectual issues in order to explain the nature of these processes, optimizing utilization of human resources (Akter et al., 2020).

5. Virtual reality (VR) technology is a technology that allows you to immerse a person in an immersive virtual world using specialized devices (virtual reality glasses and helmets) (KPMG, 2019).

6. Augmented reality (AR) technology is a virtual environment that integrates into the real physical world to improve the perception of information about the surrounding reality by adding sensory data to the perceptual field and further modeling using computer processing of elements, which allows to visualize many difficult objects or processes (Bahremand et al., 2019).

7. Internet of things (IoT) – a network of connected devices and a set of sensors necessary for collecting information and processing it, which exchange data and are controlled remotely. The received information is processed using Big Data technology in order to improve the accuracy and quality of decisions made (Kasych et al., 2019).

8. Optical recognition technology (OCR/ICR) allows digitalizing document flow in the enterprise by replacing a person in the processes of receiving, checking and analyzing documents. This technology is most in demand in organizations that work with a large volume of various paper documents that need to be digitized in order to speed up the decision-making process, customer service, and automation of accounting operations (KPMG, 2019).

9. A blockchain is a database that stores data about all the actions of its participants in the form of a "block chain". The main feature of this technology is that each user confirms the accuracy of

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information entered by other users, which reduces the risk of fraud or unfair use of information (Akter et al., 2020).

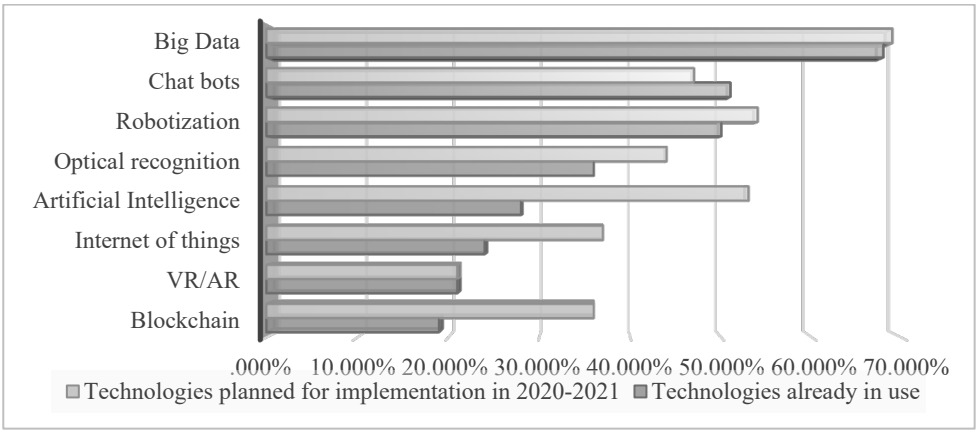

Figure 1. Digital technologies used and planned for implementation in Russian companies
Source: authors.

KPMG audit company conducted a study "Digital technologies in Russian companies" in 2019, which was attended by more than 100 Russian companies. The results of the study showed what digital technologies are being implemented by Russian enterprises. The most popular solutions in Russian companies are big data analysis and predictive analytics, chatbots, and robotics (Figure 1). However, the percentage of use of the technologies under consideration differs depending on the scope of application.

Therefore, despite the fact that 68% of Russian companies use big data, only 15% of companies in the transport sector use this solution in their business processes. The most popular technologies in retail are big data (55% of respondents use this technology) and chatbots (50%), in telecom are big data (100%), robotics (100%) and the internet of things (100%), in metallurgy are big data (84%), robotics (83%) and optical recognition (67%), in the oil and gas sector are big data (50%). Chatbots (50%), robotics (50%) and optical recognition (50%), in transport these are chatbots (29%) and the internet of things (29%). This also shows that the least digitalized industries are retail, oil and gas, and transportation (KPMG, 2019).

Russian companies plan to develop solutions based on big data technologies in 2020-2021 (69% of respondents), as well as pilot solutions based on artificial intelligence (53%), and further robotization of business processes (54%) and introduction of chatbots (47%) (Figure 1). Most Russian companies are ready to allocate more than 100 million rubles a year to implement digital technology projects. At the same time, representatives of the telecommunications, financial and metallurgical industries are ready to make significant investments in digitalization. It integrators and transport companies are the least ready to invest. Thus, 66% of respondents from the IT industry are ready to allocate less than 30 million rubles a year. The expected average payback period for these digital investments is 2 years (KPMG, 2019).

