

Prospects for digitalization of the Russian economy

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Abstract - The article aims to analyze the prospects of digitalization of the Russian economy. Despite the adoption of the state Program "Digital economy of the Russian Federation" and the active work of the government in this direction, the introduction of digital technologies is not fast enough. According to the authors, the main reasons for this situation are: underdeveloped ecosystem, lack of personnel and financial resources, conservative thinking. The success of digitalization is possible with the active state support of this process in such areas as: the creation of infrastructure, training and development of digital culture, cybersecurity, promotion and financing of new national IT – products, cross-border cooperation in the field of digital technologies.

Keywords - digital economy; mobile economy; digital technologies; cybersecurity; IT-platforms; digitalization of public services; information infrastructure.

I. INTRODUCTION

On July 28, 2017, the program "Digital economy of the Russian Federation" was approved by the Order of the government of the Russian Federation № 1632-p. The objectives of the program are to create an ecosystem of the digital economy of the Russian Federation, to ensure sufficient institutional conditions and remove obstacles to the creation and development of high-tech businesses in all sectors of the economy, to increase competitiveness in the world market, both individual sectors of the economy and the economy on the whole.

According to experts, the digital economy is implemented at three levels: markets and sectors of the economy; platforms and technologies; institutional environment, including legal regulation, information infrastructure, personnel, information security[8]. The digital economy is becoming the foundation of a future technological breakthrough.

The adoption of this program was caused by objective reasons. Russia lags behind the leading countries in the process of digitalization of the economy.

Thus, the share of the digital economy in the GDP of developed countries from 2010 to 2016 increased from 4.3% to 5.5%, and in the GDP of developing countries – from 3.6% to 4.9%. In the G20 countries, this figure increased from 4.1% to 5.3% in five years. The world leader in the share of the digital economy in GDP is the UK – 12.4% [14].

International analysts indicate the share of Russia's digital economy in GDP in 2010 in the amount of 1.9%, in 2016 - 2.8% [14].

According to researchers of the Russian Association of electronic communications (RAEC), the contribution of the digital economy to Russia's GDP in 2017 was 2.1%, and with the mobile segment together – 5.06% or 4.35 trillion rubles. [16]. The indirect contribution of the mobile economy to GDP is 1.76 trillion rubles. The small business in the mobile economy accounts for 0.54% of GDP. The question remains: is a digital breakthrough possible in Russia?

II. METHODS

In this paper the following sequence of investigation is applied. At the first stage, the subject and object of the study were determined. The object of the study was a set of digital technologies that determine the further development of the Russian economy. The subject of this article is the factors contributing to the development of a new image of the economy based on digital technologies.

At the second stage, a study of potential opportunities for the implementation of digital technologies was conducted, the impact of digital technologies on economic relations was studied, the intensity of the impact of digital technologies on production was assessed, regulatory documents, state federal and subfederal programs aimed at stimulating innovation

activity were studied, emerging problems and institutional traps were identified. The authors took into account the studies conducted in the works of N. F. Vasilyeva, G. M. Kleiner, and other scientists.

At the fourth stage, the main conclusions and results of the research were formulated and the directions of their practical application were proposed.

III. RESULTS

According to the forecasts of the consulting company *Accenture*, the use of digital technologies should add 1.36 trillion U.S. dollars in 2020, or 2.3% of GDP in the total GDP of dozens of the world's leading economies. The GDP of developed countries will increase at the expense of the "digital economy" by 1.8%, and GDP of developing countries – by 3.4%. The Boston Consulting Group predicts that the volume of the digital economy could reach 16 trillion. US dollars by 2035 [14].

Fletcher school at Tufts University in partnership with *Mastercard* presented a new research "Digital evolution Index in 2017".

Norway, Sweden, Switzerland, Denmark, Finland, Singapore, South Korea, Great Britain, Hong Kong and the USA were in the TOP 10 countries with the most developed digital economy. Based on the rate of growth and the state of the digital economy, the study divided the countries into four groups:

1. The leaders: Singapore, UK, New Zealand, UAE, Estonia, Hong Kong, Japan and Israel. They show high rates of digital development and spread of innovations.

2. Countries with slowing growth: many countries in Western Europe, Scandinavia, Australia, South Korea. Without innovation, they may lag behind the leaders of digitalization.

3. Promising: China, Kenya, Russia, India, Malaysia, Philippines, Indonesia, Brazil, Colombia, Chile, Mexico. They are characterized by a relatively low level of digitalization, but at the same time stable growth rates, which attracts investors.

