Implementation of the National Project for Staffing the Digital Economy[1]

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Abstract. The introduction of new digital technologies, rapidly becoming widespread, entails a change in the maps of professions (specialties) and sets of professional knowledge and skills. This makes it necessary to improve the system of vocational training, primarily higher technical education. More university graduates should appear in the country who have the basic competencies of the digital economy. People must have the motivation to learn new areas that are in demand in the digital economy. The key areas of the approved federal plan include both the formation of a system of motivation for citizens to develop the necessary competencies and participate in the development of the digital economy and the education system, which will ensure the comprehensive development of man in the new digital environment. It is impossible to realize a new vision of the company without competent and involved employees who have the skills to work in the digital environment. Of particular importance is the pro-activity and competence of HR and business partners accompanying transformation processes.

Keywords: E-learning, Digitalization, Startups, Augmented Reality (AR), Digital technology, Industry 4.0, Virtual Reality (VR)

1   Introduction

Modern life cannot be imagined without digital technologies. Smart homes and cities, online shopping and banking, car sharing, remote work. But people have yet to unleash the potential of the digital economy, we are at the very beginning of a new era. Millions of people are faced with the task of finding their niche and learning how to take advantage of digitalization for their benefit, without fear that one day they will be replaced by robots or artificial intelligence. Besides, there should be new cadres in this area and leaders who will develop it further.

The modern world, thanks to the growing role of the digital economy, is going through a stage of radical transformation. The technologies and innovations that underlie it have been prepared for several decades and now they have entered the stage of rapid global spread.

Already, the level of penetration of digitalization in most regions of Russia, according to the Digital Russia Index, exceeds 60%, and in the most advanced regions, it has already exceeded 75%.

Worldwide, the development of digital technology is inevitable, and this fundamentally affects the lifestyle of millions. All areas of the economy have either become digital or are moving towards this. Even in such an area as agriculture, which, it would seem, is completely "terrestrial", robotic tractors appeared in the fields, the condition of the crops is checked by drones, the milk production of cows is controlled by automatic digital devices.

Artificial intelligence, advanced robotics, the Internet of things, cloud computing, big data analytics, and three-dimensional (3D) printing are far from a complete list of benefits, which gives us digital progress. And its development depends solely on a person with the necessary knowledge and qualifications.

2   Materials and Methods

In the paper, various research methods were used, which belong both to the category of general scientific and special ones for determining the directions of solving the identified problems. These include graphical analysis, statistical, systemic, and structural analysis, expert assessment methods. Theoretical and applied works on the research topic [1-38], as well as official statistics, were studied.

3   Main content. Personnel trends in the digital economy in Russia

According to expert estimates, the global GDP does not receive $ 5 trillion annually due to low labor productivity. Rosatom, together with BCG and WorldSkills, prepared the study "Massive uniqueness - a global challenge in the struggle for talent." It notes that the inability to find a sufficient number of personnel with the necessary qualifications as countries move to the digital economy has become one of the main problems in the labor market. In Russia, the qualification pit is estimated at 33.9 million people.

Experts point out that in today's world, the entire technological cycle can change in just 2.5 years. And the labor force that does not have time to adapt to these rapid changes is a big problem for developed countries.

Over the next 10 years, the process will enter the phase of massive digitalization of industries, the need for IT specialists will increase, according to a study by the Internet Initiatives Fund (IIDF). For the successful implementation of digitalization programs, the number of IT specialists in Russia should be equal in volume to other countries - for example, the share of IT specialists from the employed population in the United

States is 4.2%, in Russia - only 2.44%.

Also, the introduction of digital technologies will necessitate mass training of personnel in "traditional" professions in ICT skills: this process will affect up to 3.76 million people over 10 years. The demand for low-skilled labor will decrease. Up to 6.7 million jobs can be reduced in Russia in 10 years - such a forecast in the IIDF was made based on the current dynamics of changes in employment in the country, as well as a study of the potential for labor automation conducted by the McKinsey Global Institute.

The professions associated with routine labor have the highest reduction potential: recruiters, accountants, call center operators, bank clerks, and analysts.

According to BCG estimates, by 2025, 63% of the world's able-bodied population will consist of current youth: 26% from generation Z and 37% from Millennials. At the same time, the IIDF estimates that in Russia, due to the demographic pit and low birth rates, by 2027, the share of "young specialists" - the most socially and economically active population aged 20-29 - will decrease by 29% to 7.8 million people The figures speak for themselves: what we invest today in young people will have the greatest impact on the future economic well-being of the country.

