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WORLD EXPERIENCE OF IMPLEMENTATION AND APPLICATION OF DIGITAL ECONOMY

Abstract. *The purpose of the study:* The purpose of the study is to study foreign experience in the rapid development of the digital economy. The scientific novelty of the study is to substantiate a systems approach in the development of information technologies based on the challenges and risks of the digital economy, based on the study of foreign experience.

Methodology: the study was conducted using such methods as: abstract - logical and comparative analysis, the descriptive method and generalization were also used. The sources of research were theoretical and analytical articles, the works of Kazakhstan and foreign authors, which deal with issues of digitalization of the economy.

Conclusions: In our opinion, the digital economy is becoming an increasingly important driving force of global economic growth and plays a significant role in accelerating economic development, increasing the productivity of existing industries, shaping new markets and industries and ensuring comprehensive sustainable growth and development.

Keywords: digital economy, information technology, economic growth, digitalization.

Introduction – Currently in many countries digitalization is strategic development priority. According to the forecasts of the world's leading experts, by 2020, 25% of the global economy will be digital, and the introduction of digitalization technologies for the economy, allowing the state, business and society to interact effectively, it becomes more and more large-scale and dynamic process.

More than 15 countries of the world implement national programs. Digitalization: Denmark, Norway, UK, Canada, Germany, Saudi Arabia, India, Russia, China, South Korea, Malaysia, Singapore, Australia, New Zealand and Kazakhstan.

«Digitalization» (in the English version - digitization, and also sometimes digitalization) of the economy and society is often understood as a transformation in socio-economic sphere through the mass introduction digital technologies of search, creation, processing, exchange and transfer information [1].

According to E. Bykovskaya, G.P. Kharchilava and Kafiyatullina Yu.N., digital technologies penetrate into all aspects of our life [2, p.39].

N.S. Revenko claims that the active implementation of information Communication technology in the United States began at the end of the twentieth century, however, the work was carried out mainly at the micro level, i.e. within companies [3, p.84].

Digital platforms are beginning to be used as major channels of interaction with customers and transactions, as well as as a means of creating innovative business models, including in traditional industries, as described in their scientific articles Avdeev I.L., Golovina T.A. and Parahina L.V. [4, p.53].

In their publications, Manakhova I.V. claim to be the norm Equipping cars with satellite navigation systems, security and alerts, means to connect with mobile devices by Bluetooth, as well as multimedia complexes. Digital implementation technology entails increased competition, creating for Existing Market Leaders Threats from New Waves of Innovation [5, p.286].

Polyanin A.V. agrees with this opinion, who says that creation of platforms for working dialogue of the state with representatives industries will increase the speed of adoption decisions on key digital development issues. Digital literacy, willingness and willingness to try new solutions problems, to risk,

experiment, and create valuable social connections and business partnerships will increasingly become integral attributes of success of citizens and companies [6, p.54].

The potential of the digital economy is largely attributed to the results creation and development of the information society, as Veduta E.N. and Dzhakubova T.N. [7, p.43].

The increasing complexity of social structures and relationships, the foundation of which is all modern digital technologies are more likely to cause the exponential growth of data flows, according to AV Babkin, puts forward to the forefront the need to form an economy of a new type, the main instrument of which are digital, informational technology [8, p.9].

In the concept of the draft state program «Digital Kazakhstan 2020» notes that the digital economy is undergoing rapid growth leads to accelerated innovation and their widespread use in other sectors of the economy [9].

In modern discussions about CE, there are many different ideas about her. A common place for them is the connection of CE with the need to introduce modern IT for monitoring and control, automation of calculations, workflow, services, etc. [10].

Table 1 – Comparative analysis of the participation and role of the state in digitalization of the economy of foreign countries.

