

Education Development in Terms of Digitalization

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Abstract: The formation of a knowledge society and the digital stage of development of modern civilization culture still remains a continuing process, which itself is experiencing serious internal contradictions and problems. The article discusses the analysis results of digital literacy development among Russians, as one of the most essential areas of the emerging digital economy. The study of statistical and analytical material made it possible to draw the conclusion about the insufficient current level of digital economy competencies in Russia, the need to educate Internet users in information selection, instilling the need for self-development, self-education, developing the skills in useful information selection, and wider introduction of distance technologies in education. In this work, we used the abstract logical general scientific method of cognition and the method of empirical generalization. This approach to the study of the digital economy development allows us to identify the main factors of this process intensification.

Keywords: Digitalization, digital economy, distance technologies, digital literacy, modern civilization.

INTRODUCTION

Active development of the information society, called the great digital information revolution, predetermined the development of new information and electronic technological structure. Despite the fact that the use of nanotechnology is the driver of this structure, digitalization penetrates all economic processes and fields of activity. Implementation of the digital economy principles requires an active change in organizational and managerial processes, the anticipation of related problems and effective solutions aimed at enterprises and service industry performance improvement (Chen, Dewi, and Huang 2020).

The need to intensify the digital economy development is conditioned by time requirements, is associated with the creation of terms for labor productivity, GDP, digital skills, and infrastructure development and are of paramount importance for any country (Tapscott 2014).

STUDY TERMS AND METHODS

The use of advanced information technologies, new management methods in the context of digitalization becomes the most important factor in acquiring the competitive advantages of organizations in any field of activity, since organizations and markets make the first level of interaction between individuals and society as a whole (Glazyev 2017). The National Program "Digital Economy 2024" provides a structured and phased

solution of legal regulation, infrastructure development, staffing, technology, security and public administration issues in new conditions (Chakravorti and Chaturvedi 2017; Tapscott 1995).

In this survey, the abstract logical general scientific method of cognition was utilized. This strategy of analyzing the digital economy development enables us to recognize the primary factors involved in this process intensification. This topic is intensely debated in the literature by both academics and experts from the Russia and more by professionals in the labor market. What we have proposed is to present the most up-to-date points of view and arguments regarding the developing education in terms of digitalization so as to make a significant contribution to the field of research of the topic.

MAIN PART

At the present stage, the digital economy becomes one of the key factors determining the trends of economic growth. It directly affects the volume of GDP, labor productivity and the level of profit in all areas of the economy.

World Bank experts in digital economics have identified the key mechanisms of digitalization impact on economic growth. They consist of a significant number of population involvement in social processes, as well as of innovation efficiency improvement and development, which contributes to increased volumes of trade, capital and labor and leads to increased competition (Caraka, Lee, Kurniawan, Herliansyah, Gio, Kaban, Ilmi Nasution, Chen, Toharudin, Pardamean 2020).

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During the fiftieth world economic forum in Davos, they noted that the creation of more than 60% of global GDP will be associated with digitalization by 2022. Over the next 10 years, 70% of the value added will be based on digital platforms. And this is in a situation when about 50% of the world population does not participate in the digital economy at all and there is some slowdown of Internet introduction growth (Kelly 1998).

The Russian Federation Government develops a number of national and state programs aimed at the most important challenge solution of the modern world, including the development of digitalization in all areas of the economy. This gives certain preferences to organizations for the introduction of various innovations into production processes and the management system. So, 403 billion rubles allocated only for the implementation of the national program "Digital Economy" during the period 2019-2021. This amount is distributed in growing tranches for the following periods: 108 billion rubles for 2019, 123 billion rubles for 2020 and 172 billion rubles for 2021 (Giffi 2016).

Attention to the digitalization process development at the present stage gives certain results, which proves a number of studies conducted by domestic and foreign research centers. Thus, the experts of the Higher School of Economics, analyzing the digitalization level of Russia and comparing it with other countries, note that 77% of Russian households currently have Internet access, while this indicator reaches 99% in Japan and South Korea (World economic forum 2020).

The dynamics of broadband Internet access use by Russian users (The Decree of the President of Russia 2018) can be seen on Figure 1. The dynamics of subscriber growth proceeds quite smoothly and progressively; it has grown by a third over eight years, which ensures the development of the process.

