

Factors of Adaptation of Economically Active Population to the Processes of Economy Digitalization

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Abstract. The process of digitalization of the global economy is one of the fundamental challenges of the Russian Federation today. The key subject of the digital economy is the economically active population (labor), participating in the creation of innovative products of the digital economy, adapting key segments of the Russian economy to conditions of global competition. The purpose of the study is to consider the issues of readiness of the economically active population for the digital transformation of the economy, which in turn is a fundamental task for solving related problems in the field of long-term national security, ensuring the security of personal data, and creating conditions that ensure the privacy of citizens within the digital space. In this regard, it is necessary to search for factors that contribute to increasing the adaptation of the economically active population to the processes of digitalization of the economy. The research methodology is based on systems analysis methods used to study the features of the digital transformation of the economy and ensure full coverage and accounting in the study of a complex of socio-economic processes and phenomena, ensuring the integrity of the knowledge received and synergistic effects based on the results of decisions.

Keywords: Digital economy · Digitalization process · Economically active population · Digital literacy · Adaptation factors

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1 Introduction

Today, the process of digitalization of the global economy is one of the fundamental challenges of the Russian Federation. Currently, it is becoming obvious that the problems of declining economic growth, the deterioration of the socio-economic situation in depressed regions, the high dependence of the country's development on

world commodity prices cannot be solved within the framework of a conservative scenario for the development of the domestic economy. Despite the fact that the term “digital economy” is largely debatable, the characteristics of the new world economic structure and the competitive advantages associated with them are clearly visible. The digital economy is a scientific and technological paradigm of the development of society in the context of the formation of a new economic system of a global nature. It aims to realize the potential of a new economic order in order to increase national well-being. The key subject of the digital economy is the economically active population (labor), participating in the creation of innovative products of the digital economy, adapting key segments of the Russian economy to conditions of global competition. The ongoing digitalization of the economy is taking place in a climate of uncertainty dominated by external shocks, such as natural disasters and epidemics. Such uncertainty is counter-cyclical, and the impact of its shocks on countries with different levels of development is asymmetric, accompanied by various economic risks.

At the same time, an important aspect is the determination of the readiness of the economically active population for the digital transformation of the economy. This is due to the fact that: firstly, the economically active population is very heterogeneous in terms of interaction with digital technologies, especially regarding the differences between the «classical» and «post-industrial» industries. Secondly, in the context of the digitalization of a post-industrial society with a high percentage of the population not participating in the implementation of information and communication technologies, it is necessary to propose innovative management procedures that allow creating the prerequisites for the advanced development of the Russian economy. This task can be solved only within the framework of digitalization of the economically active population, the essence of which is to understand the personal prospects associated with the ongoing global digital transformation. Thirdly, the economically active population acts as a producer, forming and implementing creative ideas for building a national system of digital space. In accordance with the presented arguments, we note that the need to study the readiness of the economically active population for the digital transformation of the economy is a fundamental task to solve related problems in the field of long-term national security, ensure the security of personal data, and create conditions that ensure the privacy of citizens within the digital space. To solve the fundamental problem of revealing the potential of the economically active population in the conditions of digital transformation of the economy, we consider it necessary to identify a number of factors that make it possible to increase the degree of readiness of the economically active population for digitalization and outline reference points for changing the development vector in the desired direction.

The identification of factors for adapting the economically active population to the processes of digitalization of the economy is an urgent topic of the study, which is confirmed from a theoretical and practical point of view. The implementation of the process of transition to the digital economy identifies the priority of tasks related to the modernization and adaptation of socio-economic systems in a changing information environment. It is therefore necessary to carry out research on the problem of adequate public perception of the processes of digital transformation of the economy, which consists in the comprehensive penetration of information and communication technologies. The key object of scientific research is the economically active population, as

the most important element that is the user and determines the basic values of a dynamically developing information space.

The main aspects confirming the relevance of the study from the point of view of practice are defined in the speech of Putin V.V. - President of the Russian Federation (President of the Russian Federation 2016) and in the program «Digital Economy of the Russian Federation» (Government of the Russian Federation 2017).

Methodology. The basis of the research methodology is fundamental methodological tools and concepts that are justified by foreign and domestic representatives of various economic schools, devoted to the problems of building and developing the digital economy, as well as the problems of adapting the labor force to digitalization processes. Together, this ensures the implementation of a systematic approach to the study of the laws of digital transformation of the economy and the search for factors for adapting groups of the economically active population with various basic reactions to the processes of digitalization of the economy. The applied methods and approaches are determined primarily by the logic of the research and include methods of systemic analysis used to study the features of the digital transformation of the economy and ensure full coverage and integration in the study of a complex of socio-economic processes and phenomena, ensuring the integrity of the knowledge gained and synergistic effects based on the decisions taken.