№	Страна	Цифровизация экономики	Ведомства
1	USA	an economy that mainly operates with the use of digital technologies, especially electronic transactions carried out with the use of the Internet	State program «Digital Economy Agenda» 2015y.: - National telecommunications and information Agency (FIND); - National Institute of standards and technology (NIST); - The US patent office; - Department of international trade [12]
2	China	the country is rapidly developing digital globalization, and China is creating new global trends in many areas: industrial investment, business models and global governance	The state Chancellery Affairs online information. Three Chinese Internet giants (Baidu, Alibaba, Tencent) have created an "ecosphere" favorable for digitalization [13] , [14]
3	Britain	global leadership in building a cyberspace that ensures the prosperity of the nation by increasing productivity, creating highly skilled and highly paid jobs	Development strategy for the digital economy [15]
4	Germany	Security and data protection are priority goals of the Federal government. First of all, we are talking about creating a balance between the interests of consumers, enterprises and state security.	Digital agenda 2014-2017 Digital strategy 2025
5	Russia	The Federal state information system "unified system of identification and authentication in the infrastructure providing information and technological interaction of information systems used for the provision of state and municipal services in electronic form" and platforms for payments created by credit institutions are successfully developing»	Program "Digital economy of Russia". Work in these areas is conducted within the framework of the competence centers ANO "Digital economy", headed by Evgeny Kovnir of the Agency for strategic initiatives (ASI), and was founded by 16 leading Russian companies "Rostelecom", "MegaFon", Rosatom, rostec, Sberbank, ASI, "Yandex", "Open mobile platform", "1C", Mail.ru Group, MTS, Fund "SKOLKOVO", "VEB innovations", "Rambler", "Mail of Russia" and "VimpelCom» [16]
6	Byelorussia	Attention is paid to projects based on blockchain technologies and smart contracts. The latter, for example, guarantee the execution of signed agreements by automatic execution of conditions by a computer algorithm.	December 21, 2017 signed Decree № 8 "On the development of the digital economy» [17]
Note – Compiled by the author			

Methodology – In order to measure the effectiveness of the digital economy, it is necessary to have generally accepted and unambiguous methods, which today not yet. Obviously, the results should be evaluated on the basis of the goals and objectives set must be calculated and realized with criteria of socio-economic feasibility. Development strategy the digital economy cannot be developed solely for the sake of approbation of the new idea.

In each country, the development of a digital economy depends on the maturity markets, the level of development of science, education and the state of economy. There is a view that the digital economy reaches a sufficient degree of development only if the cost transactions for the sale of goods and services in the virtual space exceeds the cost of similar transactions in the real economy. But this only possible if produced in the real economy A sufficient number of different products that you can buy and sell online. The widespread digitalization of the economy cannot be achieved and become effective without increasing the competitiveness of real production, renewal and expansion his potential.

Results of research – According to the analysis of the international consulting company The Boston Consulting Group (hereinafter referred to as BCG), today many countries are implementing their programs to digitize the economy, although the accents are different. Many developed and developing countries, realizing the inevitability of the upcoming changes, began a conscious movement towards «digitalization» economy. The first such course was declared by the United States and China, which considered to be the informal leaders of the «Digital» race today day. Following them, the relevant programs were accepted by England, countries European Union, Australia, Belarus, Kazakhstan and others [11, p.28]. We have reviewed the foreign experience of participation and the role of the state in digitalization of the economy (Table 1).

The digital economy is rapidly developing globally in the world. After analyzing the current state and growth rate of the digital economy in foreign countries were divided into four groups that are shown in Figure 1.

