

# Impact of Information and Communication Technologies Development on the Labor Market in the Russian Federation

Magomedov M.D., Karabanova O.V.\*, StroeV V.V.

*Moscow City University, Moscow129226, Russia*

*\*Corresponding author. Email: karabanovaov@mgpu.ru*

## ABSTRACT

The article shows the great importance of the development of information and communication technologies (ICT) in the Russian Federation (RF). Current level of ICT use in RF in whole and dividing by types of economic activities are being observed in the article. The impact of ICT on labor market of the country is determined. The analysis of the economic scientists' discussions about an impact of the development of ICT on unemployment in Russia has been done. The necessity of the training and retraining of specialists for working under conditions of ICT use in the country was substantiated. New approach to mastering ICT in teaching students is proposed.

**Keywords:** *information and communication technologies, labor market, unemployment, training and retraining of specialists*

## 1. INTRODUCTION

Information and communication technologies (ICT) have created new directions and approaches to perform business activity. It improves competitiveness of enterprises. Business can develop on the basis of new models contributing to a significant increase in markets for products and the purchase of raw materials, machinery and equipment. It significantly increases the growth potential of the economy. And that has an impact on the labor market. Digitalization is mainly driven by the internet. It

enables enterprises to enter a system related to the development, production and sale of products. This helps to reduce labor costs and machine downtime.

## 2. RESEARCH METHODOLOGY

Current level of the ICT use in enterprises of Russian Federation is shown in Table 1.

**Table 1 ICT use at enterprises of RF in 2010-2018 (% of the total number of surveyed enterprises) [4]**

	2010	2016	2017	2018
Enterprises that used:				
Personal computers	93,8	92,4	92,1	94,0
Servers	18,2	50,8	50,6	53,4
Local area networks	68,4	62,3	61,1	63,9
Email	81,9	87,6	88,3	90,9
Internet	82,4	88,7	88,9	91,1
including widespread access	56,7	81,8	83,2	86,5
Intranet	13,1	21,6	26,2	31,3
Extranet	5,3	15,0	16,6	18,5
«Cloud» services	-	20,3	22,9	26,1
Enterprises that have web-site in the Internet	28,5	45,9	47,4	50,9

The data in Table 1 show that the number of enterprises in the Russian Federation where information and communication technologies are used is growing, with the

exception of personal computers, servers and local area networks. The level of ICT use in the Russian Federation by type of economic activity has great importance for the economy of country.

**Table 2** ICT use in enterprises by type of economic activity 2017-2018 in the Russian Federation (% of the total number of surveyed enterprises) [4]

Years	2017	2018
Total	92,1	94,1
Mining	90,7	88,5
Manufacturing	95,5	94,1
Electricity, gas and steam supply; air conditioning	94,2	93,5
Water supply; drainage, collection and waste disposal, elimination activities pollution	85,5	88,8
Construction	88,9	86,2
Wholesale and retail trade; repair of motor vehicles vehicles and motorcycles	94,5	95,2
Transport and storage	93,4	92,8
Hotel and catering	90,5	88,7
Information and communication	97,3	96,6
including in the field of telecommunications	97,5	94,6
Finance and insurance	94,9	96,0
Real estate	65,6	86,5
Professional, scientific and technical activities	93,1	92,4
Administrative activities and related additional services	89,7	89,3
Public administration and military security; Social security	97,2	97,2
Training of highly qualified specialists	98,4	96,8
Health and social services	96,8	97,1
Activities in the field of culture, sports, leisure and entertainment	91,1	91,9
Other activities	93,9	91,2

The data of Table 2 show high level of ICT use by type of economic activity in the Russian Federation. Despite this, the economic benefit is lower than the costs caused by increase the number of employees, that indicates the need to identify reserves. ICT requires high qualification of the employees. As a result, the demand in labor market is increasing. It has changed significantly after the pandemic both in Russian Federation and in other countries. The unemployment is one of most important indicators evaluating economic situation of the country. It was not so high in our country before pandemic. It was 4,8% in 2008 and at present time it is around 6%.

The increase of labor supply in the beginning of the transition to market economy is explained by its reinforcement with younger generation and migration from the former Soviet Union states.

### 3. RESULTS OF THE STUDY

Analysis of demand and supply on the labor market of the country shows that supply does not completely meet the demands. It is because of, on the one hand, a certain part of the workforce does not meet the offered jobs, and on the other hand, enterprises raise their requirements for the level of the qualifications.

The structure of working population has also changed. The changes are running very slowly due to the complications of innovation process. These changes should be considered taking into account the specifics of the regional labor markets. It has a particular importance for the Russian Federation due to the huge territories and a wide range in the skill level of the working population. The labor market in the regions, areas and republics of our country is not always formed with a competitive labor force. According to our calculations, the share of the labor market in the regions slightly exceeds 30% of the total employed population in the whole country. The labor market in Russia has a high turnover of the labor force. The reason for this is the low cost of labor and the insecurity of existing jobs comparing to new ones.