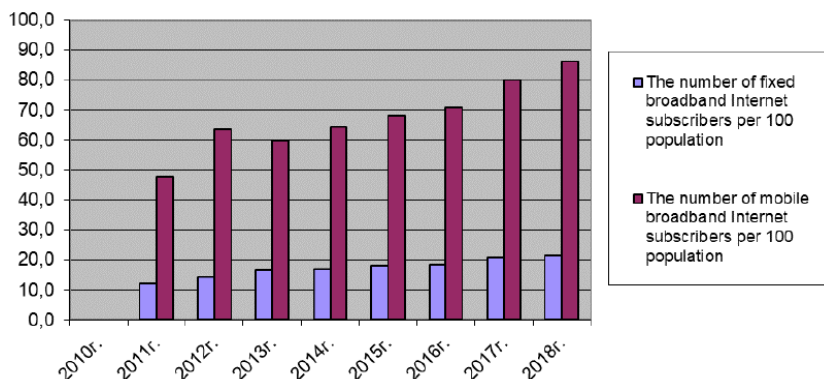


Figure 1: Dynamics of fixed and mobile Internet subscriber growth per 100 population units.

When they conduct the analysis, it is essential to consider how available online resources are used. Experts note that almost 39% of Russian Internet users carry out financial transactions online. This is a reasonably high figure among European countries. This indicator is higher only in the Scandinavian countries and the Baltic states.

As for online shopping, Russian consumers turn to it two or more times less (35%) than the residents of such countries as Great Britain, Sweden or Germany (Digital literacy of Russians, 2020). On average, 55% of purchases were made online in the EU (2016). The growth of Russian online shopping over the past seven years has almost doubled, so the prospects for electronic purchase increase are quite justified (Figure 2).

The development of the digital economy is largely dependent on the level of population digital literacy. The validity of this statement is confirmed by the fact that the problem of staffing is considered as one of the most important components of the national program "Digital Economy". Since digitalization involves the mass involvement of citizens in this process, the problem of digital literacy becomes comprehensive (Digital economy and society statistics 2017).

According to experts at the NAFI analytical center, the results of the comprehensive assessment of the current level of digital economy competencies in the Russian population and its readiness to live in digitalization terms showed that only a little over a quarter of Russians (27%) have a high level of digital literacy. Thus, due to an insufficient level of knowledge and skills in the field of digital technologies, most people and, therefore, organizations were not ready to work in a remote format, which exacerbates the problem in self-isolation terms.

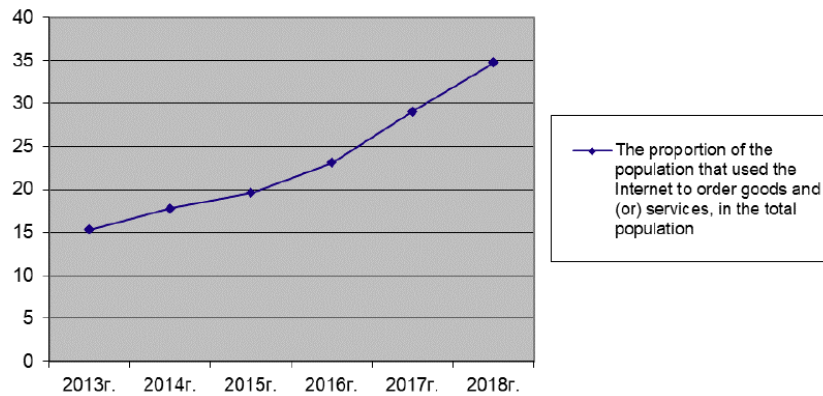


Figure 2: Dynamics of online shopping among Russian buyers.

At the same time, Russians realize the importance of acquiring and using competencies in the digital field. 65% of respondents believe that employers can reduce staff due to the introduction of process automation and/or the introduction of new technologies. Almost every fourth worker (24%) admits that he can become unemployed if he does not learn digitalization skills. But the employees with a fairly high level are striving for additional competencies. That is, we can conclude that we can understand the need for continuous training only by plunging into this area.