4. Purpose of the Study

The most advanced Russian companies are already using the digital technologies under consideration and are implementing pilot projects. Some organizations that are not connected to the IT

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sector of the economy, but want to increase their competitive advantage through digital transformation, face a number of questions: which technologies are better to invest in, what is the correlation with economic efficiency, what obstacles to face and how to overcome them, etc. However, these questions do not have ready-made answers confirmed over the years. Due to the fact that foreign experience is much broader in the implementation of digital technologies in business processes and has been considered many times in various research papers, the relevance of the topic of this study is due to the possibility of using foreign experience in digitalization of business in the Russian reality. However, it is necessary to take into account Russian specific barriers to digitalization of enterprises, such as gaps in regulation, conservative corporate cultures, etc. Thus, the purpose of this study is to analyze trends in the digital transformation of Russian companies. To achieve this goal, the authors analyzed the degree of prevalence of the considered digital solutions among Russian companies, revealed the possibilities of improving the efficiency of economic processes through the digital transformation of the main business processes, and developed practical methods for overcoming barriers to digital transformation.

5. Research Methods

To achieve the set research objectives, the authors used a set of interrelated general scientific research methods. Thus, methods of induction and deduction, synthesis and analysis, as well as a systematic approach were used. The analysis of materials from companies engaged in research activities in the field of business digitalization was carried out. In particular, as part of this work, the authors analyzed the materials of the survey "Digital technologies in Russian companies", conducted by the audit company KPMG in 2019. The authors also analyzed the report "Digital transformation in Russia-2020" based on the research of the Russian market, presented by the consulting company KMDA (KMDA, 2020). During the study of legislative and regulatory barriers, the passport of the national program "Digital economy of the Russian Federation" was analyzed (Passport of the national project «Digital Economy of the Russian Federation»», 24.12.2018 N 16). For a visual and structured presentation of information, the authors used methods of comparative, logical and statistical analysis, as well as the method of graphical interpretation of information.

6. Findings

The use of these technologies can increase the efficiency of economic processes at the enterprise, namely:

- increase the productivity and efficiency of financial and economic processes;
- reduce labor costs, as well as staff errors and costs associated with them;
- cut costs;
- create new channels of interaction with customers and suppliers, etc.

However, in the process of implementing these projects, Russian industrial enterprises face a number of barriers presented in Table 1 (Rumyantseva et al., 2020).

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Table 1. Obstacles to digital transformation of Russian companies

Type of barrier			
Social barriers	**Technical barriers**	**Technical barriers**	**Regulatory barriers**
- lack of qualified personnel; - lack of educational programs and advanced training courses in the digital economy; - the conservatism of corporate cultures; - the moral unwillingness of workers to the transformation of organizational structures.	- low autonomy, limited computing power of individual technologies (for example, VR/AR); R); - security issues in the application of digital technologies; - outdated infrastructure, fragmented it departments and business structures.	- the high cost of creating infrastructure for the implementation of digital technologies; - high cost of digital transformation and specific obsolescence of digital products and service; - lack of clear correlation with economic efficiency.	- the need for standards for the development of digital technologies; - lack of methodological support for the implementation of regional digital economy.

Source: authors.

The most significant obstacle to the digitalization of Russian enterprises is the barriers to training. This problem is related to the insufficient number of graduates specializing in the digital economy. To implement the digital transformation technologies under consideration, a large number of industry analysts are needed who are able to form the requirements for digitalization of the industry. However, due to the lack of focus of educational institutions on training CDTO (Chief Digital Transformation Officer) and data analysts, specialists are extremely lacking. There is also a shortage of personnel and a lack of skills in such areas as business analytics, cybersecurity, artificial intelligence and robotics, big data and cloud technologies.

To overcome this barrier, it is advisable to take the following measures:

1. Targeted training of specialists in the field of business digitalization. At the moment, 20 pilot projects — competence centers based on higher education institutions are in operation, but this is not enough yet. Business process management, personnel automation, document management, and performance indicators should be covered on a regular basis. It is advisable to conduct webinars on the topic of digital transformation, and only in this case it is possible to form a market of specialists and realize the necessary changes by the heads of Russian companies;

2. Changing the technology team at the enterprise level that was created to enable digital transformation: the team's specialists must be able to master the skills needed to work in the new environment. In this regard, it is advisable to identify the key knowledge and skills required to work with the digital technologies under consideration. It seems that a kind of professional standard of specialists involved in the digitalization of the enterprise will not be created in the near future or will not be created at all due to the transience of transformations.

3. The Federal bodies of executive power should consider the organization of basic and advanced training programs in the field of information and telecommunication technologies in the regions of the Russian Federation, to draw up a general timetable for training programs, after agreeing the need for each individual region.