4. Problematic: South Africa, Peru, Egypt, Greece, Pakistan with a low level of digitalization and growth rates [5].

Russia is classified in this study as the third group of countries on digitalization. According to statistics, the impact of Internet markets on the economy is growing by 11% per year, and by 2021 the contribution of only Internet markets to GDP will be 4.7%. The Internet industry employs about 2.3 million people, including self-employed [1]. According to forecasts, up to 85% of Russians will have access to the Internet in Russia by 2020, and by 2021 the mobile economy, which is currently 11th in size among industries, will become larger than the agricultural sector.

The peculiarity of Russia is the significant growth of the mobile economy, which, according to forecasts, will grow by an average of 10.7% annually in the next 5 years, by 2021 its share in GDP will reach 4.7%. Now it created 1.2 million jobs, another 430 thousand will appear in the next 5 years [11].

Particularities of the mobile economy of Russia are: availability of high quality personnel in the domestic market; low cost of mobile traffic (almost 10 times than in the US, almost 3 times than in Germany and almost 2 times than in

South Africa) [11]. RAEC together with Rostelecom estimated that by the end of 2017 there will be 8.4 billion devices connected to the Internet in the world.

The driver of the digital economy growth in Russia over the past 5 years has been the implementation by the state of such initiatives as the introduction of e-procurement (federal law-44; federal law-94 and federal law-223) and the implementation of the e-government project. However, according to experts, the problem is that the services provided are not full-service: while a significant part of the processes of interaction with the state is completed offline.

There is a gap between the capital and the regions in the use of e-government services (it is about 5 times), which indicates the need for further implementation of public online services [9].

Yandex Taxi and the Higher school of urban studies conducted a research of the level of digital penetration in 1016 Russian cities with a population of up to 200 thousand people. The population of these cities is 36 million people (one third of the total urban population of the country).

This investigation showed that in small cities the Internet is mainly used for communication: for users of social networks in the structure of the population increases as the size of the city decreases.

To search for information about goods and services in small towns 31% of the population against 52% use the internet in cities with population over than 1 million people. For small towns can be characterized by low penetration of local digital services: delivery "at home", ordering food, online shopping in local stores, buying tickets for concerts, taxi online, etc. The full presence of services in 56 major cities of the country and at the same time their complete absence in 819 cities with an average population of 25 thousand people were revealed [13].

In general the introduction of digital technologies is developing slowly compared, for example, to China and India, taking place at the end of the third ten of about ninety countries. In general, Russia's digitalization forecasts for the next few years are not very rosy, as companies invest little in new technologies. However, there are incentives for the development of the digital economy. They are associated with such unfolding trends as:

- cybersecurity (industries, banking and the public sector are most interested in IT-security. According to Gartner forecasts, the global turnover of the cybersecurity market in 2018 should approach \$ 100 billion.) [17];

- cross-border cooperation with international alliances;
- creation of common IT-platforms (for example, Association of Russian Uber and "Yandex.Taxi" "in a single platform online taxi", the agreement between "Sberbank" and "Yandex" to create a joint e-commerce platform on the basis of aggregator of goods and services " Yandex.Market" with a total project cost of 60 billion rubles);

- digitalization of public services (Russia plans to provide 80% of public services in electronic format by 2025, so that the population and business interact with the state through online services);

- B2B marketplaces for online shopping and the variability of payment for products of a particular type.

Experts believe that the drivers of technological growth with huge potential are IoT and automation of production, digital design, virtualization (for example, remote office), cross-channel communications and mobile technologies

The cost of the IoT market alone is projected to be \$ 457 billion by 2020, with \$ 240 billion expected to be generated by automation by 2022 [7].

Russian business on the whole understands that without the use of digital technologies it is impossible to compete successfully in the domestic and foreign markets. At the same time, the development of the digital economy has once again exposed the existing problems and revealed new ones.

First of all, it is the lack of investment resources for many enterprises to realize projects of implementation and maintenance of IT systems.

In addition, the country lacks both IT professionals and users who are able to use innovative technologies correctly and effectively.

One of the obstacles is also the conservatism of thinking: innovative solutions don't always resonate with suppliers and consumers.

In some cases, the underdeveloped ecosystem (inability to access the Internet, lack of data centers, etc.) acts as a deterrent.

One of the problems counteracting the development of the digital economy, is the weak technical development and the weak pace of "digitalization" of the economy" ss many experts say.

Russia is characterized by a relatively low index of intelligent robotics. According to statistics, out of 254,000 industrial robots sold in 2015, only 550 units were purchased for use in Russia. If the average global level of the number of robots per 10,000 employees is 69, then in Russia it is 1[2].

If the country accelerates the automation of current economic processes and uses fundamentally new, breakthrough business models and technologies, then, according to McKinsey, the digitalization of the Russian economy will increase the country's GDP by 4.1-8.9 trillion rubles by 2025, which will be from 19 to 34% of the total expected GDP growth [2].