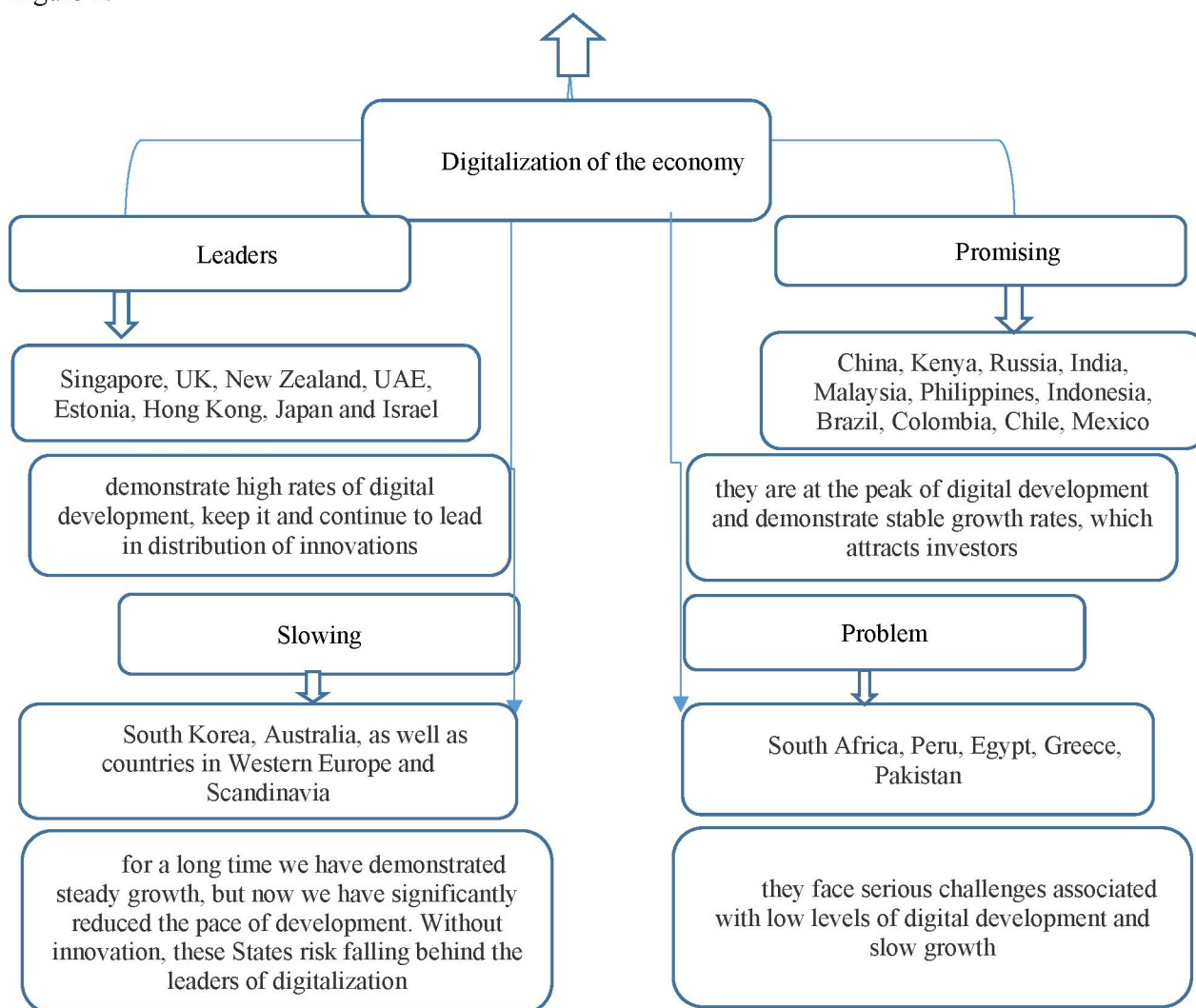


Figure 1 – Grouping of foreign countries taking into account the digitalization of the economy
Note – Compiled by the author

According to the European Commission, the digital economy is estimated 3.2 trillion euros in the group of countries of the «Big Twenty» and is about 8% GDP. The McKinsey Global Institute in the study noted that the Internet - The most important element of economic progress. It provides a significant part of economic growth: the contribution of the Internet to the GDP of developed countries over the 15-year period 1995-2009 totaling 10%, and for the last 5 years (2011-2016) it has doubled - up to 21%. Development digital economy is associated with the development of Internet access and telecommunications. But in themselves such «communication channels» do not have values, if people do not use technology [18, p.135]. Because the development of the digital economy is inextricably linked with the development of the economy knowledge.

According to research by the Institute of Statistical The HSE's research and knowledge economy has developed a methodology calculating the index of business digitalization, which characterizes the speed adapting to the digital transformation of entrepreneurial organizations sectors [19].