One of the social barriers is the conservatism of corporate cultures, characterized by the avoidance of abrupt changes, which is the reason for the limited ability to manage such changes. Often, the

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conservative corporate culture is the result of a lack of knowledge and skills in the field of digital transformation. In addition to being ready to learn new skills, IT and business specialists need to change their attitude to digitalization of the company, which is characterized by moral unwillingness to change organizational structures and unwillingness to participate in digital transformation. In order to overcome the negative attitude to digitalization, company managers should demonstrate the importance of digital transformation at all levels and the company's focus on the digitalization strategy. This firmness will increase employees' motivation to learn new ways of working and change their way of thinking. To do this, it is advisable to conduct explanatory work among the company's employees, which will model the results of digital transformation in a positive way. For example, an effective method is to organize open discussions and motivational training sessions where company specialists can discuss aspects of digitalization that concern them.

Companies themselves cannot influence the removal of technical barriers such as low autonomy, limited computing power, and limited flexibility of the interface platform, since the developers themselves are responsible for this. Given the current trends in the creation and development of new information technologies, we can expect that significant shortcomings will be eliminated in the near future. One of the technical barriers to digitalization is the threat to information security related to technological risks, techniques of employees who try to take advantage of vulnerabilities of new information technologies. The use of digital technologies coupled with cloud storage leads to many threats to the company. To secure the implementation of business processes, it is necessary to develop a certification scheme by it and information security departments. All incoming information technologies that connect to the internal infrastructure should be audited for compliance, which will allow the company to ensure a controlled level of risk. Also, in most cases, outdated equipment and IT systems are an obstacle to the digital transformation of companies. This barrier can be circumvented by overcoming the limitations of analytics capabilities and a high proportion of manual processes of outdated infrastructures and implementing robotics of various business processes, as well as machine learning, artificial intelligence and other digital technologies designed for data processing and decision-making in a more accelerated mode. Companies embarking on digital modernization should aim to build an infrastructure that allows them to create and scale software for more than 10 years. Another important factor hindering the digital transformation of Russian companies is economic barriers, such as the high cost and complexity of implementing these technologies, combined with the lack of obvious benefits from their use. Public (development institutions, such as the SKOLKOVO Foundation) and private (business angels) financing can be effective tools for financing the projects under consideration. You can also overcome budget constraints by using free versions of the system, such as ELMA Community, which allows automating individual business processes of an organization without spending money on purchasing expensive digital technologies.

At the moment, there is a need to create standards for the development of digital technologies, since not all technologies that ensure the development of the digital economy are enshrined in legislation, for example, blockchain, unmanned vehicles. It is also necessary to legislate phenomena in Russian business, such as crowdfunding activities and the activities of business angels. The entry into force of these regulatory legal acts will make it possible to more actively stimulate the development of Russian

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business in the direction of digitalization. Particular attention should be paid to tax incentives and other types of state support for those entities that will actively implement digital technologies (Nuretdinova et al., 2019).

Overcoming regulatory and legislative barriers is currently being carried out, for example, in 2018 the Government of the Russian Federation approved the program "Digital Economy of the Russian Federation". The launch of this national program and the inclusion of accelerated digital transformation among the national development goals until 2024 have raised this digital agenda to the highest political level. In addition, this program is one of the first examples of national goals implemented on the basis of project management principles and sponsored by significant budget funds (410 billion rubles from the federal budget and about 535 billion rubles from extra-budgetary funds for 2019–2021) (Passport of the national project "National program “Digital Economy of the Russian Federation”, 24.12.2018 N 16).

This Program involves:

1. Development of normative-legal acts regulating the application of digital technologies: the changes in statutory regulation, including the introduction of new concepts related to digital transformation ("smart contract", "cryptocurrency", "Internet of things", «artificial intelligence», etc.), addressing gaps in legislation, standards, preventing the proliferation of digital technologies (for example, recognition of the results of the virtual tests in the industry, regulating the use of personal data in various forms of cyber-physical systems).

2. Modernization of the digital infrastructure: development of the system of Russian data processing centers, introduction of digital platforms for working with data in order to meet the needs of citizens, business and government.

3. Implementation of digital solutions in key areas of the economy and public administration.

4. Large-Scale training of personnel for the digital economy at all levels of education and development of digital literacy of the population (Abdrakhmanova et al., 2019).

