

Digitalization of the social and economic processes in the Russian economy: the current situation and directions of development

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Abstract—Widespread digitalization, automation and implementation of appropriate technologies is a natural and expected process, and therefore inevitable. By reducing information search costs, digital technologies significantly reduce the cost of economic and social transactions for firms, individuals, and the public sector. Digital technologies stimulate innovations, minimizing transaction costs. They increase efficiency: existing activities and services become cheaper, faster and more convenient. Finally, they promote integration: people get access to previously unavailable services. At the same time, in terms of digitalization, Russia is currently inferior to a number of developed countries, ranked in the third ten countries. But experts agree that Russia has necessary potential for digitalization. This potential can be realized through combining planned and market approaches with the preference to the planned approach. It is important to understand that digital technologies serve the real economic sector. Thus, the transition towards a digital economy is impossible without the developed manufacturing sector and industry. The integrated approach will allow being able to achieve large-scale digitization of social and economic processes in Russia.

Keywords – digital economy, digital infrastructure, digital technology, digital segment, virtual economy.

I. INTRODUCTION

Humanity has entered an era of global changes. In the near future, the main elements of its life activity such as economy, management, science, and safety will attain a new form and content. The further penetration of digital technologies in life is one of the essential characteristics of the future world due to progress in microelectronics, information technologies and telecommunications. Thus, digitalization is an objective, inevitable process and one that is impossible to stop.

Many developed countries, realizing the inevitability of the upcoming changes, began a conscious movement towards the 'digitalization' of the economy. The United States and China became the pioneers in this sphere, and they are still consid-

ered to be informal leaders. After them, similar programs were introduced in the UK, the European Union, Australia, Belarus and others. However, if we look at their strategic planning documents and development programs, they reveal not to contain a formulated concept and a strategic vision of digital economy, descriptions of the impact on the existing economy (apart from increasing labour productivity) and descriptions of the main qualitative changes that should occur in other areas. Summing up these facts, we can state that none of the countries, including the leading countries, have a complete understanding of digital economy and its consequences. In many countries, web economy is obviously limited by new forms of payments and communication with consumers, and does not include new forms of management and economic relations.

The research purpose is to study the current situation of digitization of socio-economic processes in the Russian economy and determine the directions of its development.

II. RESEARCH MATERIAL AND METHODS

During the research process the following research methods were employed: universal scientific methods including the empirical and theoretical levels, analysis and synthesis, a systematic approach, and conceptual modeling. In addition, methods of scientific research such as dynamic and structural analysis, and the construction of logic circuits were used.

The term 'Digital Economy' was coined by Don Tapscott in 1997 [1, 2]. It also referred to as the Internet Economy, New Economy or Web Economy. In 2001, Thomas L. Mesenbourg structured and identified 5 components of the digital economy, which can be statistically assessed and measured [3]. He specified the following blocks:

- e-business infrastructure (including hardware, software and computer technologies);
- e-commerce;
- company and industry structure (increase in the value of traditional industries through the use of digital technologies);

-demographic and worker characteristics (the difference in the value of labour power in the digital economy compared with the traditional labour power);

-price behavior (changes in value added of products and the digital economy services.

The topic of the web economy became very popular among Russian scientists only in the last few years. The main research papers on this topic were published during the period from 2014 to 2018 [4, 5, 6, 7, 8].

III. RESEARCH RESULTS

‘Digital’ (electronic) economy is an economy that exists in a hybrid world. The hybrid world is the result of the merging of real and virtual worlds, characterized by the possibility of accomplishing all essential actions in the real world through the virtual one. High efficiency and low cost of information and communication technologies (ICTs) and availability of digital infrastructure are the necessary conditions of this process [5].

Digital data is a key factor of production in this type of economy. The processing and use of analysis results can significantly improve production efficiency of goods, technologies, equipment, storage, sale, delivery of goods and services.

Digital technologies have repeatedly expanded the information base, reduced information costs and created information products. This simplified the search for information, its comparison and exchange, and contributed to the strengthening of cohesion and cooperation between business entities.

Before the advent of the Internet, some operations were so expensive that there was no market for them. We are talking about two kinds of situations. The first situation describes two sides of a potentially profitable deal which simply did not know about the existence of each other and paid high search costs. The second one is a case when one side was armed with much more information than the other. Economic studies define these cases as informational asymmetry between buyers and sellers, when lots of deals cannot be implemented due to mistrust and non-transparency. By reducing information search costs and increasing the amount of available and transparent information, digital technologies provide necessary conditions for business development.

