

The Role of the Digital Economy in Developing the Market Model of Russian Society

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Abstract. The article studies the issues of development of the digital economy and its role in shaping the market model of Russian society. The concept “digital economy” has been systematized; its features have been substantiated. The basic components of the digital economy have been identified. The role of information in the digital economy has been determined. Information is a special economic good. Benefits and risks of the digital economy have been substantiated. The advantages of business digitalization have been identified. The current state of the digital economy in Russia, its problems and trends have been described. The role of the government as a leading regulator of the institutional development of the digital economy has been determined. Development directions have been described.

1. Introduction

The post-industrial digital economy can change the entire world market. The concept “digital economy” indicates a new stage in production of goods and services by using the modern IT technology. The digital economy is a new stage in development of the global economic system due to transformations under the influence of information and telecommunication technologies. The issue of development of the digital economy is theoretical and practical one. It is relevant for the government due to the crucial role of digital technologies in enhancing the national strategic competitiveness. The digital economy is a viable market model with enormous resources which can become a source of national economic growth in the field of innovative development. Under the explosive development and large-scale penetration of new technologies into all spheres, the innovative development is of particular significance. The article aims to study problems and trends in the development of the digital economy in Russia and determine its role in shaping the modern market model of Russian society. Fundamental and applied works on the digital economy have been analyzed.

1.1. The concept, nature and components of the digital economy

Modern information and communication technologies change all social relations forming a new information society called “digital economy” [1].

The concept "digital economy" was introduced by Nicolaso Negroponte in his monograph “Being Digital” (1995). The author considered shortcomings of goods and advantages of the new economy and formulated fundamental principles of the digital economy [2].

The digital economy (according to the definition given by the European Community) is a result of transformational effects of general information and communication technologies which affect all economic sectors and social activities. Thus, the digital economy is a system of economic, social and cultural relations based on digital technologies [3].

According to the World Bank, the digital economy is a system of economic, social and cultural relations based on digital information and communication technologies [4].

In Russia, the digital economy is a top priority; a number of digital initiatives have been implemented at the national and subnational levels. Russia contributes to the development of a single digital space in the Eurasian Economic Union (EAEU). The Presidential Decree "On the Strategy for the Development of Information Society in the Russian Federation for 2017-2030" defines the digital economy as an economic activity whose key factor is digital data which can improve the efficiency of various types of production, technologies, equipment, storage, sales, delivery of goods and provision of services" [5].

A key element of the digital economy is information considered as a special economic good (information products and services). In the digital economy, information is the most valuable resource produced, stored, transmitted and processed using information and communication technology (ICT). The development of the digital economy is connected with the development of new technologies [6]. The development of technology creates a basis for digital economic development.

1.2. Features of the digital economy

The digital economy is characterized by a high speed of information transfer. The online and offline spheres are merged due to several fundamental factors: universal connectivity, a rapid spread of sensory devices and large databases. Thanks to connectivity and data sharing, it is possible to use resources. It is an economy of mutual assistance or joint consumption whose volume is 150 billion USD [7].

The platform concept is a characteristic of the digital economy. The "digital" economy platform is a digital environment (a software and hardware system) with a set of functions and services ensuring the needs of consumers and manufacturers and their direct interaction [6]. The platforms speed up and reduce the cost of production, eliminate unnecessary intermediary links, improve the efficiency of markets and labor productivity, allow sellers and buyers to make deals. Many platforms serve participants in transactions without any geographical restrictions. The digital platform is a new business model coordinating activities of market participants.

Other features of the digital economy are as follows: personalized service models; direct interaction of producers and consumers; the shared economy [6].

The basic components of the digital economy are as follows: infrastructure, including technological equipment, software, tele-communications, etc.; electronic business operations covering business processes implemented through computer networks; e-commerce.

Systematization of various definitions of the concept "digital economy", identification of its features and basic components allowed us to conclude that the digital economy is a new paradigm of economic development based on the exchange of real-time data using digital technologies, institutions, legal acts, and competences.

1.3. Benefits and risks of the digital economy

In 2018, the World Bank delivered a report "Digital Dividends" on the state of the digital economy. Benefits and risks of its development were identified. According to the experts, benefits of the digital economy are as follows: labor productivity growth; enhanced competitiveness; reduction of production costs; capitalization growth; new jobs; new markets; satisfaction of human needs; improved living standards; a lower level of poverty and social inequality [4]. Possible risks are as follows: cybersecurity; massive unemployment; a digital boundary between citizens and businesses and between countries [4].