According to experts, the digital literacy index has grown by six points over the past year and amounted to 58% (Digital economy 2020). Undoubtedly, experts in the field of computer science have the highest level of digital literacy. The growth of the index depends on the development of young people's interest in IT technologies to a large extent. This can be traced by the dynamics of the number of students who completed training in the field of "Computer Science and Computer Engineering" (Figure 3).

But free access to Internet resources for both professionals and ordinary users opens up not only

from the positive aspect. As part of the discussion on digital revolution problems during the last economic forum in Davos, it was noted that digital technology does not always positively affect a person, his professional strategies and lifestyle. Clip thinking and features of the human brain lead to the fact that the consumer of information chooses vivid pictures and not deep analytical material for study (Caraka *et al.* 2020).

The emerged problem can only be solved by Internet user training about the information selection, instilling the need for self-development, self-training, and developing the skills of users, rather than entertaining, information selection. Education professionals can only solve these tasks, and primary skills should be instilled from an early age.

According to a study by HSE experts, the education sector in our country has been little affected by digitalization processes so far. In 2019, only 3% of Russian citizens received educational services through distance learning (Caraka *et al.* 2020).

Certain justifications have been found for such a low percentage of interest in online education. According to

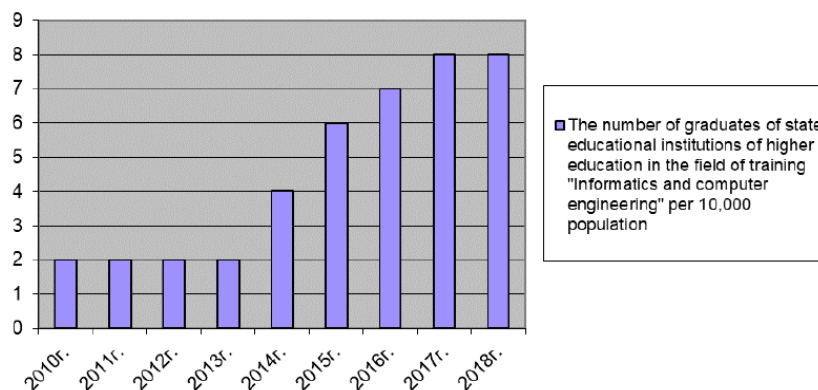


Figure 3: Dynamics of university graduate number in the field of training "Informatics and computer engineering" per 10,000 of population.

the analytical center of NAFI, 54% of Russians have a positive attitude towards distance learning. But at the same time, there are a number of shortcomings, the main of which are the lack of personal contact between a student and a teacher. The study shows that 12% of respondents consider this type of training less effective than traditional, 8% - uncomfortable, and 7% of respondents are confused by the lack of control and motivation among students.

Russian citizens are especially interested in distance education programs related to the digital sphere. But 75% of those who would like to acquire or improve knowledge and skills in the field of digital technologies are interested in distance learning on a free basis (Digital economy 2020).

In order to expand the network of online education, high readiness of educational institutions is required. The analysis of university readiness for development based on information and communication technologies (ICT) makes it possible to assess emerging trends (Figure 4). Already since 2012, the share of universities connected to the Internet at a speed of 2 Mbit/s and

higher was 76%. By 2017, this figure increased to almost 89%, but in 2018 it fell again to 75.3%. Unfortunately, there are no official statistics for 2019; thus, there is no way to clarify a further trend.

The most comprehensive information on the readiness of educational institutions for development on the basis of ICT is provided by the analysis of secondary vocational and higher education institutions that use distance educational technologies to implement basic educational programs (Figure 5). In the context of secondary professional institutions, there is no steady trend in this process development: from 2010 to 2015, the number of colleges and technical schools that use distance technologies is growing, then there has been some decline for two years, and there has been a slight increase in 2018. As for universities, there is a steady decline of universities developing ICT use after 2015. Moreover, the decline makes more than 40%, which is a negative trend, as it does not correspond to modern trends of digital economy development. The reason for this is not only the low technical equipment of some educational institutions