Active implementation of digital technologies needs state support in such areas as:

1. Creation by the state of infrastructure and conditions for private initiative. There are such options as additional tax incentives for the development of digital technologies, reduction of insurance premiums for the growth of IT companies, the introduction of tax incentives for the amount of capital investments in modernization (digital technologies), the settlement of tax issues in cross-border online trade.

2. Training and development of digital culture. The widespread development of the digital economy will cause changes in the structure of employment and requirements for the qualification of workers. We will need IT professionals, programmers, skilled users who can work in the digital environment. The digital economy will also affect top managers who will have to understand how to put in practice digital transformation of business processes.

3. The work of the state with the media in order to prepare citizens for future changes, the implementation of a broad digital education.

4. Ensuring cybersecurity. This requires the development of legal norms to combat cybercrime, technological solutions and standards, the creation of qualified cyber police staff.

5. Financing of new technological solutions from the budget, attraction of non-state sources of funding for exploratory research, stimulation of corporate science development, training of heads of scientific organizations capable of combining the qualities of a scientist and an entrepreneur.

6. Promotion of domestic new IT products and services to foreign markets by providing marketing information, organization of participation in foreign exhibitions and conferences, allocation of subsidies and guarantees for export credits, compensating the costs of patenting, forming investment funds aimed at conducting M&A (mergers and acquisitions) transactions abroad.

7. Promoting cross-border cooperation. Restrictions on international cooperation are rapidly undermining the competitive position of domestic producers. It is necessary to ensure the possibility of using by Russian users of services offered by the world market, cross-border data transfer of a non-secret nature. The entry of Russian companies into the global technological alliances, forming the technological standards for the future should be encouraged [17].

The success of the digitalization of the Russian economy will be possible with a comprehensive, systematic approach to solving problems and overcoming existing problems, the introduction and scaling of the best foreign practices and projects.

The experience of digitalization in Denmark, Singapore, Germany, China and other countries has shown the need to use such tools as:

- digital privatization (it is aimed at supporting interested, innovative, competent subjects, i.e. is designed to improve the efficiency of certain areas of the economy where they will be involved - health, housing and communal services, etc.);

- digital leap (creating conditions for the development of new businesses and advanced technologies),

- the very digitalization of the state (ensuring transparency of public authorities and its interaction with private structures in the country, simplification of business),

- digital reinvestment (the government finances the selected strategic directions for the implementation of the goals and objectives of the digital economy program) [9].

State support for the development of digitalization should be carried out taking into account the fact that, along with the advantages, it, like any phenomenon, has certain shortcomings that manifest themselves wherever it is deployed.

In the most general form the challenges of digitalization in Russia can be:

- reducing the number of vacancies of low and medium qualification;

- security risk due to the lack of protective technologies;

- toughening competition in all sectors of the economy;

- threat to the "digital sovereignty" of the country;

- violation of a person's privacy;

- complication of business models and interaction schemes;

- changes in producer and consumer behaviour;

- the need to revise the regulatory framework [3].

A significant disadvantage of digitalization is the transformation of jobs, which can lead to an increase in technological unemployment. Chairman of the Board of Sberbank G. Gref gave an example that, as it turned out, the neural net prepares claims better than a person. This led to a reduction of 450 lawyers of the Bank. This situation is fraught with increasing social tension and depressive phenomena in society [2].

According to the research center of recruiting portal Superjob.ru, the country faces an explosive increase in unemployment due to falling demand for low-skilled labor. According to the center, 2017 is the last year when the market will record an increase in the number of jobs available to citizens, and the growth rates themselves will decrease from 47% to 5%.

This is due to the increase in the efficiency of work processes due to automation and elimination of unprofitable links in the process chain [2]. Such professions as an entry-level accountant, bank employees, specialists of call centers who will be replaced by robotics technologies fall into the risk zone.

According to studies by economists Carl Frey and Michael Osborne, in the United States due to the deployment of the process of robotics may disappear 47% of jobs existing in 2018 by 2033. According to the World Bank, for China, this share may be 77%, and according to estimation of the International labour organization in countries such as Cambodia, Indonesia, the Philippines, Vietnam and Thailand, this share will be 56%.

The working-age population, those who make up the bulk of the labor force in many countries, the British economist G Standing called *precariat* (from lat. *Precarium* - unstable, non-guaranteed and "proletariat"). Robotics and the introduction of artificial intelligence will make them unnecessary. He compares the unfolding process with the invention of the internal combustion engine, which made horses unnecessary in the early twentieth century [14].

According to the Center for macroeconomic analysis and short-term forecasting (CMASF), digitalisation would have "released" of 12.5 million workers by the year 2030. The deterioration of the demographic situation absorbs only 1.5 million of them, 3.5 million people can take small business. For the rest, the problem of employment will be acute.