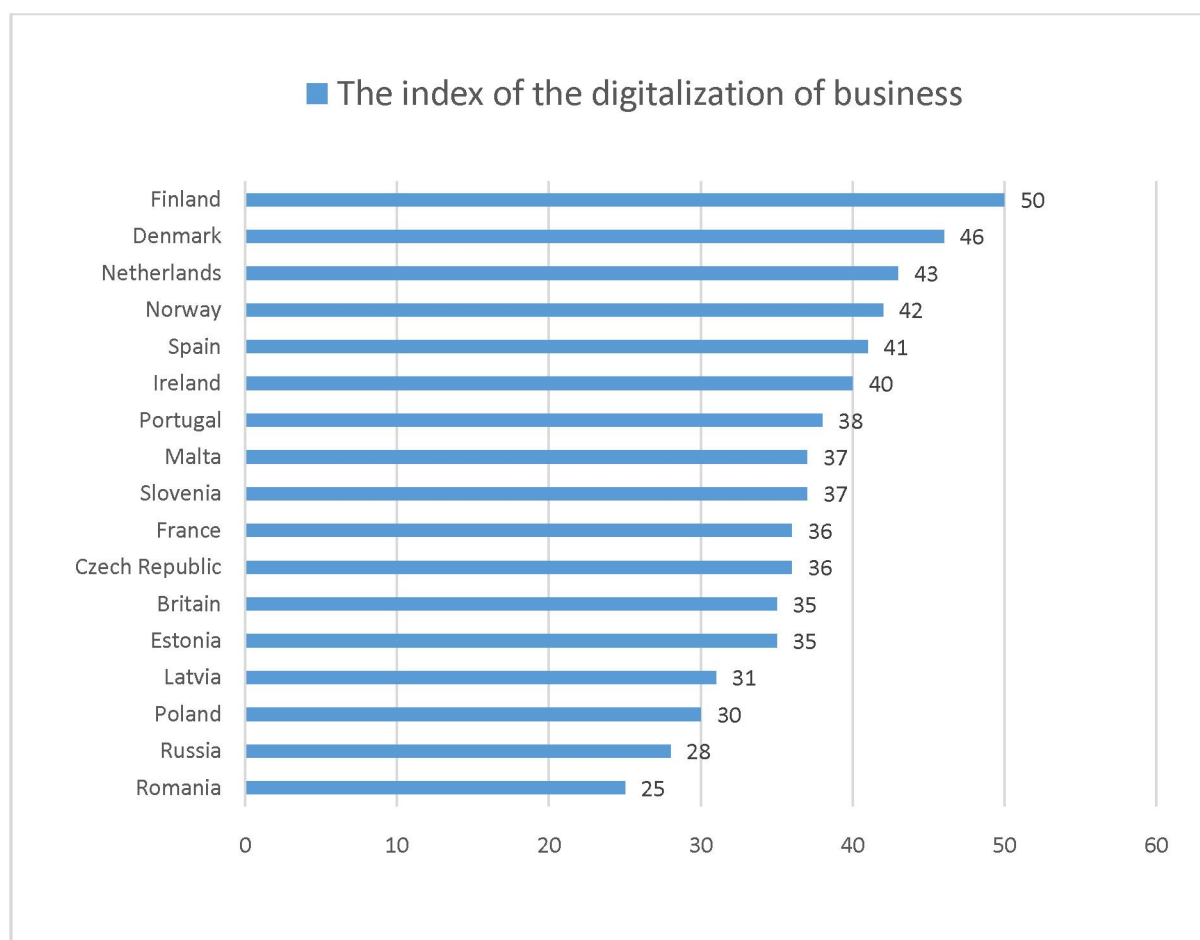


Figure 2 – The index of digitalization of business by country at the beginning of 2019

Note – Compiled from the source: Site data www.issek.hse.ru

Digital technologies have penetrated into all spheres of life, changed economic and organizational processes, ways of communication between suppliers and consumers of goods and services.

In foreign countries, the least in demand of all the listed technologies were electronic sales (they are used on average by only 17% of organizations) and RFID technologies (14%). The maximum differentiation is noted in the use of RFID-technologies and cloud services (8.4 and 8.3 times respectively). In addition, for each indicator can be called a leading country. Thus, in the implementation of electronic sales, the top line is occupied by Ireland (30%), RFID-technologies are used most intensively in the Republic of Korea (42%), ERP-systems in Belgium (54%), cloud services in Finland (66% of organizations) . 100% coverage of organizations by broadband Internet reached in Denmark, Lithuania, the Netherlands, Finland.