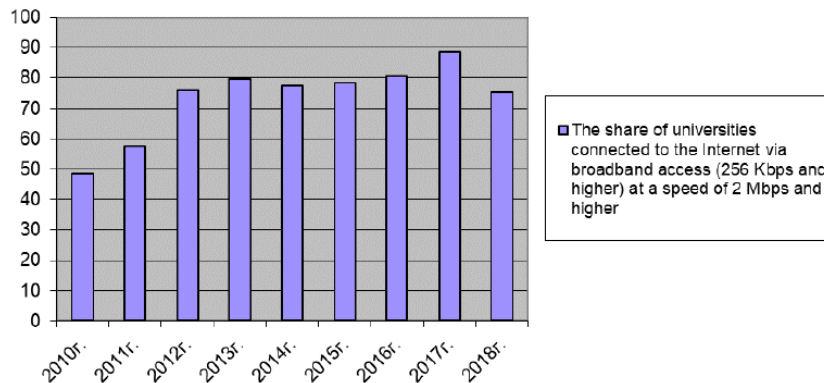


Figure 4: Dynamics of university provision with broadband Internet.

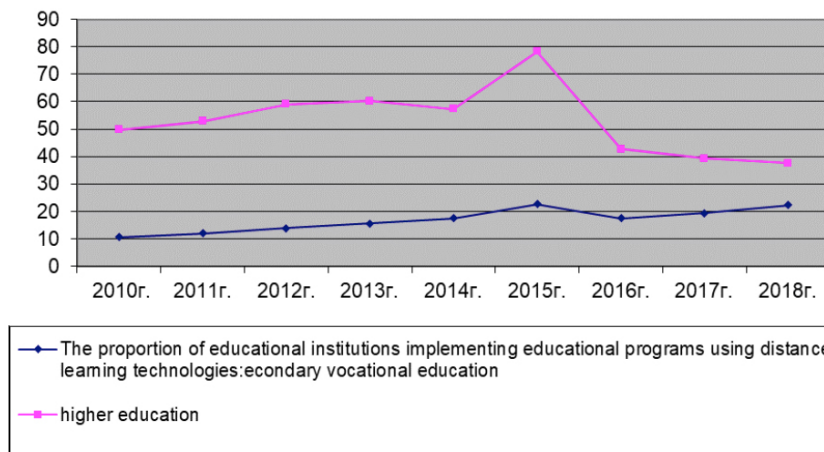


Figure 5: Dynamics of educational institutions implementing educational programs via distance learning technologies.

but also the insufficient training of teachers for new teaching technology introduction.

The introduction of distance technologies both in the main educational programs and in additional ones will expand the circle of participants in the educational process

The current situation related to the forced self-isolation of a large number of citizens as the result of the coronavirus epidemic has made it possible, on the one hand, to check the level of digital technology use in education, accelerate the immersion process of all participants in this area, and, on the other hand, to reveal a large layer of problems associated with the use of remote learning technologies at all levels of the educational process.

In order to accelerate the intensification of digitalization process development in the field of education, to increase the level of acquired competencies, it will be necessary to study the experience of various digital platforms use, on the basis of which educational institutions provided educational services at all levels, and disseminate the most successful one in future activities.

Quarantine measures made it possible to highlight more clearly the problems associated with the need to increase digital literacy among Russians. As Timur Aymaletdinov rightly notes, "this made the topic of digital literacy and the willingness of Russians to live and work in the digital economy most relevant, where millions of managerial, technical, social and business processes are implemented in a virtual, rather than physical, space" (Chen *et al.* 2020). The experience gained in self-isolation by Russians who are capable and striving for self-education will make it possible to feel the need to increase digital competencies and adapt more easily to the realities of the digital economy.

CONCLUSION

The study allows us to note that:

- at the present stage they continue the activities on digital technology development in the Russian Federation, which is facilitated by the implementation of the national program "Digital Economy";
- over the past decade, the number of Internet users in Russia has grown by a third and the volume of online shopping has almost doubled;

- insufficient level of knowledge and skills among the majority of Russians in the field of digital technologies has led to the lack of willingness to work in a remote format;
- a low percentage of interest in online education is associated with high cost, lack of personal contact, less efficiency than traditional education;
- to expand distance learning technologies, they require high readiness of educational institutions in terms of technical equipment and high qualifications of teachers in the field of digital literacy;
- quarantine measures related to the complex epidemiological situation have made it possible to accelerate the need for digital literacy increase among Russians;
- studying the application experience of various digital platforms for the implementation of distance technologies during the provision of educational services, will identify and disseminate the most successful one for further use.

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