Results. Currently, large-scale scientific developments are being carried out, in which scientific views of scientists on the problem of digitalization of the economy are being implemented. Significant are the scientific works of such leading scientists as: Bakhtizin A.R. (on the use of hybrid methods in the digital economy) (Bakhtizin 2008), Ilmenny M.D. (on the use of electronic communications in the process of modernizing the economy) (Ilmenny 2007), Kleiner G. B. (on the relationship between the systemic economy and econometric cybernetics in the context of the measurement of social development problems) (Kleiner 2017), Golubeva L.A., Ilyin V.P., Kozyrev A.N. (on the possibilities of software technologies for mathematical modeling of new economic realities) (Golubeva et al. 2017). In addition, it is necessary to note the work of Alekseev I.V. (on the specifics of electronic interactions in the digital economy) (Alekseev 2016); Kupriyanovsky V.P., Sotnikova A.E., Solovyov A.I., Drozhzhinova V.I., Namiot D.E., Mamaev V.Yu., Kupriyanovsky P.V. (on the identification characteristics of a person in the context of digitalization of the economy) (Kupriyanovsky, Sotnikov, Soloviev, DrozhDzhDzhov, The topic of digitalization of the economy is widely reflected in foreign scientific literature. The most significant studies on this issue are presented in the works of scientists such as: Gerhard Mensch, George Stigler, Nicholas Negroponte, Kenneth Arrow, Simon Kuznets, Fritz Mahlup, Carlota Perez, Christopher Freeman.

The multidimensional nature of the research topic reveals the need to conduct it at the intersection of two fundamental sciences: economics and economic sociology. The economy (from the point of view of digitalization of the economy) helps to highlight the basic conditions for the development of socio-economic systems in the process of digital transformation. The Research in this area is being carried out by scientists such as: LaMonica M. (on the role of the digital economy in developing countries), Cohen N. (on the impact of corporate-type structures on the digitalization of the

economy), Wright R. (on the regulatory and legal problems of digitalization of the economy), Zherebin A.M., Terekhov I.I. (on digitalization of the economy when implementing the priorities of scientific and technological development and necessity).

Economic sociology (from the point of view of studying the basic reactions of the economically active population to the processes of digitalization of the economy) reveals the role and place of a person in digitalizing the economy, as reflected in Cross L. (on the development of digital education necessary for the formation of digital human capital), McDonald C. G. (on the role of digital change in human personality formation), Sittenfeld C. (on the risks of digitalization of society and their factors), Preobrazhensky B.G., Tolstoy T.O., Shkarupet E.V. (on the human potential of the region and its development during the digitalization of the economy) (Preobrazhensky et al. 2017).

Currently, despite the rather active development of the issue of digitalization of the economy, the issue of adapting the economically active population to the processes that are taking place is not disclosed and it is being studied in the framework of our research. It is also worth noting that the observed digitalization of the economy occurs in the context of the dominance of uncertainties caused by external shocks, such as: natural disasters and epidemics.

According to Chatterjee P., Novak S. (Chatterjee and Novak 2017), studies of the uncertainty problem indicate its counter-cyclical nature when it is cumulative at the macroeconomic level. This is manifested in such a way that shocks of such uncertainty affect macroeconomic parameters more precisely during the recession stage, while influencing the performance and accuracy of macroeconomic forecasting. In this case, taking into account this factor in the construction of the forecast model will improve the quality of forecasts. In addition, the impact of uncertainty shocks on countries with different levels of development is asymmetric. Therefore, the presence of uncertainty shocks in emerging economies, unlike in developed countries, contributes to a significant decrease in actual activity, after which economic recovery occurs at a slower pace and in less effective ways.

Bloom D.I., Kadarett D., Seville H.P. (Bloom et al. 2018) note that the conjugation of shocks of uncertainty caused by outbreaks of epidemics and morbidity with the fears and panic led to various economic risks. The primary economic risk in this case is the costs incurred by public and private health systems in treating and controlling cases. The consequences of these shocks of uncertainty are uneven in terms of their distribution in the economic system. Therefore, some industries are able to benefit financially, while others incur disproportionate losses. In addition, it is possible to present risks that are not purely economic (the emergence of armed conflicts or the occurrence of natural disasters).