Today, the share of the digital economy in total global GDP is 5.5 percent, in developing countries - 4.9 percent, and in Russia - 3.9 percent. The highest — 12 percent — is the United Kingdom, and 10 percent in China [20].

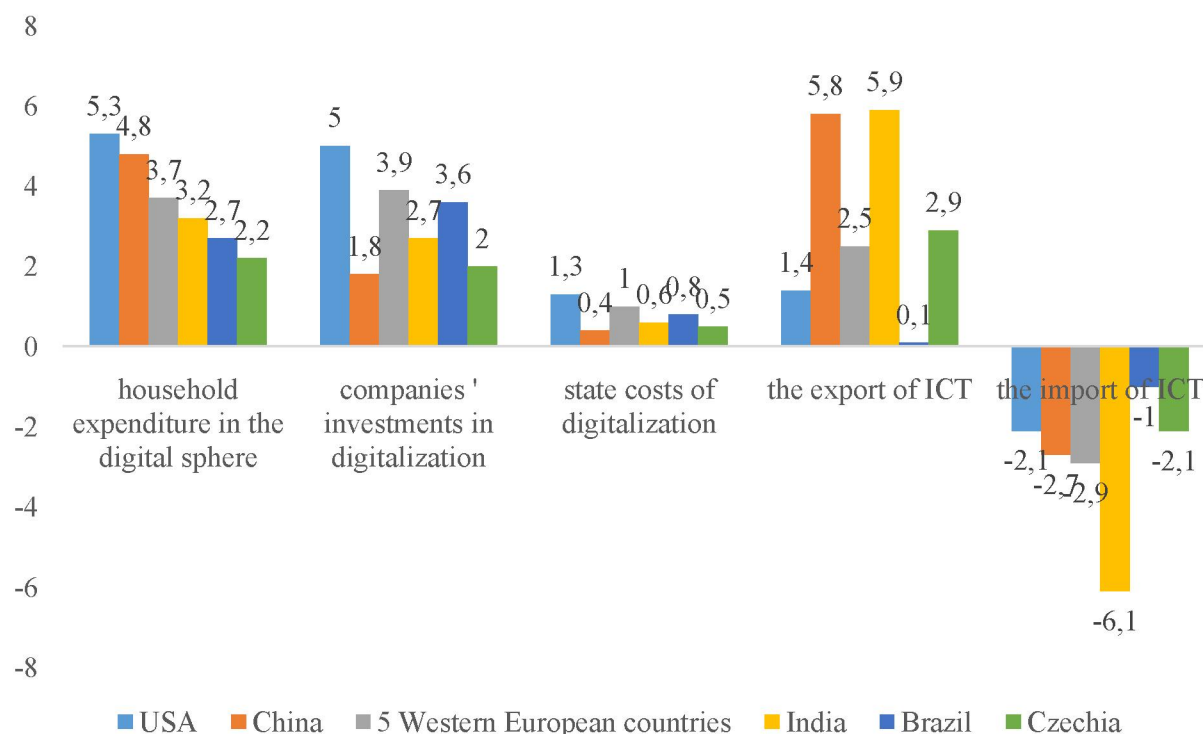


Figure 3 – The contribution of the digital economy to GDP in foreign countries for 2017

Note – Compiled from the source: www.rbk site data

According to a survey conducted by the OECD in 2016, 32 countries included in this organization and 6 other partner countries stated that they have a digital economy development strategy, plan or program. Since September 2017, the Australian Government has announced the beginning of the development of a Digital Economy Strategy. In the United States in 2015, it announced the formation of a digital economy plan (digital economy agenda), and in 2016, the Council of Advisors on the Digital Economy under the Ministry of Commerce was created, performing the functions of creating a spectrum of tasks and solutions for the development of the Internet, information security, promoting innovation and etc., implemented by private business [21, p.54].

Table 2 presents the ranking of the goals of the development of the digital economy, conducted by the OECD based on an analysis of existing strategies and a survey [22, p.13]

According to the table, it is clear that a total of 20 goals for the development of the digital economy were considered, including 15 proposed by the OECD, and 5 more goals included in the national strategies of the digital economy by individual countries.

