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**DIGITALIZATION OF THE ECONOMY AS AN EFFECTIVE MECHANISM FOR IMPROVING THE COMPETITIVENESS AND WELFARE OF KAZAKHSTAN**

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**Abstract:** In this scientific article, the authors attempt to assess the impact of digitalization on these drivers of socio-economic development and well-being in a group of developed and developing countries, including Kazakhstan, and also provide comparisons between the processes and methods of digitalization of Kazakhstan and other developed countries. The relevance of determining the effects of the rapid introduction of digitalization in developed and developing countries, including Kazakhstan, predetermined the purpose of the study. At the same time, it is expected that the use of digital technologies means a transition to a completely new development trajectory, which provides for the creation of a digital economy in Kazakhstan, which will accelerate the pace of development of the country. However, the rapid development of information technologies on a global scale dictates its own rules and requires an adequate and timely response from our government. Therefore, it is necessary to take the next step – to initiate the process of transformation of key sectors of the national economy, education, health care, as well as the sphere of interaction between the state and business.

**Keywords:** economy digitalization, digital evolution index, e-government development index, digital trust level, digital literacy, developed countries, developing countries

**Introduction.**

Digitalization is one of the key trends in the global economy. Countries with the strongest economies in the world have included a digitalization program in their economic development strategy. Also, Kazakhstan adopted the State Program “Information Kazakhstan 2020”, approved in 2013, which became the foundation for the digital transformation of the country's economy and contributed to the development of the following factors: transition to the information society, improving public administration, creating institutions of “open and mobile government”, increasing the availability of information infrastructure not only for corporate structures, but also for citizens of the country. The state program “Information Kazakhstan 2020” includes 83 target indicators and 257 events. According to the results of three years of implementation of the State program “Information Kazakhstan 2020”, 40% performance has already been achieved. However, the rapid development of information technology on a global scale dictates its own rules and requires an adequate and timely response from our government. Therefore, it is necessary to take the next step - to initiate in time the process of transformation of key sectors of the national economy, education, healthcare, as well as the sphere of interaction between the state, community and business [1]. At the same time, the importance of monitoring the dynamics of digitalization processes and the degree of its impact on welfare is of paramount importance for all countries involved in the global community. Currently, there are practically no studies that comprehensively assess the institutional, cultural, economic, educational, and infrastructural consequences of digitalization. An attempt is made to evaluate the impact of digitalization on these drivers of socio-economic development and on welfare in a group of developed and developing countries, including Kazakhstan.

**Theoretical analysis.**

Digitalization of the global economy has entered an active phase of implementation at the country level in the last 10-15 years. One of the practice-oriented illustrations is the active implementation of the concepts of the “Third Industrial Revolution”, “Industry 4.0” and other approaches to integration into government programs and business strategies. Thus, the effects of

the dynamics of the introduction of digitalization and its impact on socio-economic results and the well-being of society are becoming priority for all regions involved in global sustainable development.

Today, integration into the world of digital technology determines the success of both business and consumer transactions. According to a McKinsey study, digital data currently has a greater effect on GDP growth than traditional trade in goods and services [4]. Indeed, many countries have identified key priorities in their development strategies based on methods to increase competitiveness by achieving a digital advantage in the global market. So, in Europe, the Entrepreneurship 2020 action plan has been introduced. The European Commission is stimulating the use of opportunities offered by the digital revolution, encouraging innovative transformations of existing businesses and supporting digital enterprises in Europe [5].

The European Commission also proposes between 2021–2027 years to create the first Digital Europe program, in which 9.2 billion euros will be invested to strengthen the position of the countries of this region in such advanced areas as supercomputers, artificial intelligence, cybersecurity and e-government.

In Germany, the digitalization level has reached a high level: more than 60% of purchases are made through online services, more than 80% of bookings are also made via the Internet [6].

In turn, in the United States, state programs are working: “Digital Attache”, the purpose of which is to provide assistance and support to US enterprises, which allows us to successfully solve digital policy issues and problems in foreign digital markets, and also helps to increase product exports through global e-commerce channels; “Privacy Shield” initiative between the EU and the US [7]. In developed Asia, in particular Singapore, the impact of digitalization contributes to the development of digitalization as much as possible, most of the initiatives taken at the state level:

- supporting the initiative “Singapore of the Future”. Development and attempt to apply and test new solutions in the field of education, healthcare, public sector;
- “The Smart Nation” program, aimed at solving the problems of healthcare, housing and the transport network;
- Jules program aimed at teaching children the basics of digital literacy;
- Virtual Singapore program, which is the collection of data and the creation of a single ecosystem in the city [8].