With its virtually uninterrupted communication and collaboration the Internet can support new supply models, promote collective action, and accelerate innovation.

Talking about business, through the expansion of trade the Internet brings companies to the global economy, improves capital productivity and intensifies market competition, which in turn promotes innovation. It expands household opportunities by creating jobs, increasing human capital and creating additional benefits for consumers. It provides citizens with access to public services, builds up the capacity of the state, and serves as a platform for citizens to solve collective action problems. These benefits do not appear automatically and they are not guaranteed, but in many cases digital technologies can create significant benefits.

At the same time, the perceived benefits of digital technologies are negated by the possible risks. About 60 % of the world's population still lack access to the Internet and cannot play any significant role in the digital economy.

Many economically developed countries face increasing polarization of labour markets and growing inequalities - partly because new technologies complement more skilled labour and, at the same time, replace standard labour operations, forc-

ing many workers to compete with each other for low-paying jobs. Government investments in the development of digital technologies reinforce the influence of elite, which may lead to submission of politics to the interests of leadership elite and the tightening of state control. Since the internet economy encourages the rise of natural monopolies, the lack of a competitive business environment can lead to increased market concentration, which is beneficial for established businesses. Not surprisingly, the greatest benefits are received by the better educated, well-connected and more capable companies, thus limiting the spread of the gains of the digital revolution.

Nowadays the digital revolution has almost no effect on the most of the world's population. Only about 15% of the world's inhabitants can afford to pay for broadband Internet access. Figures suggest almost 2 billion people have no mobile phones, and about 60% of the world's population do not have access to the Internet [2].

Due to different approaches to definition and measurement of the digital economy, it is quite difficult to quantify its scale. According to one estimate, the share of the digital segment of the world economy is 23% (USD 17 trillion). By 2020, the volume of the digital economy will increase by USD 4 trillion, and its share in the global GDP will reach 25%. In China the share of the web economy is 11%, in the United States – 34%. In Russia, the contribution of the digital economy is estimated at 2.0–5.1% of GDP [10].

The US and the UK are the digital leaders in the world and the digital segment in these countries is more than 30% of GDP [10]. The volume of the digital segment in China reaches USD 1.2 trillion (10.8% of GDP) and it is growing rapidly; in 5 years’ time this figure is expected at least to double. In all large countries of the world, the dynamics of development of the digital segment is significantly ahead of the rest of the economy.

As for Russia, according to the Boston Consulting Group report, the share of the digital economy increased from 1.2% to 2.0% in 2009–2016, and in 2021 it can reach 5.6% [11].

Digital McKinsey estimates the contribution of the web economy to Russia's GDP at 3.9%, the US - 10.9%, China - 10.0%, leading EU countries - 8.2%, Eastern European countries (Poland and the Czech Republic) - 6.3% , Brazil - 6.2%, India - 5.5% (2015) [12].

According to the study of ‘RuNet Economics’, conducted by the Russian Association of Electronic Communications (RAEC), the digital economy covers 2.1% of Russian GDP, and together with the mobile segment - 5.06% [13].

According to the Digital Evolution Index 2017 presented by the Fletcher School of Law and Diplomacy at Tufts University in partnership with MasterCard, Russia has a good prospect to take a leading position in the ranking of the development of the digital economy. Despite the relatively low level of digitization in Russia, it shows the growing tendency, and at the moment it is at the peak of digital development, attracting investors to the economy: Russia ranks 39th in the DEI [14].

There are two polar approaches to building a ‘digital’ economy: planned and market. All real-life strategies are a combination of these two approaches. The market approach to building a ‘digital’ economy assumes that the state creates optimal conditions, first of all, an enabling environment for the functioning of the ‘digital’ economy, which stimulates business to transition to this new sector. Optimal conditions include a complex of interrelated regulatory, economic and social measures and the existence of technological base. The

planned approach to building a 'digital' economy involves a phased development of infrastructure under the leadership of the state and targeted 'filling' of the relevant sector with various economic actors. At the same time, the formation of infrastructure and technological basis for the functioning of 'digital' economy occurs simultaneously (or even ahead) of creating conditions conducive to the development of private business (primarily, small and medium).

The most digitally advanced countries follow different approaches: the United States declares the market path, while China chooses the planned one. The rest of the countries take intermediate options.