The introduction of new digital technologies, rapidly becoming widespread, entails a change in the maps of professions (specialties) and sets of professional knowledge and skills. This makes it necessary to improve the system of vocational training, primarily higher technical education.

More university graduates should appear in the country who have the basic competencies of the digital economy. People must have the motivation to learn new areas that are in demand in the digital economy.

The key areas of the approved federal plan include both the formation of a system of motivation for citizens to develop the necessary competencies and participate in the development of the digital economy and the education system, which will ensure the comprehensive development of man in the new digital environment.

Such a system involves accelerated training aimed at meeting the needs of the digital economy in personnel.

The development of a basic model and a list of key competencies of the digital economy, a personal profile of competencies, an increase in the number of students in IT areas, the satisfaction of requests from digital economy companies for personnel with the necessary competencies are provided.

The number of people accepted for study under the programs of higher education in the field of IT should be at least 80 thousand people for the 2020/2021 academic year, and by the 2024/2025 academic year it is planned to raise it to 120 thousand people.

According to the Federal State Statistics Service, the share of employees in the IT sector in 2018 amounted to 1.7% (this is about 1.2 million people). In the regions, the highest share of workers in this field - in Moscow is 3%, the Vladimir and Moscow regions are slightly behind - 2.6%. Even though, according to Rosstat, the number of people employed in the IT sector is generally stable (in 2010–2017, their share in the total number of employed people ranged from 1.7 to 2.1%), most experts predict her increase.

It should be noted that the demand for ICT specialists is already high and is not covered by supply. Thus, the share of demand for highly qualified specialists in the IT

sector is 3.3% (for highly qualified specialists as a whole, this figure is only 2.3%). Among the specialists in the field of information and communication technologies, which are part of highly qualified specialists, software developers, system administrators, and computer network specialists prevail - their share as a whole is almost 57%. Among middle-level specialists, the proportion of people employed in the field of ICT is half that of those with the highest level of qualification. The main professional groups employed here are technicians who support ICT users, and computer networks and systems.

In the coming years, the demand for IT sector specialists in almost all professional groups (but primarily for developers and programmers) will only increase. The annual increase in additional demand will be at the level of 50-60 thousand people. In this regard, and also considering that the unmet need now amounts, according to rough estimates, to at least 20 thousand people, a significant increase in admission to universities in the relevant areas of training will be required.

Design decisions in the field of training are developed for the specific request of each of the largest national companies - Rosatom, Russian Railways, Sibur, Element, ChelPipe, R-Farm, Rostelecom, NLMK, Kalashnikov concern, and a number others. The general personnel requests of leading Russian companies include the importance of a quick and high-quality selection of specialists in new "digital" areas and the need for retraining of employees for staff rotation in connection with the automation and digital transformation of the business.

The human resources services for the industry for providing digital transformation processes include, for example, the following:

- designer of the ideal mentor, for the creation of which it is necessary to digitize the experience of adult specialists;

- a service for mass entry of citizens into the digital space based on the existing infrastructure (MFC, CPC, grocery stores, post offices of Russia, etc.);

- service for creating a digital resume;

- digital professional navigator;

- digital course for beginners.

It is impossible to realize a new vision of the company without competent and involved employees who have the skills to work in the digital environment. Of particular importance is the pro-activity and competence of HR and business partners accompanying transformation processes.

More than a third of Russian companies plan to invest more than 100 million rubles in digitalization in 2019. In 2019, more than 36 % of companies are ready to invest more than 100 million rubles in projects to introduce new technologies in a year. The most large-scale investments are planned by companies in the telecommunications and banking sectors, as well as metallurgy.

Another 22 % of the companies we surveyed plan to invest from 30 million to 100

million rubles in digitalization. 15 % of respondents are willing to spend up to 30 million rubles. At the same time, 27 % of companies put less than 10 million rubles into the digitalization budget for 2019.

There is an illustration of an investment budget, which Russian companies are ready to allocate for the implementation of projects to introduce digital technologies (fig. 1)

As our study showed, the main obstacles to digitalization are the lack of maturity of current processes, a low level of automation, a lack of competencies, and a low level of IT literacy among employees.

Industrial enterprises note the insufficient level of development of automated process control systems and production process control, which is also an important factor in terms of data availability for the development of predictive analysis tools. Most market participants are still at the data accumulation stage.

The leaders of the companies surveyed note that enterprises often have proprietary production management systems that store data in their own unique or outdated formats or are encrypted, which greatly complicates the receipt and accumulation of information from them. In the future, master data management will become critical for the subsequent digitalization of processes.