To minimize risks of the digital economy and maximize technological progress in Russia, a reliable

national digital strategy should be developed. It will facilitate implementation of innovations using digital technologies. Governments have to intensify interaction with a wide range of stakeholders, including citizens, technology companies, educational institutions, infrastructure providers, and enterprises [8].

2. Benefits of digitalization of business processes

Digitalization of business processes has gone beyond the branches of technological production where it controlled the first wave of digital growth. It covers a much larger area of economic activities. The nature of the digital economy has changed. Digital technologies are used in the production process in order to make fundamental changes in the mechanism for creating the value of a product or a service. Most business processes are transferred to the online environment (conclusion of agreements, accounting, logistics processes, monitoring of relationships with partners and customers, technical support, etc.) which makes the company “digital”, ensures its efficiency and improves its competitiveness.

Digitalization of business processes is the transition of companies to electronic platforms where business processes are optimized and adapted to modern economic tools and technologies. By digitizing business processes, companies reduce the number of actions required to complete tasks, reduce paper work, avoid operation errors, and improve the staff productivity.

Digital technologies are becoming more accessible, faster and cheaper. Benefits derived from increased productivity are spreading along the supply chain in all economic sectors. The director of the strategic development department of Huawei Technologies Co. William Xu said [8]: “the investment in digital technologies can bring an income 6.7 times higher than the investment in non-digital assets; the use of intellectual technologies can maximize the associated effect of digitalization”.

By 2025, the GDP of the developed countries can increase by 1.6%, while poor digitalization can cause its decline by 1.6% (Figure 1).

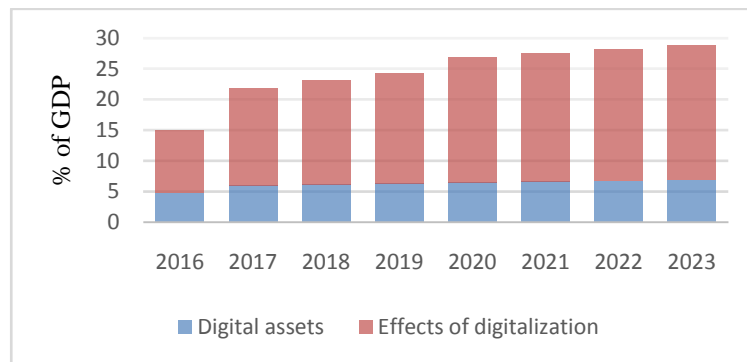


Figure 1. Predicted growth of the digital economy, % of the world GDP [8].

In his book “Business at the Speed of Thought” (1999), Bill Gates said that the development of information technologies and the Internet had a significant impact on all aspects of society. The author said that business should respond faster to changes and challenges of the “new economy”, growing consumer needs and competition. In the future, there will be two types of companies: those which are on the Internet, and those who stopped their business activities" [9].

The main advantages of digitalization of business processes are as follows:

- reduced costs of services and new sources of income (online services are cheaper than traditional ones);
- accelerated access to the global market (goods and services reach the market quickly and become accessible to people around the world);
- products and services can be instantly improved to meet new expectations or needs;
- conditions for the diverse informational, educational, scientific content are created faster. They are better and more convenient;

- unification of efforts (Internet sites) for creating businesses, searching for employees, partners, resources and sales markets [10];

- increased productivity and innovations (improved market supply meeting demand and growing needs of consumers. “+ Intellect” stimulates and supports the accelerated economic development) [8].

Heads of national companies understand that digital technologies help them compete in the domestic or foreign markets. However, companies are very pragmatic [11]. Therefore, Russian businesses should understand that information technologies are important for the economic development, and their innovative activities in the field of corporate information technologies should be intensified. Currently, about 40% of the world population have access to the Internet. Digital technologies are used for selling goods and services, providing public services, teaching. They help receive “digital dividends” (the growing national welfare, material profits, and transparency of public administration) [12].

3. The current state, problems and trends in the development of the digital economy in Russia

Between national economies, the technological unevenness is increasing due to different levels of national development and different perceptions of digital technologies [13].

Russia lags far behind Singapore, the United States, Japan, the United Kingdom and other countries which have strong economies and a high level of GDP per capita. The main factors that determine the “digital development” are as follows: the level of supply, consumer demand for digital technologies, the institutional environment [14].