Building a 'digital' economy process in the United States can be divided into 4 blocks: creating conditions for 'digital' economy development (laws and regulations); the rise of web economy platforms in the most prepared industries; platform competition and their gradual integration; implementing the most successful solutions to the entire economy. This strategy seems justified for the United States due to the following circumstances: the United States has a significant economic and technological advantage over the rest of the world; it can rely on such high-tech multinational corporations as Google, Facebook, Amazon, Intel and others for building the 'digital' economy infrastructure; the United States has a certain numbers of private companies that can put into action the spontaneous development of the 'digital' economy in order to realize its potential for the benefit of themselves and the country.

However, this strategy also has obvious disadvantages, the main of which (primarily with regard to Russia) is a lengthy process of forming a mature 'digital' economy. China, another unofficial leader, has chosen a different strategy: the planned development of a 'digital' economy. The detailed analysis shows that the strategy declared by China contains two parallel, almost unrelated areas: manufacturing digitalization through implementing the industrial Internet; use of the Internet for expanding into new markets. The chosen strategy includes the following 4 main components: full digitization of manufacturing and logistics; development of laws and regulations; digitization of control systems, creation of digital platforms; integration of digital platforms and ecosystems into common digital space.

As for the Russian economy, we suggest combining both approaches with the preference to the planned approach.

On September 29, 2018 there were identified the main areas of activity of the Government of the Russian Federation for the period up to 2024 [15], there were specified the goals, main objectives and long-term priorities for the implementation of breakthrough scientific, technological and socio-economic development.

In the economic sphere, by 2024 the Government of the Russian Federation will ensure the solution of the following tasks: creating a legal regulation system for the digital economy, based on a flexible approach in each sphere; creating a global competitive infrastructure for high-speed transmission, processing and storage of large amounts of data on the basis of domestic technologies; providing the training of highly qualified personnel; ensuring information security of transmission, processing and storage of data on the basis of domestic technologies, guaranteeing the protection of interests of the individual, business and the state; creating end-to-end digital technologies predominantly on the basis of domestic projects; implementing digital technologies and platform solutions in the areas of public administration and provision of public services; optimization and standardization of rendering state and

municipal services; implementing new principles of provision of state and municipal services aimed at providing maximum convenience for citizens and organizations. Domestic costs for the digital economy development will be increased at the expense of all sources (by the share in the country's gross domestic product) at least three-fold compared to 2017. Digital technologies will be used by state bodies at the federal, sectorial and regional levels. There will be implemented certain measures to ensure a constantly updated human resources capacity of the digital economy, citizens' competence and personnel training.

In order to develop digital technologies in public administration, issues related to formation and maintaining state information resources will be legally regulated, there will be also defined rules for systematization of information in these resources, as well as information harmonization between various information resources of government bodies.

In order to improve the quality of public administration, on the basis of the Unified Register for Acts of Civil Status will be created an integrated information resource base.

The digitalization of public financial management processes will be completed, the procedures for planning and executing the federal budget and budget reporting will be made transparent.

Consistency is a key factor of digitalization of all spheres of the economy; it is an important step towards the conscious growth and development of the country. It is important that the need for this step be equally recognized by both the business and the state, cooperating and synchronizing achievements.

At the same time, it is important to understand that the virtual economy is impossible without the real sector, which it is created to serve. In this regard, it is necessary to stimulate the development of the real sector of Russia's economy.

The industrial sector in Russia has been collapsing since the 1990s [16]. In the second half of the 20th century, the USSR was the 2nd most powerful industrial country in the world in terms of GDP. The share of the Soviet Union in world industrial production was almost 20%. The country could produce any type of product. Since 1990, Russia has experienced a decrease in industrial production and a reduction in number of enterprises. By the end of the century, the IPP (industrial production index) fell to 48% compared to the indicators of the early 1990s. In 2008, the number of operating enterprises was 456,000; in 2015 – 316, 000 [16].

Digital economy development requires restoring manufacturing industries; it will allow Russia to reduce the economic dependence on external factors and to ensure sustainable development [17].

We are talking in particular about Russian electronic engineering. It could be the core of the program of the digital economy development in Russia. Small and medium businesses are not capable to develop the domestic electronics. The government should be responsible for such medium- and long-term planning big tasks. The experience of the Ministry of Electronic Industry of the USSR can be used as a very good example. In fact, in order to develop own electronics, it is necessary to organize manufacturing of materials for electronics industry. To move forward, you need to have your own electronic engineering.

