



Digital technologies in the business sector in Russia: prospects for development

Tecnologías digitales en el sector empresarial: perspectivas de desarrollo

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ABSTRACT:

Digital technologies in business have recently become a popular topic for discussion. Developed countries have taken a course on digitalization in all spheres, economy included, adopting at the state level the concepts and development strategies based on the application of information technologies. The conducted analysis shows that the business sector in developed countries uses digital technologies differently. The authors of the article pay special attention to the problems of digital technologies development in Russia.

Keywords: digital economy, digital technologies, IT, business sector

RESUMEN:

Las tecnologías digitales en los negocios se han convertido recientemente en un tema popular de discusión. Los países desarrollados han tomado un curso sobre digitalización en todas las esferas, incluida la economía, adoptando a nivel estatal los conceptos y estrategias de desarrollo basados en la aplicación de tecnologías de la información. El análisis realizado muestra que el sector empresarial en los países desarrollados utiliza las tecnologías digitales de manera diferente. Los autores del artículo prestan especial atención a los problemas del desarrollo de tecnologías digitales en Rusia.

Palabras clave: economía digital, tecnologías digitales, informática, sector empresarial

1. Introduction

At the present stage of economic development, the term "digital economy" is actively used in all developed countries. This term is used not only by economists, but also by politicians and journalists around the world. According statistics, in 2017, the volume of the digital economy in the United States reached 7.4% of GDP, in Great Britain – about 7.1% and in Russia –3%. There is no doubt that digital economy is the thing of the future. In this article, we assess the prospects of "digitalization" for the business sector development (Institute for the Economy of Growth, 2018)

Among the pioneers of digitalization is Germany, which, in 2011, officially introduced a state strategy called Industry 4.0. In Japan, the main government document that defines long-term goals and objectives of the country in the field of digital technologies development is Smart Japan ICT Strategy, which was published in 2014. In 2015, the "Alliance pour l'Industrie du Futur" was

established in France, which unites private businesses, scientists and a number of state institutions (AIF, 2015). In the same year, China presented the national concept of Internet Plus, which reflected key areas for the further development of digital technologies in cooperation with other industries, agriculture, financial sector and government institutions (SHMP, 2015). Also in 2015, the Netherlands adopted the Smart Industry PROGRAM, which stated "the achievement by the national economy of the leading positions in the world by means of a faster and more effective use of information and computer technologies in combination with advanced industrial technologies" (Smart Industry, 2015). In the UK, the new Digital Strategy was officially published just recently, in March 2017 (UK Digital Strategy, 2017). In Russia, in order to implement the Information Society Development Strategy, in accordance with the Presidential Decree, the Digital Economy of the Russian Federation program was adopted in 2017, which states that digital data are the key factor of production in all spheres of social and economic activity, and will increase the country's competitive advantage, the quality of life of its citizens, and secure the economic growth and national sovereignty (Program, 2017).

In 2016, the World Bank, in the "World Development Report 2016: Digital Dividends", announced that digital technologies spread rapidly in most countries of the world, but digital dividends – broader development benefits of using these technologies – lagged behind. Many entrepreneurs in early start up phases of their businesses want to know whether the digital economy can provide new business opportunities.

In this article, we aim to analyze the influence of digital technologies on the business sector development and assess the benefits they give to entrepreneurs.

1.1. Literature review

The term "digital economy" was introduced in 1995 by Nicholas Negroponte (1995), the American computer scientist at the University of Massachusetts. This concept is closely connected with the development of information and communication technologies. The word "digitalization" is often used to denote the socio-economic transformation initiated by the massive introduction and assimilation of digital technologies, i.e. technologies for creation, processing, exchange and transfer of information (UNCTAD, 2015). Also, a widely debatable question is "What stage of technical and economic development is humanity at now?" The term "Third Industrial Revolution (TIR)", the main ideologist of which is American researcher Jeremy Rifkin (2011), is widely used. The concept of TIR rests on the fact that the First Industrial Revolution was based on the use of coal, the Second - on hydrocarbon resources, and the Third one implies a gradual introduction of a whole range of new technological solutions (including renewable/clean energy sources, composite and nanomaterials, biomedical innovations, 3D printing technologies, mass use of electric vehicles, etc.). Consequently, it greatly relies on the application and further improvement of digital technologies. There is an opinion that the digitalization of the economy will pave the way for the Fourth Industrial Revolution – the massive introduction of cyber-physical systems into production (Industry 4.0), and catering for human needs, including life, work and leisure. According to some scholars (Schwab, 2016; Androniceanu and Burlacu, 2017; Tvaronavičienė, 2018; Lysytsia et al., 2019; Batkovskiy et al., 2019; Bezpалov et al., 2019; Petrenko et al., 2019; Davidavičienė et al., 2019; Shevyakova et al., 2019), the Fourth Industrial Revolution will have a fundamental impact on the world economy, which will be so multifaceted that it will be virtually impossible to separate one particular effect from another.