A remarkable example of uncertainties caused by external shocks is the current coronavirus pandemic (COVID-19), which has contributed to a new type of economic crisis. According to Ausan A.A. (Ausan, 2020), the emergence of a crisis due to a pandemic has not become an accident, most likely it is a kind of payment for the globalization of the economy, proving the reality of its existence. Such a crisis differs significantly from the previously known types of economic crises. On the one hand, its consequences can be civilizational, on the other hand, governments face an unsolvable dilemma: to preserve the lives of citizens or to preserve the economy, in other words, the future lives of citizens. The implementation of anti-crisis measures in such a

situation is not so much the elimination of morbidity as the formation of conditions for a new, still unknown future, as a result of which the world will radically change.

According to a research conducted by Kozhevina O.V. (Kozhevina 2018), in the ranking of countries in the world by the level of development of information and communication technologies (ICT) compiled by the International Telecommunication Union, Russia in 2016 ranked 43 on the ICT development index, 35 on the e-government development index and 41 on the readiness index for an internet society. A cross-country comparison of the digitalization indices of the economy is shown in Fig. 1.

According to Kozhevina O.V. (Kozhevina 2018), the leaders in this rating are countries that have a high level of technological development. Within the framework of the Customs Union, Kazakhstan is more ready for the digital economy, while Russia has lagging positions in terms of readiness for the digital economy, as well as in terms of the level of efficiency of the use of digital technologies in economic and innovative terms. In addition, in Russia there is a strong differentiation of regional economies in the level of integration into the framework of the information environment, as well as in the level of readiness for digital transformation. The distribution of federal districts in terms of readiness for the development of the digital economy is also uneven. In 2016, in relation to the level of 2015, the digital literacy index of Russian citizens on a ten-point scale increased (by 0.63 points), amounting to 5.42 (Fig. 2).

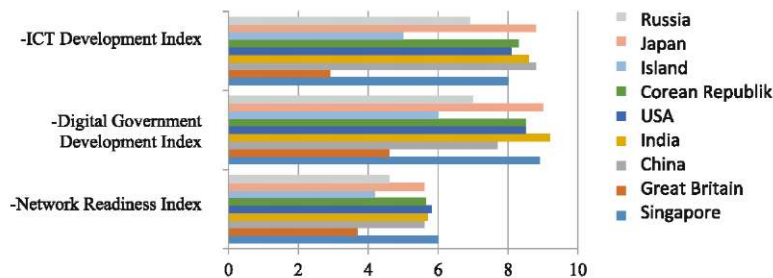


Fig. 1. Intercountry comparison of indices of digitalization of the economy (Kozhevina 2018)

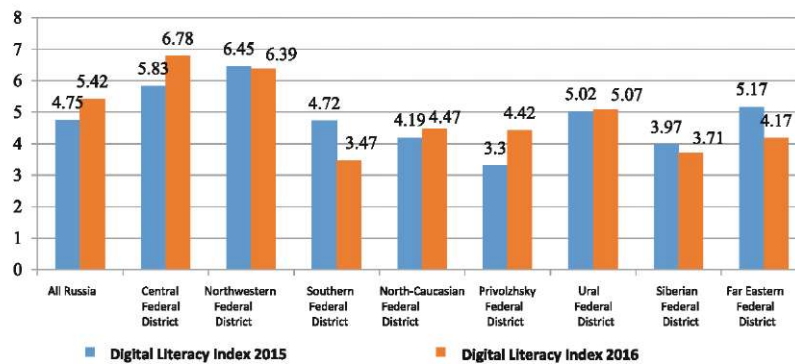


Fig. 2. Dynamics of the digital literacy index of Russian citizens in federal districts (Kozhevina 2018)

The analysis conducted by the Moscow School of Management Skolkovo (Skolkovo 2018) allows you to distinguish four groups of federal districts (FD) by the level of their digitalization: the leader, the first three catching up, the second three and the closing FD. Federal districts in 2018 were distributed in the same way as in 2017, but changes occurred within the groups (Fig. 3). The uneven nature of the development of digitalization in federal districts is explained, among other things, by the uneven socio-economic development of subjects belonging to the districts.

According to a research by the Moscow School of Management Skolkovo (Skolkovo 2018) among the 85 subjects of the Russian Federation in terms of digitalization, there are a dozen leading regions and a dozen lagging regions. In 2018, the subjects indicated in Table 1 became the leaders, and the ten lagging subjects of the Russian Federation in 2018 include the subjects listed in Table 2.