According to the international digital economy development rating indicators, Russia ranks 45th (7.07) in the ICT Development Index, 35th (-0.7215) in the E-Government Development Index, 10th (0.788) in the Global Cybersecurity Index (Figure 2).

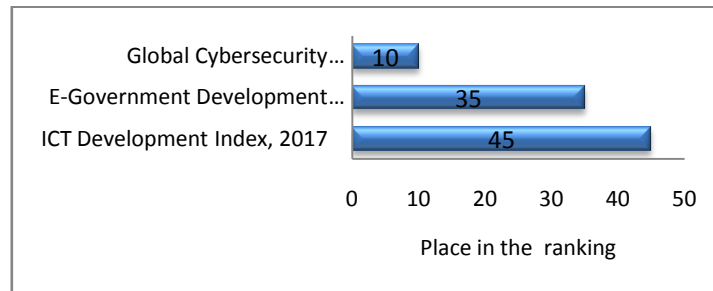
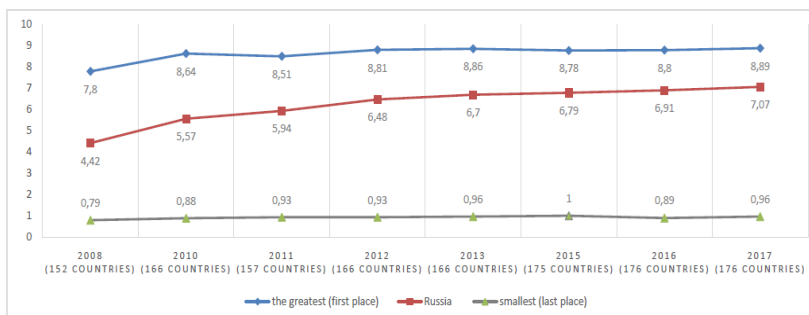


Figure 2. Russia's place in the international digital economy development ratings: 2017 [15].

The share of the digital economy in Russia is lower than that in the developed countries. The impact of the digital economy on the welfare and competitiveness of world economies will increase with the development of innovation and information technologies [12].

Figure 3 shows the dynamics of ICT development in Russia in comparison with other countries. We can observe a positive trend in the ICT development for 2008-2012. In 2013, the growth slowed down. For 10 years, Russia's rating has improved only by 4 positions.



Source: ITU data.

Figure 3. Index of ICT development in Russia in comparison with other countries: 2017 [15].

The technological equipment indicators are presented in Table 1.

Table 1. The technological equipment indicators: Russia vs. leading countries [16].

№	Indicator	Russia	Leading countries
1	Number of platform companies (2015)	3	China - 64; United States - 63; Great Britain - 9
2	High-tech exports, billion USD (2015)	9,7	China - 554.3; Germany - 185.6; United States - 153.5; South Korea - 126.5
3	Labor productivity, USD per person-hour (2015)	25,9	The average labor productivity in OECD countries is 50.8, including in the United States - 68.3; France - 67.6; Germany - 66.6
4	Share of organizations implementing technological innovation projects, % (2014)	8,8	Germany - 55; Sweden - 45.2; Finland - 44.6; Netherlands - 44.5
5	Share of subscribers of high-speed broadband access networks, % of the total number of subscribers of fixed-broadband access networks (2015)	58	South Korea - 100; Israel - 97; Great Britain - 87; Australia — 72; United States - 67
6	Share of online sales in the total turnover of retail trade, % (2015)	4	United States - 20; Great Britain - 20; France - 15; Spain - 15; Italy - 9
7	R&D costs, % of the GDP (2015)	1,10	South Korea - 4.23%; Hermania - 2.93%; United States - 2.79%; China - 2.07%; Great Britain - 1.70%
8	Number of patents issued (applicant's country of origin) (2015)	24 998	China - 279501; United States - 257,108; South Korea - 109,107; Germany - 86849; Great Britain - 21503
9	Place in the Global	45	Switzerland - 1; Sweden - 2;

Innovation Index (2017)	Development		Netherlands - 3; United States - 4; Germany - 9; South Korea - 11; Japan - 14; China - 22
10	Place in the international ranking of industrial competitiveness (2016)	32	China - 1; United States - 2; Germany - 3; Japan - 4; South Korea - 5; Great Britain - 6
11	Place in the Networked Readiness Index, 2016/2017 year)	41	Singapore - 1; Finland - 2; Sweden - 3; Norway - 4; USA - 5; Great Britain - 8; Japan - 10; Germany - 15; China - 59

The low rating of the Russian digital economy is due to the following problems:

- the low level of application of information technology in education;
- the lack of infrastructure for selling domestic information products in the world market (however, Russia is a manufacturer of innovative products in neuroscience, robotics, energy storage and distribution, etc.);
- underestimation of current digital opportunities and their impact on the efficiency, productivity and growth potential of businesses.