### 4. DISCUSSION OF RESULTS

The views of economists on the prospects for the development of the labor market in our country differ significantly. One group of scientists supposes that due to robotization of production processes and the formation of artificial intelligence, the requirements for the qualifications of workers will increase. However, they do not evaluate the prospects for the development of the labor

market in the Russian Federation. Another group of scientists supposes that the development of ICT will significantly change the labor market. Will unemployment increase in our country under such conditions? Some economists suppose that it will increase significantly and the reason for this is the significant lag of the Russian Federation in labor productivity comparing to advanced economies. Other economists suggest that the use of ICT will not greatly affect it. They explain this by the fact that most of the workers who have been laid off, quickly improve their qualifications and get another job. Therefore, we can safely say that the development of ICT will not lead to a significant increase of unemployment. However, it is impossible to completely exclude the increase in unemployment with the development of ICT. Those employees who can be classified as competitive and willing to get retraining in accordance with the requirements of ICT will not have big problems with employment. In 2020, when the coronavirus pandemic began, all countries were forced to introduce severe restrictions, as a result of which the demand for labor significantly decreased, resulting unemployment increase. However, in such a difficult period of time, the use of ICT contributed to a slight decrease in the growth rate of unemployment. For example, the remote form of work has made it possible to save jobs in education, the banking system, etc. The unemployment rate in the regions of our country is higher than in Moscow. The reason for this is that many businesses operate in one shift, and some are completely shut down. This is due to the fact that most of the enterprises were built without a proper economic feasibility study. With the transition to a market economy, when the demand for manufactured products is taken into account on a daily basis, the above deficiency began to appear. In addition, technological equipment at enterprises is significantly worn out and therefore it is extremely difficult to produce competitive products that meet the requirements of the population. It also forces the working-age population of such regions to look for work in other territorial entities. Currently, joint ventures created in a number of regions of the country make full use of ICT, which allows, to a certain extent, to reduce the unemployment rate. To further reduce unemployment, new jobs should be created using advanced technology. ICT does not lead to significant changes in the structure of employed people. However, the movement of a significant part of the labor force to the service sector can be traced. The growth of the production in the sectors of the economy using ICT leads to an increase in the need for a highly qualified labor force, reducing unemployment. In countries that use more robots, the number of people employed is much higher. This means that the use of advanced technology contributes to an increase in jobs. The share of employees using ICT is steadily growing. In 2017, the share of such employees in the country was 1.7%. This value varies significantly depending on the region. In Moscow, it was around 3%. It will increase in future. The results of the analysis show that the demand for employees using ICT is high and not being met. To

solve this problem, it is necessary to significantly improve the training of ICT specialists.

## 5. CONCLUSIONS

ICT makes the living conditions of the population comfortable helping to pay for utilities, money transfers, make an appointment with a doctor, order food, etc. Further development of these services requires high qualified specialists. In this regard, there is a need to improve the current system of training specialists. The Government of the Russian Federation, considering the program for the development of the digital economy, pays great attention to the training of ICT specialists. In particular, it is planned to increase the number of graduates of higher educational institutions with competencies in the digital economy. This program defines the directions of motivating citizens of the country in mastering the necessary competencies in the digital economy. The program defines progressive forms of training that allow for a short period of time to prepare the required number of specialists for the development of ICT. The number of people trained in special programs is growing. In the future, attention should be paid to increasing the number of students. Funding for retraining courses for trainees in ICT should be public. It will pay off very quickly in the future. When training specialists in other areas, it is imperative to include a certain number of ICT classes in the program. In addition, when performing coursework and diploma theses in economic specialties, a section related to ICT should be included.

## REFERENCES

- [1] N.Y. Akhapiin, N.N. Volkova, A.E. Ivanov, Development of the digital economy and the prospects for the transformation of the Russian labor market, *Bulletin of the Institute of Economics of the Russian Academy of Sciences*, 5 (2018) 51-65. DOI: 10.24411/2073-6487-2019-10068
- [2] M.D. Magomedov, O.V. Karabanova, A.D. Krasotina, Integrating a teacher of economics and social studies in the digital transformation of education, *Bulletin of the Moscow City Pedagogical University. Series: Economics*, 3 (21) (2019) 77-83. DOI: 10.25688/2312-6647.2019.22.4.8.
- [3] Program "Digital Economy of the Russian Federation". Approved by the Government of the Russian Federation on July 28, 2017 No. 1632-r. Moscow.
- [4] Russian statistical yearbook. 2019: Statistical collection Rosstat. R76 M. 2019, 708 p.

- [5] M.D. Magomedov, O.V. Karabanova, E.V. Morozova, Tutor support as a tool to improve the efficiency of educational process management. *Bulletin of the Moscow City Pedagogical University. Series: Economics*, 4 (22) (2019) 92-97. DOI: 10.25688/2312-6647.2019.22.4.8
- [6] O.V. Karabanova, S.A. Sharapova, M.D. Magomedov, Competitiveness of a Multicultural Region's Economy: Measuring and Provision. In: Popkova E., Vodenko K. (eds) *Public Administration and Regional Management in Russia, Contributions to Economics*. Springer, Cham, 2020. DOI: 10.1007/978-3-030-38497-5\_19
- [7] V.F. Nitsevich, V.V. Moiseev, V.V. Stroev, O.A. Sudorin, Actual Problems of Business in Russia. In: Solovev D. (eds) *Smart Technologies and Innovations in Design for Control of Technological Processes and Objects: Economy and Production, FarEastCon 2018. Smart Innovation, Systems and Technologies*, vol 138. Springer, Cham, 2020. DOI: 10.1007/978-3-030-15577-3\_75
- [8] V.V. Stroev, V.S. Evteeva, A.Z. Kardanova, The relationship between economics and education. In the collection: *Current problems of state, municipal and corporate governance. A collection of articles*. Edited by Yu.V. Guskov, R.T. Valiev. Moscow, 2020, pp. 244-250.