The Soviet Union was an industrial power with a well-developed machine-building complex, the basis of mechanical engineering. The next step was its automation and robotics. It is necessary to mention manufacturing of highly accurate machines and machines with numerical control (CNC). This is

the most technologically advanced machine tool industry. In 1990, the USSR produced 16.7 thousand CNC machines; in 1996–1999, their production was 100 pieces per year, i.e. 167 times less. In 2000, the production of such machines increased twice (by a hundred pieces), and amounted to 200 machines [18].

The industrial reform destroyed the important high-tech engineering industry, destined for the development of automatic and semi-automatic lines for metalworking and mechanical engineering. By 1985, the domestic industry reached the level of production of 754 sets of lines, their production reached its maximum in 1987 (802 sets). From 1991, when the industrial collapse began, up to 2009, manufacturing activity reduced by 278 times.

Production of 3D printers is another important and useful technology for the revival of domestic engineering. Moreover, this industry has relatively recently begun to develop, and we have not had time to fall far behind.

In order to rebuild industrial manufacturing, the following measures should be applied. First of all, the tax system is the most important factor determining industrial development. The analysis shows that the current tax system in Russia requires modernization. We are talking about the reforming of personal income tax and value-added tax.

As for the personal income tax, it is obvious that the flat rate personal income tax should be replaced with the progressive one. According to the calculations of the Institute of Socio-Economic Problems of Population of the Russian Academy of Sciences, using the average European progressive tax scale in Russia would increase Russia's gross domestic product by 30–50% [19].

According to Professor S. Glazyev, introduction of a progressive income tax scale will provide additional budget revenues up to 5 trillion rubles, which can be used to develop innovation, to ensure decent salaries for government employees: teachers, doctors, cultural workers, the military, etc. [20]. Thus, the progressive scale can solve two problems: firstly, it can replenish the state budget, and secondly, it ensures the implementation of the social justice principle by redistributing income in favor of the less well-off. Note incidentally that the progressive tax scale is implemented in the BRICS and G-20 countries [21].

On the other hand, it is necessary to reduce the VAT rate by at least ten percentage points; it would ensure the development of high value-added industries. At the same time, it is necessary to limit land-based mining by national industry demand and domestic consumption, especially energy resources. Companies must have oil and gas extraction rights exclusively on the basis of competitive selection. These companies receive payment per unit of raw material they extract, while the product itself remains in state ownership. As for electricity, gasoline, fuel oil, and natural gas prices, they should be halved. It can be achieved by withdrawal from the price the following costs: excess taxes on domestic energy consumption, intermediary costs, and costs caused by inefficient management technologies. The implementation of this measure would ensure an increase in Russian economic competitiveness and growth in prosperity of the population [13].

IV. CONCLUSION

In conclusion, it is necessary to emphasize that widespread digitalization, automation and implementation of appropriate technologies is a natural and expected process, and therefore

inevitable. The development of the digital economy provides the possibility of communication, exchange of ideas and experience. The Internet platforms allow combining efforts to create a business, investing, finding employees, partners, resources and markets. Digital technologies can also play a key role in personnel training, sharing knowledge, and implementing innovative ideas in different fields, including social sphere. It is very important to develop digital technologies in the public sector. Digital government and government services can reduce costs, providing more efficient services to citizens and businesses. Russia is on its way to become one of the leaders in digitalization of the economy; they will have to implement a policy of catch-up development.

At the same time, statistics suggest that it is impossible to build a digital economy without the real sector of economy (first of all, the industrial sector). Therefore, it is obvious that key digital economies of the world such as Germany, America and Japan are based on developed industrial manufacturing. Therefore, Russia needs to implement a purposeful policy on restoring manufacturing industries. It must become a basis for the digitalization of the domestic economy.

V. RESULTS AND DISCUSSION

The studies reveal an insufficient level of the digital economy development in Russia. At the same time, experts agree that Russia has the necessary potential for digitalization. This potential can be realized through combining planned and market approaches with the preference to the planned approach. Certain steps in this direction have already been taken; there were identified the main areas of activity of the Government of the Russian Federation for the period up to 2024.

Russia will have to unite the virtual sphere with the real economy where new management models will be effectively applied, network and hierarchical principles will successfully coexist. Such an integral vision will allow forming a coalition of like-minded countries around itself and lead the transition to a common digital future.

The results of the study can be used for further scientific research on this and related topics. They can be used in state and sectoral management for strategy and tactics development of the digital economy.

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