The most significant (according to the results of the survey conducted by the OECD) at the present time are «the improvement of e-government services» and «the development of telecommunications infrastructure». These two goals were most often met in national strategies (21 and 22 times respectively).

Table 2 – Priority of the objectives of the development of the digital economy in OECD countries

Purpose	Priority		Number of countries that have included the goal in the strategy
	2017, rank	2020-2022, expected. ISM. rank's	
Improving e-government services	1	0	21
Development of telecommunication infrastructure	2	-3	22
The promotion of ICT-related skills and competencies	3	0	16
Increased security	4	+2	18
Increased access to data	5	+1	6
Promotion of ICT adaptation by businesses, including small and medium-sized enterprises	6	-1	3
Promotion of ICT adaptation in specific sectors such as health, education, etc.	7	+1	3
Strengthening the protection of personal data	8	0	5
Strengthen your digital identity	9	0	2
The development of the ICT sector, including international markets	10	0	2
E-Commerce promotion	11	-1	5
Addressing global challenges, including Internet government, climate change, etc.	12	+1	1
Strengthening consumer protection	13	-1	0
Expanding access to the Internet, including for the elderly and persons with disabilities	14	+1	4
Keeping the Internet open	15	0	4

Примечание – Составлена на основе источника: Электронный ресурс: цифровой экономики стратегии 2015-2018. Инновационная Великобритания. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/404743/Dig

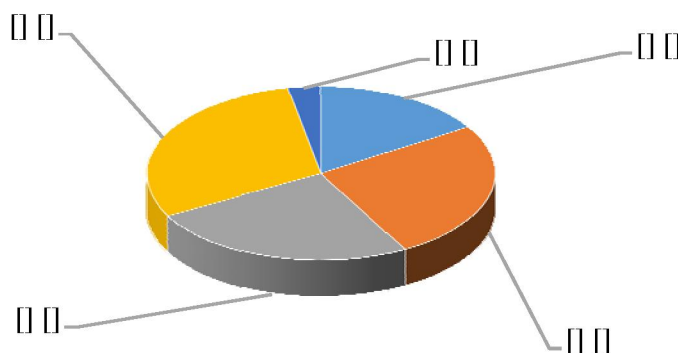


Figure 4 – The OECD Ranking of the Digital Economy Development Goals

The survey processed data mainly for developed and some developing countries (Brazil, Mexico, Russia, etc.). Further, we reviewed foreign programs for the digitalization of the economy (Table 3).

Table 3 – Foreign programs on digitalization of the economy

Country	Idea	Control system	Infra structure	Human capital	Sector of economy	State amenities
South Korea's	«Creative economy»	Ministry of science, technology and ICT, committees, regional centers	+	+	+	+
New Zealand	«Digital transformation»	The Ministry is responsible for initiatives on its topic	+	+	+	+
Denmark	«Digital Denmark»	Agency for digitalization (Ministry of public sector innovation)	+	+		+
Canada	Establishment of an ICT hub in Toronto	Establishment of an ICT hub in Toronto Formation of a hub under the leadership of the Government of Canada	+	+	+	
Singapore's	«Smart economy»	Management of ICT – management ICT	+	+	+	+
China	«Internet Plus» industry integration	Responsible group of ministries and agencies	+	+	+	+
Note – Compiled by the author						

From the experience of leading countries in the development of digital services, it follows that:

- by developing digital services all countries focus on human capital. In their strategic directions, all countries emphasize the development of digital skills among the population;
- in the development of digital services, the UK is focusing on data science (datascience). In the future, the UK Government does not exclude the possibility of its commercialization. In addition, the focus is on the development of national registry infrastructure and cross-channel presentation of services;
- Singapore makes extensive use of the opportunities offered by public-private partnerships, thereby attracting investment in the development of e-government and digital services;
- The United States views the development of new services, including digital ones, as start-up projects;
- Korea creates a consolidated system that provides information and services, integrating government agencies, domains and geographic jurisdictions into the process;
- in general, all countries, in an effort to avoid excessive bureaucracy, are switching to electronic document management, creating special software in the cloud (cloud based software). At the same time, all countries take into account the risk of cyber attack and create appropriate data protection programs or special cyber security agencies;
- a wide range of digital services in foreign countries indicates the presence of a sufficient number of niches in our country that require the digitization of the services provided;
- it is necessary to study the possibilities of Kazakhstan for the Electronic Migration System, the system of electronic elections and the population census;
- it is required to create a single portal of educational institutions, a portal for access to OSMS;
- it is necessary to further improve the portal enbek.kz in terms of electronic filing of applications for admission to work;
- for the successful implementation of the digitalization process, trained personnel, a developed reward system and the appropriate regulatory framework are necessary.