We also believe that the digital economy is a new way of life, the basis for development of the public administration system, economy, entrepreneurship, social sphere and society as a whole.

2. Methods

As part of the study of the digital economy development, the authors used a set of economic analysis methods. The statistical-economic method is applied as a set of techniques used for a comprehensive description of the phenomenon development through mass digital data. When evaluating the information, methods of processing and analyzing statistical data were used: economic grouping, absolute and relative values, economic comparison.

Small and medium-sized enterprises form the backbone of the economy of any developed country. According to some estimates, small businesses contribute a half of the total US budget. In Russia, this figure is currently significantly smaller, but it is steadily increasing from year to year. With the ability to quickly adapt to market changes and consumers' ever-changing needs and tastes, small businesses make the economy more flexible and competitive. Efficiency of small firms is evidenced by the fact that for each \$1 of costs they introduce 17 times more innovations and developments

than large enterprises that come up with only 10% of new technologies, with the remaining 90% introduced by small businesses and independent inventors. Nowadays, practically all niches of the market are saturated: thousands of new small enterprises appear every year, trying to compete with existing ones. Therefore, the most advanced players in the market are already using their competitive advantage that information technologies give them, while the rest are gradually beginning to realize that without investments in this sphere they will soon have nothing to do in the market.

Table 1 shows business sector organizations which use the Internet in their operations. It can be seen that the Internet access is widely available in developed countries. In Finland, Denmark, the Netherlands, and Lithuania, for example, 100% of businesses use the Internet. In Belgium and Slovenia, the figure is 99%.

A relatively small percentage in Russia (86%) can be explained by the fact that in some areas with a population of 500 to 10 thousand people there is neither wired nor wireless Internet connection. These areas are located mainly in Dagestan, Magadan Oblast, Kalmykia, Stavropolsky Krai and the Nenets Autonomous Area. The solution to the problem could lie in development of fiber-optic communication lines.

Table 1
Organizations using the Internet: 2016
(% of the total number of organizations of the business sector) *

Countries	%
Finland	100
Denmark	100
The Netherlands	100
Lithuania	100
Belgium	99
Slovenia	99
Sweden	99
Germany	98
Norway	98
Bulgaria	91
Greece	88
Russia	86

* According to the "Indicators of the Digital Economy: 2018"
(Abdrakhmanova et al., 2018, p. 150).

Table 2 shows the use of information and communication technologies in organizations of the Russian business sector.

Table 2
The main indicators of the use of information and communication technologies in the organizations of the Russian business sector (% of the total number of organizations) *

	2010	2011	2012	2013	2014	2015
Personal computers	92.2	92.4	91.9	91.6	91.4	89.3

Servers	20.8	22.9	21.5	22.2	28.4	53.8
Local area networks	72.3	74.6	74.4	75.5	69.2	65.1
Global information networks	85.2	86.5	87.4	87.9	88.5	86.8
E-mail	83.5	84.0	85.3	86.0	83.6	82.7
Web sites	33.8	36.0	38.7	40.5	39.8	41.4
Electronic data exchange between own and external information systems	-	-	23.1	24.1	53.1	59.2
"Cloud" services				11.0	13.8	18.4

* According to the "Indicators of the Digital Economy: 2018" (Abdrakhmanova et al., 2018, p. 134).

Over the period of 2010-2015, we can note that, in Russia, some types of information technologies lost in popularity. In particular, the use of personal computers decreased by 2.9% compared to 2010, and local area networks by 7.27%. They were ousted by more modern technologies: server utilization increased by 33%, global information networks by 1.6%, use of websites by 7.7%. Starting from 2013, electronic data exchange between companies' own and external information systems (59.2% in 2015) was successfully implemented, and the so-called "cloud" services started to be developed and gained in popularity (18.4% in 2015).