Nevertheless, according to A. Aptekman, the high-tech market in Russia is growing. In general, although Russia lags behind the advanced countries by 5–8 years, for 2011-2015, the share of the national digital economy increased by 59% which is about 24% of the total GDP growth [17].

To overcome these problems, government bodies should encourage international scientific and technical cooperation systems to export domestic products to the world market and encourage private businesses to use digital and innovative technologies through tax benefits, government orders, etc. [12].

In Russia, the share of the digital economy is about 4% of the national GDP. It can increase from 19 to 34% due to the digitalization. The share of the digital economy can be 8-10% of the national GDP [18]. Russia has to become one of the most digital countries in the world. The primary task should be the digitalization of life support systems, the transport infrastructure, the financial system, and public administration [16]. Experts rank Russia as a promising country having resources for digital development.

According to the McKinsey digitalization index, Russia has been included in the group of active followers expanding the infrastructure of information and communication technologies (ICT) and implementing technologies in government structures (Table 2).

Table 2. The contribution of the digital economy to the Russian GDP and its components in comparison with other countries (% , GDP).

	USA	China	5 Western European countries *	India	Brazil	Czech Republic	
Household expenses in the digital	5,3	4,8	3,7	3,2	2,7	2,2	2,6

sphere							
Corporate investment in digitalization	5	1,8	3,9	2,7	3,6	2	2,2
Government expenditure on digitalization	1,3	0,4	1	0,6	0,8	0,5	0,5
ICT exports	1,4	5,8	2,5	5,9	0,1	2,9	0,5
ICT imports	-2,1	-2,7	-2,9	-6,1	-1	-2,1	-1,8
Total size of the digital economy:	10,9	10	8,2	6,3	6,2	5,5	3,9

* United Kingdom, France, Italy, Germany, Sweden

By 2020, the catch-up development will have been completed, and the Russian economy will have entered a new stage of economic digitalization.

4. Directions of development of the digital economy of Russia

Development of the digital economy is a key priority. The level of digitalization will determine the national competitiveness [19].

The digitalization of the Russian economy can increase the GDP by 4.1–8.9 trillion rubles (19–34% of the total increase in GDP by 2025) [20]. To solve large-scale tasks of the digital agenda, Russia should use all the tools of the new economy [21]: “digital privatization”, “self-digitalization” and “digital reinvestment” [16].

The government possesses managerial, financial and legislative resources to develop the digital economy. In most countries, governments develop digital production as it contributes to economic growth and productivity and creates new markets [22].

The study of domestic and foreign experience allowed us to identify directions of digital economy development (with direct participation of the government) [16]:

1) development of legislation adapted to the new economic model of society based on the modern ICT, including correct ways of accounting production means and legal protection of companies implementing the CIT (the consuming Internet of things) and IIT (the industrial Internet of things);

2) creation of basic infrastructure elements of the digital economy which will create favorable conditions for companies that digitalize the production (deployment of affordable, high-quality and demanded digital government services taking into account regional needs);

3) reformation of the educational infrastructure (implementation of new teaching approaches, improvement of the level of basic digital literacy);

4) financing of applied research and digital entrepreneurship (public co-financing of promising business projects through joint ventures or government orders);

5) retraining and additional education (creation of centers which will train staff for digital economic sectors);

6) solution of priority tasks of digital development of industries (permanent platforms for communicating with industries which will develop uniform federal and industry standards in the field of digital technologies, determine and coordinate priority areas of digital industry development).

5. Conclusion

The digital economy is a new type of economic relations in all market sectors. It is developing rapidly, and in the near future, it can become a key way of commodity-money exchanges at the global level. Therefore, despite the existing problems, the public policy aimed at developing the digital economy is

the only possible way to strengthen national strategic positions in the global economy. With an active support of the government and corporations, Russia can become one of the leaders thanks to further development of its unique competencies. It is necessary to engage in the global information and technological stream of updates and try to apply information technologies. It is important to build national priority niches for digital innovations to become independent in the domestic market and a leader in the world one.

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