Companies recognize the need to increase the maturity of business processes and that process optimization needs to be included in transformation plans. To achieve a meaningful result, it is necessary to consider cross-cutting business processes and involve business units.

The obstacles faced by Russian companies in introducing innovative technologies courses share are given in fig. 2.
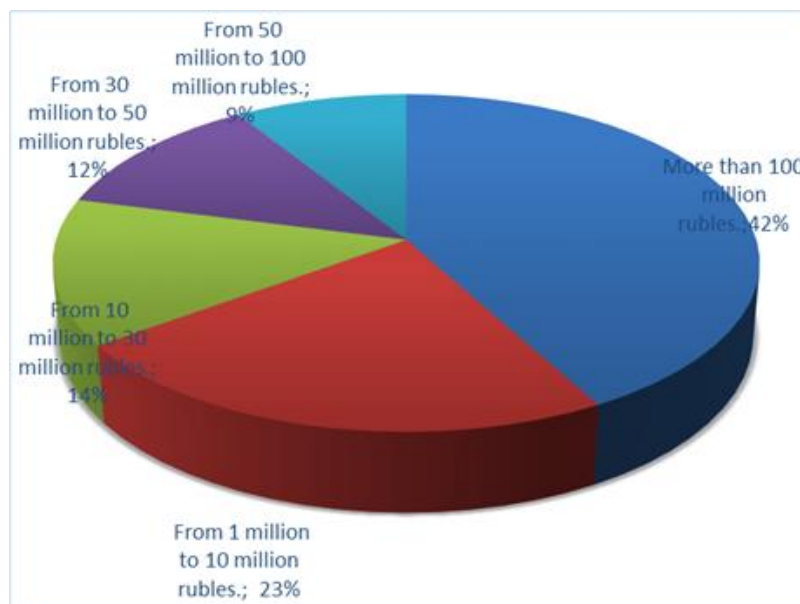

Fig. 1. Investment budget, which Russian companies are ready to allocate for the implementation of projects to introduce digital technologies
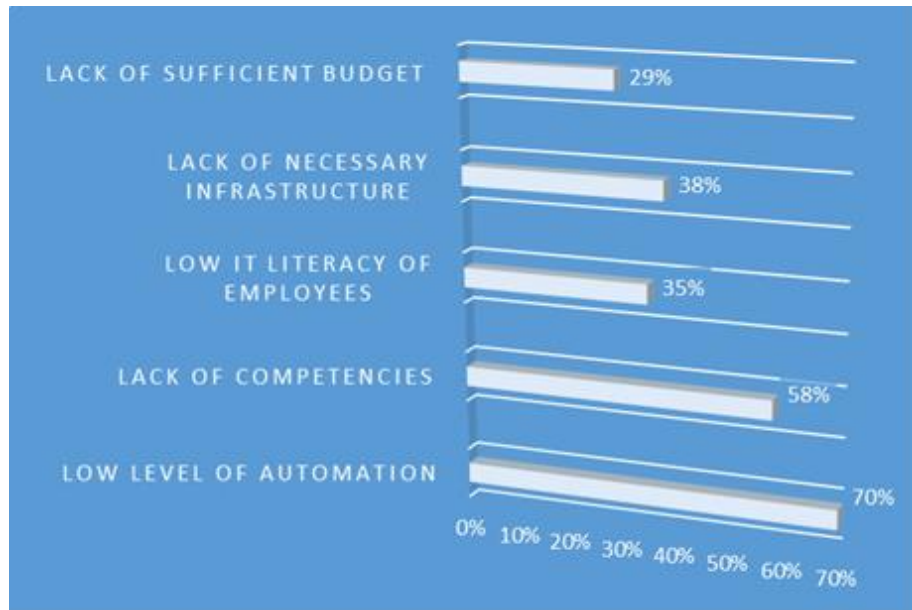
Fig. 2. The obstacles faced by Russian companies in introducing innovative technologies

Only 16% of Russian companies have introduced a new position - CDO (Chief Digital Officer) or a similar position as the head of digitalization programs; in another 44% of companies, similar functionality is distributed among previously existing top managers.

Currently, the leaders of the metallurgical industry and in telecommunication companies predominantly represent the CDO position. 44% of companies distributed tasks specific to CDO among existing top managers.

Russian companies are concerned about a certain lack of qualified specialists in innovative technologies in the labor market. More than half (54%) of respondents report a staff shortage in all digital areas.

In terms of attracting specialists, 91% of all companies surveyed implement transformation programs with internal resources, flexible forms of employment are less preferable. Russian companies tend to hire key specialists full time, prefer to attract ready-made personnel from the market, and are in no hurry to "grow" personnel on their own.