Table 3 shows organizations with company websites in different countries. Finland leads in the use of company websites with 95% of businesses, Denmark takes second place (93%), and Sweden comes third (90%). In Russia, the number of organizations with company websites is 43%, and, mainly, these are quite large companies. Small and medium-sized enterprises lag behind. On the one hand, this could be explained by the fact that businesses fail to understand the importance of their company website for attracting potential customers, and, on the other hand, the reason is the high cost of a professional-looking website with a thoughtful design. Cheap websites, as a rule, do not live up to companies' expectations in terms of attracting customers. We can assume that the number of Russian companies' websites will soon increase, as the number of Internet users is growing, with more and more age groups. This is a good incentive for any organization engaged in commercial activities to want to have some kind of web presence. A company with a professional-looking website can easily recoup the money spent on it.

Table 3
Organizations with websites: 2016
(% of total number of business sector organizations) *

Countries	%
Finland	95
Denmark	93
Sweden	90
The Netherlands	89
Germany	89
Japan	89

Spain	75
Italy	71
France	68
Turkey	66
The Republic of Korea	60
Bulgaria	51
Russia	43
Romania	42

* According to the "Indicators of the Digital Economy: 2018" (Abdrakhmanova et al., 2018, p. 157).

Table 4 shows organizations that use "cloud" services. In Finland, 57% of the business sector organizations use "cloud" services, in Sweden - 48%, in Denmark - 42%, and in Russia - 21%. A low percentage of the use of cloud technologies in Russia could be explained by the fact that companies are cautious about a potential security and data breach, or that they lack qualified IT staff well-versed in cloud technologies; in the case of large companies, the use of traditional servers allows them to increase capitalization, with expensive equipment on balance sheet.

Table 4
Organizations with "cloud" services: 2016
(% of the total number of organizations of the business sector) *

Countries	%
Finland	57
Sweden	48
Denmark	42
Ireland	36
The Netherlands	35
Russia	21
Spain	18
France	17
Germany	16

* According to the "Indicators of the Digital Economy: 2018" (Abdrakhmanova et al., 2018, p. 160).

Thus, we can make a conclusion that in the coming years Russia and other countries where the indicators are below those of the countries that are leading in the use of IT will continue to introduce new information platforms and services.

Table 5, that shows how many organizations of the Russian business sector use special purpose software, allows us to say that the most widely used is software for electronic document management systems (62.3%), financial system software (55.4%), software for economic,

administrative and organizational task management (54.0%), and management of purchases and sales of goods, works and services (41.9%). Scientific research software ranks low with just 3.9%.

Table 5
Business sector organizations using special purpose software: 2016
(% of the total number of organizations) *

	Electronic document management systems	Financial system software	Economic, administrative and organizational task management	Law reference databases
Business sector	62.3	55.4	54.0	51.7

	Software for management of purchases and sales of goods, works, and services	Design software	Training software	Editorial and publishing software	Scientific research software
Business sector	41.9	17.1	15.3	6.3	3.9

* According to the "Indicators of the Digital Economy: 2018" (Abdrakhmanova et al., 2018, p. 161-162).

Quite often, the digital economy is seen as an activity directly related to e-commerce, which incorporates online services, online stores, information platforms that make money on advertising, etc. This concept is widely used for companies that offer electronic or digital products on the Internet, including purchase, processing and delivery of goods and services, by downloading or providing access to services on a remote server. Table 6 shows distribution of electronic commerce and differentiation in purchase and sales of goods in different countries. Among the countries that rank relatively high are the Czech Republic (especially for purchase) with more than 50% and Ireland with 41% for purchase and 30% for sales. Russia ranks low with 17% and 13% respectively.