Building a digital economy will provide a number of potential benefits, for example, the use of digital technologies, both in the public sector and in business (Figure 5) [23].

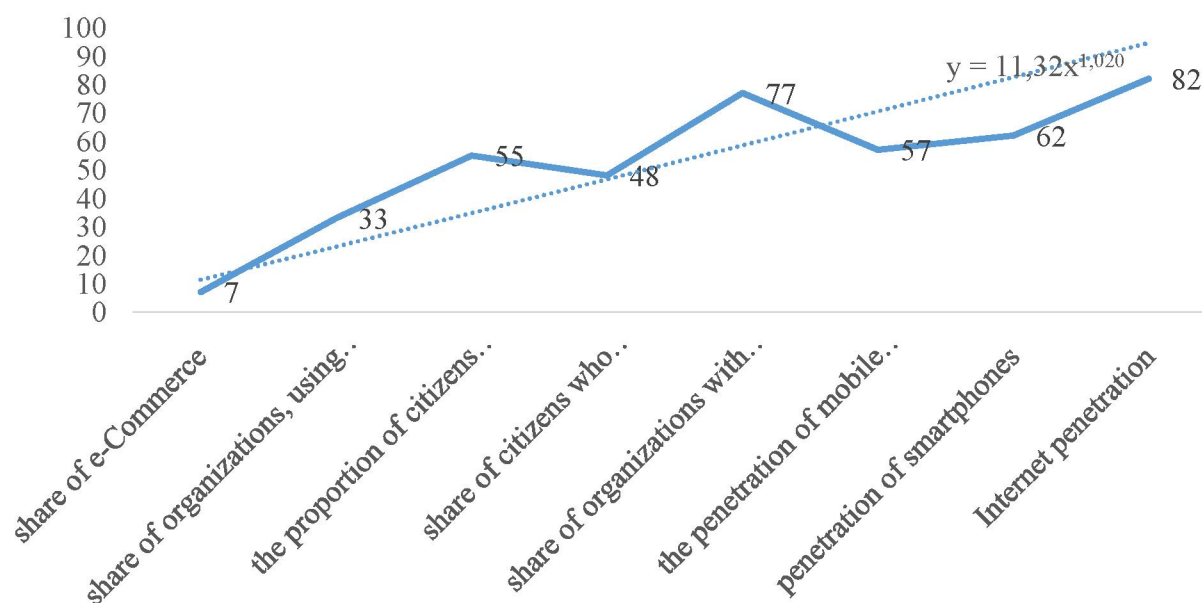


Figure 5 - Access to digital services in EU countries for 2017

Note - Compiled from the source: Euromonitor International data; Eurostat for 2017

Thus, the digitalization of the economy has recently been actively and successfully developing around the world. The level of use of digital technology has a significant impact on the GDP of countries today. At the same time, the influence of this factor will only increase as the development of innovations in this field of information technology in all areas of life.

Findings

The digital economy has created many benefits for consumers and society. Consumers have gained a lot of benefits from the development of the digital economy, although this effect is not directly reflected in GDP indicators.

1 Thanks to the proliferation of smartphones, ordinary people began to use enormous computing power. Now you can at any time gain access to the knowledge that humanity has accumulated for centuries or an unlimited flow of information on social networks, completely free of charge.

2 The digitization of the economy has accelerated the widening gap between low- and high-paying employees, that is, digitalization has a positive effect on the labor market due to the emergence of new professions that did not exist before.

3 The widespread adoption of digital technologies will give impetus to the development of traditional basic industries by ensuring productivity growth, increasing their competitiveness, including in the international market.