It should be noted that one of the most important factors that influenced the digital transformation of Russian enterprises in 2019-2020 is the COVID-19 pandemic. Thus, the virus led to "forced digitalization" and served as a catalyst for the need for phenomenally rapid implementation of technologies in marketing, HR, operations, management and other business areas. In a couple of weeks, video communication, online training, and teamwork services have moved from auxiliary to necessary tools for mass demand. Companies that survive the COVID-19 pandemic will rely on updated procedures and business models adapted to the new reality, while ensuring maximum safety and efficiency. Changes in consumer behavior are already being observed, legislation is changing, and value chains are being rebuilt. The transition to remote work has opened up the possibility to hire people from any city: by competence, not by geography (KMDA, 2020).

7. Conclusion

The success of the digital transformation of Russian companies is determined by many factors, and, first of all, by taking into account the characteristics of each organization and the situation in which it is located. At the same time, the main elements of success remain unchanged: consistency of strategic processes and people who are able to implement system changes on an ongoing basis. In the process of transformation, companies

acquire the "adaptability gene" - the ability to quickly respond and rebuild business models depending on current conditions. Digitalization takes most of the key processes to a new level: both strategic planning and risk management, as well as operational activities. In general, the company gets additional opportunities for the harmonious development of various aspects of the business. And with the proper use of digital solutions, enterprises can achieve an increase in profits by optimizing production and other economic processes, increasing labor productivity, attracting new consumers, etc. Ultimately, this allows the organization to make any decisions based on more information and play ahead of the curve, taking a better position in any external circumstances (Rogetzer et al., 2019).

References

Abdrakhmanova, G. I., Vishnevsky, K. O., Gokhberg, L. M., Dranev, Yu. Ya., Zinina, T. S., Kovaleva, G. G., Lavrinenko, A. S., Milshina, Yu. V., Nazarenko, A. A., Rudnik, P. B., Sokolov, A. V., Suslov, A. B., Tokareva, M. S., Turovets, Yu. V., Filatova, D. A., Chernogortseva, S. V., & Shmatko, N. A. (2019). What is the digital economy? Trends, competencies, measurement. In L. M. Gokhberg (Ed.), *Proceedings of the XX April International Scientific Conference of the National Research University Higher School of Economics on the Problems of Economic and Social Development, 82* (pp. 56-62). House of the Higher School of Economics.

Akter, S., Michael, K., Uddin, M. R., McCarthy, G., & Rahman, M. (2020). Transforming business using digital innovations: The application of AI, blockchain, cloud and data analytics. *Annals of Operations Research*. https://doi.org/10.1007/s10479-020-03620-w

Bahremand, A., Nguyen, L., Harrison, T., & Likamwa, R. (2019). Hololucination: A framework for live augmented reality presentations across mobile devices. In J. Shih (Ed.), *Proceedings of the International Conference on Artificial Intelligence and Virtual Reality* (pp. 243-244). IEEE.

Kasych, A., Yakovenko, Y., & Tarasenko, I. (2019). Optimization of business processes with the use of industrial digitalization. In *Proceedings of the International Conference on Modern Electrical and Energy Systems* (pp. 522-525). IEEE.

KMDA (2020). Digital transformation in Russia – 2020. https://drive.google.com/file/d/1xVK4lSanDZSCN6kGAHXikrGoKgpVlcwN/view

KPMG (2019). Digital technologies in Russian companies. https://assets.kpmg/content/dam/kpmg/ru/pdf/2019/01/ru-ru-digital-technologies-in-russian-companies.pdf

Nuretdinova, Y. V., Ometova, D. A., & Morozova, M. Y. (2019). Transfer of Russian enterprises to digital economy: Problems and ways of their solution. *Bulletin of the Altai Academy of Economics and Law, 4, 138-143.*

Passport of the national project «Digital Economy of the Russian Federation» (Approved by the Council Presidium of the Presidential of the Russian Federation for Strategic Development and National Projects. Protocol dated 24.12.2018 N 16). http://static.government.ru/media/files/urKHm0gTPPnzJlaKw3M5cNLo6gczMkPF.pdf

Rogetzer, P., Nowak, T., Jammernegg, W., & Wakolbinger, T. (2019). Impact of digitalization on sustainable supply chains. In F. Luks (Ed.), *Chancen und Grenzen der Nachhaltigkeitstransformation* (pp. 131-144). Springer Gabler.

Rumyantseva, I. A., Krotenko, T. Y., & Zhernakova, M. B. (2020). Problems of digitalization: Using information technology in business, science and education. In E. Popkova & B. Sergi. (Eds.), *Scientific and Technical Revolution: Yesterday, Today and Tomorrow. Lecture Notes in Networks and Systems, 129* (pp. 561-570). Springer.