The share of the most popular digitalization specialists in Russian companies is shown in fig. 3.

We have to find solutions for three key areas. Firstly, in the horizon of 5-10 years, to provide human resources for the economy, it is already necessary to restructure the education system and engage in the development and support of talented schoolchildren and students in the field of mathematics, computer science, and digital economy technologies.

Secondly, all segments of the population should be ready to use new technologies. Increasing the level of mass digital literacy will not only improve the quality of life of the population and reduce the digital divide but also increase its economic well-being.

So an English teacher from a region with basic digital skills can already teach students all over Russia.

And thirdly, as soon as possible you need to start providing the economy with professional personnel. The urgent need for such specialists requires the creation of conditions for their accelerated or even advanced training. Specialists in the field of data management and analysis, developers of mobile applications and complex platform solutions are the personnel "foundation" of the digital economy.
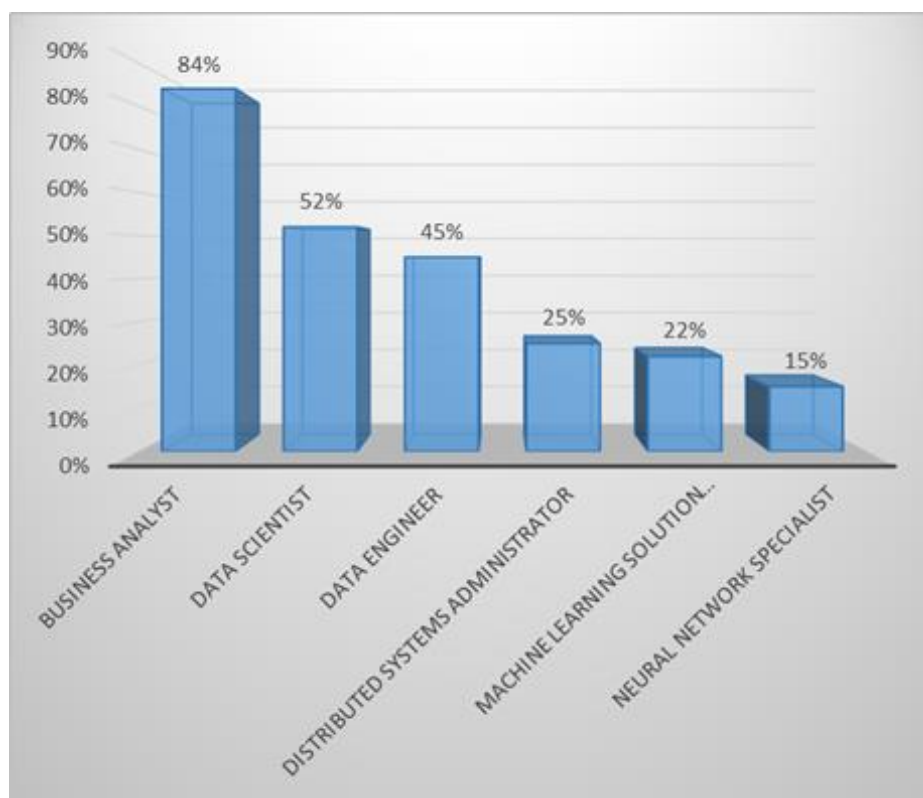

Fig. 3. The share of the most popular digitalization specialists in Russian companies

An urgent problem is a search for solutions for long-term forecasting of the need for new personnel. Every person needs to understand what competencies need to be "renewed" to remain in demand throughout their professional careers, companies are interested in quick recruitment, universities need to know what to teach students today so that they are in demand by employers tomorrow, the state is interested in assessing the labor market future and analysis of the effectiveness of funds spent on staffing the digital economy.

The barrier to solving these problems is the lack of monitoring mechanisms for "long trajectories" of human development. That is why the task of creating a digital profile for collecting and exchanging data on the educational and professional achievements of a person and building his development paths in the digital economy has become crucial.

The protocols of data exchange between various participants in the global education system and the labor market, recognition by employers of the results of an independent assessment, pilot testing schemes for a "digital passport" of human knowledge and experience, and support services for personal development paths — it is necessary to develop expert solutions on all these issues. The state must remove barriers to the successful development of these processes, provide the prerequisites for common standards for the storage and exchange of data for the formation of a digital human profile.

4   Conclusions

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The protocols of data exchange between various participants in the global education system and the labor market, recognition by employers of the results of an independent assessment, pilot testing schemes for a "digital passport" of human knowledge and experience, and support services for personal development paths — it is necessary to develop expert solutions on all these issues.

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