Digitalization can provide "two-three-fold increase in labor productivity" in Russian economy but if it is not transformed into expansion in domestic and foreign markets, then it can lead to "release of employees unacceptable in scale."

First of all, it will affect the sphere of trade and repair (reduction by 3 million people), manufacturing (minus 2 million workers by 2030), construction, agriculture and transport (reduction in each industry by 1.2 million people).

The minimum release will happen, according to Belousov, in the field of fishing - only 26 thousand workers in 12 years will have to leave. A relatively small release is projected in the financial sector, mining, fishing. According to the forecasts of "Superjob", for 10 years the number of accountants will be reduced by 10 times, 10 million of the most low-skilled Russians will lose their jobs.

According to experts CMASF in order to provide jobs for about 1 million "released" employees within 10 years every

year, it is necessary now to create the preconditions for intersectoral maneuver. It is necessary to implement programs of retraining, relocation and more actively build housing – 100-120 million square meters per year. We need a serious restructuring of the entire education system, starting with kindergartens and primary schools [15].

It will require interdisciplinary educational programs related to "robot communication", the interaction of the human mind with the "intelligence" of the robot (experts in the field of design, maintenance of robots, virtual reality designers, lawyers to resolve disputes related to the activities of robots, psychologists, digital scientists, "data scientists" etc.) [2].

However, the threat of rising unemployment due to the digital economy will be partially neutralized by other factors, such as: the shortage of labor in other industries; the emergence of new professions and activities; demand for specialists of the expanding domestic IT sector; (scientists, engineers, programmers, operators, adjusters and highly skilled workers, which the country lost in the 1990s of the XX century during the restructuring will be required); state subsidies for retraining programs, reorientation of the education system in accordance with the emerging new professions [4].

The unemployment may not be avoided, but knowing this in advance, it will be possible to take appropriate measures and regulate its scale. In any case, the emergence of new unemployed people will lead to some reduction in demand and will be an obstacle to increasing production process. In addition, the robotization of production is accompanied by the overflow of capital from the real to the financial sector, which generates the appearance of financial pyramids and bubbles [4].

According to S. Glazyev, digitalization is a threat to state security in the following areas:

1. Cyberterrorism and cyber espionage against Russia by foreign terrorist and criminal groups.

At a time when many subjects, for lack of their own, use imported computing platforms and software, it seems appropriate to make an international agreement on cybersecurity. In case of refusal of a number of countries to sign it, it is necessary to provide in the Treaty a paragraph on the introduction of collective sanctions against states that refused to join the agreement [4].

Such a Treaty could deprive the United States of its leading role in the global information space, especially since the United States opposes such a Treaty.

2. Threats from different internal criminal organizations [4].

3. The use of cryptocurrencies for the withdrawal of capital abroad and tax evasion.

4. The use of the Internet for illegal business activities.

These threats can be neutralized if the system of identification of the people working in networks is created; certification of the equipment used for this purpose is carried out, the relevant legislation is adopted.

As for the continued existence of human civilization, the digital revolution also poses a number of threats:

1. The use of genetic engineering to create viruses that affect humans and their spread throughout the world through the export of goods.

2. Cloning people, including those with certain properties.
3. Implantation in people of various cybernetic devices.
4. The emergence of people-cyborgs with certain abilities and capabilities will allow to manipulate their behavior, including for criminal purposes.

Real suggestions to neutralize these threats have not been developed yet. According to scientists, the scientific and technical advance can not be stopped, but society can limit it to the framework of international law, which should be improved, and the range of international agreements expanded to limit the dangerous areas of development of digital technologies.

Scientists talk about the appearance in the near future of such problems as the illegal actions of robots against people, robots who will be guilty of road accidents with the participation of unmanned vehicles, in violation of the terms of the supply of goods in the system "smart house", stealing money machine system?

The development of a system of "smart contracts" which should clearly define the rights and responsibilities of the parties, the procedures for identifying the perpetrators, penalties and deadlines, will be required.

IV. CONCLUSIONS

In reality, digital technologies have significant advantages and are increasingly used in many areas of life. By themselves they are not harmful but they are used sometimes by people for anti-human purposes. The threat comes not from the technology itself, but from people with criminal intentions. The neutralization of such threats should be carried out by means of legal regulation.

To sum up, it should be noted that Russia, along with other countries, is involved in the "construction" of the digital economy which has significant advantages, but also exacerbates the risks associated with cybersecurity, the growth of the "digital divide" between citizens and businesses within countries, as well as between countries, the invasion of privacy of citizens [14].

The emergence of private cross-border management systems for economic, social and political processes affecting the national interests of States and their associations is becoming possible. The agents themselves can protect their interests using new technologies and smart contracts. However, in any case, already now the system of legal regulation in many issues should be improved in connection with the widespread use of new technological opportunities in all spheres of society.

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