Table 6
Organizations using the Internet for purchase/sales of goods: 2016
(% of the total number of organizations of the business sector) *

Countries	Purchase on the Internet	Selling on the Internet
The Czech Republic	62	27
Ireland	41	30
Finland	-	18
Germany	-	26
France	29	17
The Netherlands	30	16
Russia	17	13
Portugal	14	19
Poland	19	11

In our opinion, the results could be connected with the number of people in the country using the Internet to order goods and services. In 2016, only 29% of the Russian population purchased goods online, while in Germany the figure was 75%, in Sweden – 81%, and in France – 67%, which indicates a prospect for digital commerce development in the near future. The main reason why Russians refuse to buy online is that they cannot examine the goods before purchase, or try them on (in the case of clothes or shoes), or distrust online platforms. In small towns, people do not shop online because they have no opportunity to do so or have no skills to use various Internet services. In addition, there is a fairly wide network of retail stores in Russia which are "within walking distance" where many Russians usually shop since it is easier and faster. Nevertheless, online shopping is developing, and we expect to see an increase in sales. If businesses can guarantee a fast and convenient delivery, then this may be the best alternative option to regular stores.

3. Result

The analysis of the use of digital technologies in the business sector of the economy shows that the prevalence of the Internet in developed countries is very high, and in some countries (Finland, Denmark, the Netherlands and Lithuania) this figure is 100%. The rate of using websites is also quite high (with 90% or even higher in Finland, Denmark, the Netherlands, and Sweden). As for the business sector organizations using "cloud" services, we can say that only in Finland in 2015 this indicator was 57%, while in other countries it was less than 50%. Thus, we can make a conclusion that in the coming years, the countries where the indicators are below those of the countries that are leading in the use of information technologies will continue to implement new information platforms and services.

The analysis of the Russian business sector organizations shows that the most widely used (with more than 50%) special purpose software is software for electronic document management systems, financial system software, economic, administrative and organizational task management software and law reference databases. Software for management of purchases and sales of goods, works and services is used by 40% of businesses. Not enough attention is given to design, training and scientific research software.

The analysis of the use of the Internet for purchase and sales of goods allows us to conclude that IT data differ for different countries. The leader is the Czech Republic (more than 50% of purchases on the Internet). We can see a prospect for digital commerce development in the near future in most of the countries.

The main reasons that limit the use of digital technologies in Russia, in our opinion, are:

1. The lack of both wired and wireless Internet connection in certain regions of the Russian Federation (Dagestan, Magadan Oblast, Kalmykia, Stavropolsky Krai).
2. Misunderstanding the importance of using digital technologies for company development.
3. High cost of implementation and use of information technologies, especially for small and medium-sized businesses.
4. Lack of qualified IT staff well-versed in modern digital technologies.
5. Fear of a potential security and data breach.
6. Inertia in decision-making, based on the use of traditional technologies and reluctance to try something new.

Nevertheless, Russia is part of the global community and subject to all major trends in its development, even though with some delays at times. In Russia, the number of Internet users is growing steadily, with more and more age groups using the Internet, which will facilitate the development of digital technologies, including in the business sector in order to attract new clients and increase sales of goods, works and services.

4. Discussion

To sum up, digital transformation of the economy is becoming increasingly evident and has an impact on the business sector development. The need to implement cutting-edge technologies into business activities seems obvious. However, companies differ in their levels of digital transformation, and those that refuse to acknowledge the decisive role of innovations in business development run the risk of being ousted from the market.

The business sector has a good reaction to changes and, in conditions of uncertainty about further technical and economic developments, it serves as a litmus test. It is necessary to take a closer look at the directions of its development. We can predict that Digital Enterprises – organizations that use information technologies to gain competitive advantage in all areas of their activities (production, business processes, marketing and interaction with customers) – is the thing of the future. A traditional company turns into a company with "digital thinking", taking the path of Digital Transformation.

5. Conclusion

The need to use new information technologies has become urgent due to the rapid information exchange over great distances and in huge amounts. Digital transformation should be viewed in a broader sense as a set of measures that affect a company business model; it implies a new way of life for a company. Changes should be made, among others, in methods of working with customers, in products and services and their delivery.

The use of IT technologies for companies will make it possible to find customers anywhere in the world and assess competitiveness of products; cloud storage of information, predictive analytics, machine learning, blockchain, etc. radically change the approach to doing business in the financial sector.

However, people should not delude themselves that implementing an IT system will immediately solve all the problems. IT is only a tool that provides quick access to reports and financial and management information that allows to make correct decisions based on a comprehensive analysis of the situation.

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