4 Ability to control work remotely.

5 Affordable and free market, simplified payments.

6 Any sector of the economy is available in this area, the level of productivity is higher than the existing one, cost reduction.

7 Can be completely excluded paper workflow and introduced electronic.

Based on the foregoing, we can conclude that the digital economy is a global economy. Today it is the most relevant topic for the development of any country. The digital economy can lead to the emergence of "smart" cities, transport and agriculture, the lack of digital inequality in certain regions and the growth of digital literacy among the population.

A comparative analysis of the tasks considered in the development of the digital economy of foreign countries has shown that all countries intend to:

- build a world-class digital infrastructure;
- to involve business and the public in the CE space, but if, for example, the UK declares the creation of a free system of teaching digital skills for all comers and allocating government investments to

universities developing research in the field of robotics and artificial intelligence (AI), the Program of Russia not set directly;

- improve the quality of service for its citizens on the Internet (E-Government);
- to ensure the safety of cyberspace [24, p.58].

A comparative analysis of the participation and role of the state in the digitization of the economy of foreign countries, which we examined, showed that there are certain benefits, that is, the effect of digitization:

1 Economic:

- contribution to GDP, economic growth;
- reducing unemployment, increasing the number of qualified personnel;
- growth of labor productivity indicators;
- development of small and medium business;
- integration of connections
- the transformation of industries.

2 Social benefits:

- poverty reduction;
- availability of information and communication services;
- availability of financial services;
- accessibility of education, medical care.

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САНДЫҚ ЭКОНОМИКАНЫ ЕНГІЗУ МЕН ҚОЛДАНУДЫҢ ӘЛЕМДІК ТӘЖІРИБЕСІ

Аннотация. Зерттеудің мақсаты: сандық экономиканың қарқынды дамуы жағдайында шетелдік тәжірибені зерттеу. Зерттеудің ғылыми жаңалығы шетелдік тәжірибені зерттеу негізінде сандық экономиканың қатерлері мен тәуекелдеріне негізделген ақпараттық технологияларды дамытуда жүйелік тәсілді негіздеу болып табылады.

Методология: зерттеу абстрактілі-логикалық және салыстырмалы талдау сияқты әдістерді қолдана отырып жүргізілді, сондай-ақ сипаттау әдісі мен жалпылама қолданылды. Зерттеу көздері экономиканы цифрландыру мәселелерін қарастыратын қазақстандық және шетелдік авторлардың теориялық және аналитикалық Мақалалары, Еңбектері болды.

Қорытындылар: біздің пікірімізше, сандық экономика жаһандық экономикалық өсудің аса маңызды қозғаушы күшіне айналып, экономикалық дамуды жеделдетуде, қазіргі бар салалардың өнімділігін арттыруда, жаңа нарықтар мен салаларды қалыптастыруда және тұтас қамтитын тұрақты өсу мен дамуды қамтамасыз етуде елеулі рөл атқарады.

Түйін сөздер: Сандық экономика, ақпараттық технологиялар, экономикалық өсу, цифрландыру

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МИРОВОЙ ОПЫТ ВНЕДРЕНИЯ И ПРИМЕНЕНИЯ ЦИФРОВОЙ ЭКОНОМИКИ

Аннотация. Цель исследования: Целью исследования является изучение зарубежного опыта в условиях бурного развития цифровой экономики. Научная новизна исследования заключается в обосновании системного подхода в развитии информационных технологий, базирующегося на вызовах и рисках цифровой экономики, на основе изучения зарубежного опыта.

Методология: исследование проводилось с применением таких методов, как: абстрактно – логический и сравнительный анализ, также использовались описательный метод и обобщение. Источниками исследования послужили теоретические и аналитические статьи, труды казахстанских и зарубежных авторов в которых рассматриваются вопросы цифровизации экономики.

Выводы: по нашему мнению, цифровая экономика становится все более важной движущей силой глобального экономического роста и играет значительную роль в ускорении экономического развития, повышении производительности существующих отраслей, формировании новых рынков и отраслей и обеспечении всеобъемлющего устойчивого роста и развития.

Ключевые слова: цифровая экономика, информационные технологии, экономический рост, цифровизация.

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