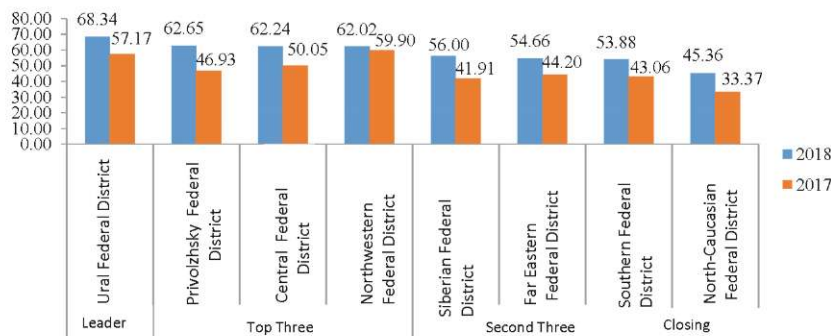


Fig. 3. Distribution of federal districts of the Russian Federation by the index «Digital Russia» in 2017–2018 (Skolkovo 2018).

Table 1. Rating of leading Russian regions by digitalization level in 2018 (Skolkovo 2018)

№	Constituent entity of the Russian Federation	2018	A change to 2017			
			2017	place	place (+/-)	points (%)
1	Moscow	77,03	70,01	1	0	10,02
2	Republic of Tatarstan	76,48	67,95	2	0	12,56
3	St. Petersburg	76,44	67,54	4	+1	13,18
4	Moscow region	76,25	65,61	6	+2	16,22
5	Tyumen region	76,19	65,44	7	+2	16,43
6	Khanty-Mansi Autonomous region - Ugra	75,81	67,88	3	-3	11,69
7	Yamalo-Nenets Autonomous region	74,48	66,03	5	-2	12,79
8	Republic of Bashkortostan	74,43	65,08	8	0	14,36
9	Leningrad region	73,15	62,45	12	+3	17,13
10	Novosibirsk region	73,10	52,48	33	+23	39,29

Table 2. Ranking of lagging Russian regions in terms of digitalization in 2018 (Skolkovo 2018)

№	Constituent entity of the Russian Federation	2018		A change of 2018 to 2017			
		points	place	points	place	place (+/-)	points, %
1	Pskov region	44,73	76	30,29	71	-5	47,68
2	Republic of Buryatia	43,65	77	30,54	69	-8	42,92
3	Republic of Adygea	42,78	78	30,32	70	-8	41,0
4	Republic of North Ossetia - Alania	41,99	79	30,15	72	-7	39,26
5	Chukotka Autonomous region	41,64	80	25,19	85	5	65,31
6	Republic of Kalmykia	41,36	81	26,43	82	1	56,48
7	Republic of Ingushetia	40,42	82	28,03	77	-5	44,22
8	Karachay-Cherkess Republic	40,31	83	27,69	79	-4	45,58
9	Jewish Autonomous region	39,76	84	26,06	83	-1	52,57
10	Republic of Tuva	39,74	85	34,04	62	-23	16,73

The current conditions have shown the need to identify factors for adapting the economically active population to the processes of digitalization of the economy. Based on our research, it is advisable to pay attention to the following factors that can increase the adaptation of the economically active population to the processes of digitalization of the economy, thereby having a primary impact on the development of regional digitalization: sufficient federal and regional financing of digital processes; digital equality; development and implementation of educational programs on digital professions (digital asset specialists, blockchain specialists, etc.); centralization and synthesis of regional digital projects in order to organize exchange processes in terms of available experience and practice; motivation for digitalization of industrial state enterprises; the creation of a united information front by the regional media in order to ensure the completeness of the information presented on the ongoing digital processes in the framework of the digital transformation of the economy.

2 Conclusion/Recommendations

The novelty of the presented study is manifested in the generalization and development of theoretical, methodological and informational approaches to the inclusion of an economically active population in the process of digital transformation of the economy, which corresponds to the order of presentation of the problem stated in the study. The scientific significance of the study lies in the formation of theoretical material within the framework of increasing the adaptation of the economically active population to the processes of digitalization of the economy based on the application of the identified factors, which will contribute to the continuous improvement of the level of qualifications of economic agents and the development of their new skills in the interactive space. The applied significance of the study is based on the possibility of using scientific results for the development of the Russian economy, deepening fundamental research in the field of digitalization of the economic sector, training various categories

of economically active population in the framework of the digital transformation of the economy, and implementing modern projects aimed at adapting the population in the context of a global transition to a digital economy.

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