In turn, in Kazakhstan, the implementation of the State Program “Digital Kazakhstan” is carried out in five key areas:

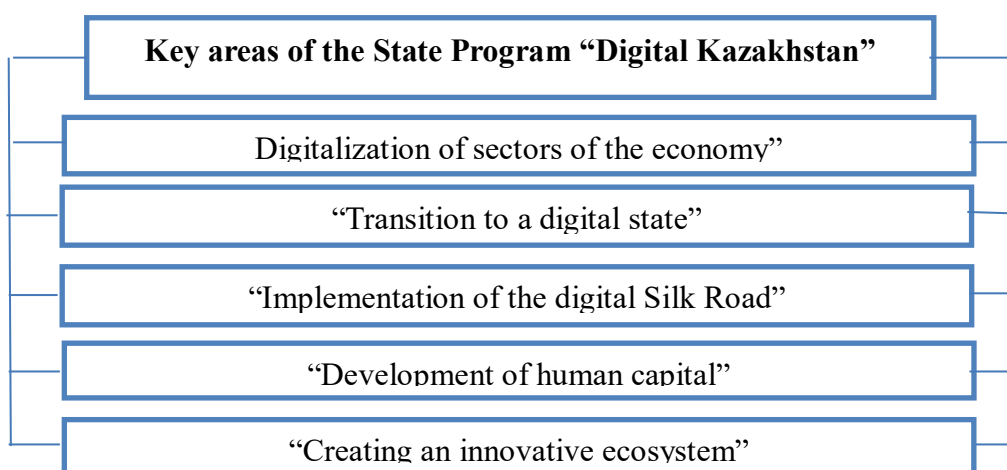


Fig.1. Key areas of the State Program “Digital Kazakhstan” (compiled from [1])

Five main areas of program implementation:

1. “Digitalization of sectors of the economy” - the direction of transformation of traditional sectors of the economy of the Republic of Kazakhstan using breakthrough technologies and

opportunities that will increase labor productivity and lead to an increase in capitalization.

2. “Transition to a digital state” - the direction of transforming the functions of the state as an infrastructure for the provision of services to the population and business, anticipating its needs.

3. “Implementation of the digital Silk Road” - a direction for the development of high-speed and secure infrastructure for the transmission, storage and processing of data.

4. “Development of human capital” - the direction of transformation, encompassing the creation of the so-called creative society to ensure the transition to new realities - the knowledge economy.

5. “Creating an innovative ecosystem” - the direction of creating conditions for the development of technological entrepreneurship and innovation with stable and horizontal connections between business, the scientific field and the state. The state will act as a catalyst for the ecosystem, capable of generating, adapting and introducing innovations into production.

**Experimental part.** The development of society is on the verge of the fourth digital evolution, which is based on the Internet connection not only of people, but also mechanisms, complex devices, as well as the integration of business processes with artificial intelligence.

Despite the tight integration into the life of modern society, the theoretical foundations of the digital economy are still rather poorly formalized in academic research and interstate documentation.

The history of digitalization is heterogeneous; its formation depends on the level of integration of innovations in groups of countries. Researchers at the Columbia Institute of Business highlight three stages of digital evolution (Figure 2).

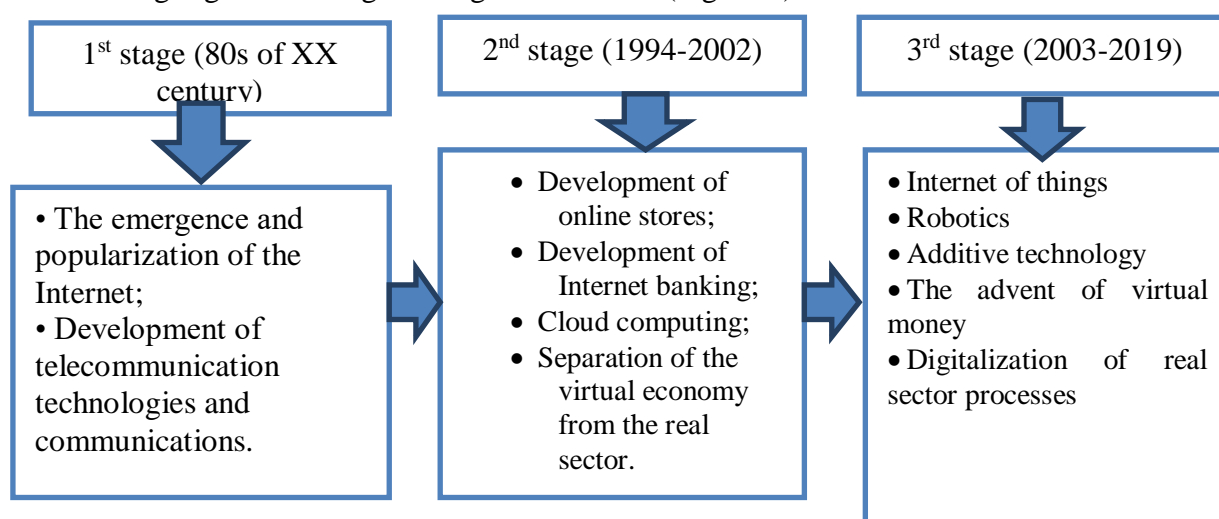


Fig.2. The stages of digitalization of the economy in the world (compiled by [3])

The digital economy is an economy that enables the functioning and provision of trade in goods and services via the Internet. The digital economy is a platform connected to each other that allows using a huge number of ways to reach the end user, as well as creating difficulties in excluding certain players (competitors).

### Results and its discussion

Digital society is a modern stage in the development of civilization, characterized by the dominant role of knowledge and information in all spheres of society, the decisive impact of ICT (information and telecommunication infrastructure) on people's lifestyles, their education and work, as well as on the interaction of the state, business and society. Digital skills are the basis for the growth of all sectors of the economy and are vital to ensure the possibility of integrating a digital society and gaining access to public and private digital services, as well as to increase competitiveness and productivity (Digital Kazakhstan State Program for 2017-2020). Only through the comprehensive transformation in Kazakhstan a greater effect can be achieved, a deeper and more comprehensive involvement in the digitalization process of all the main

economic agents.

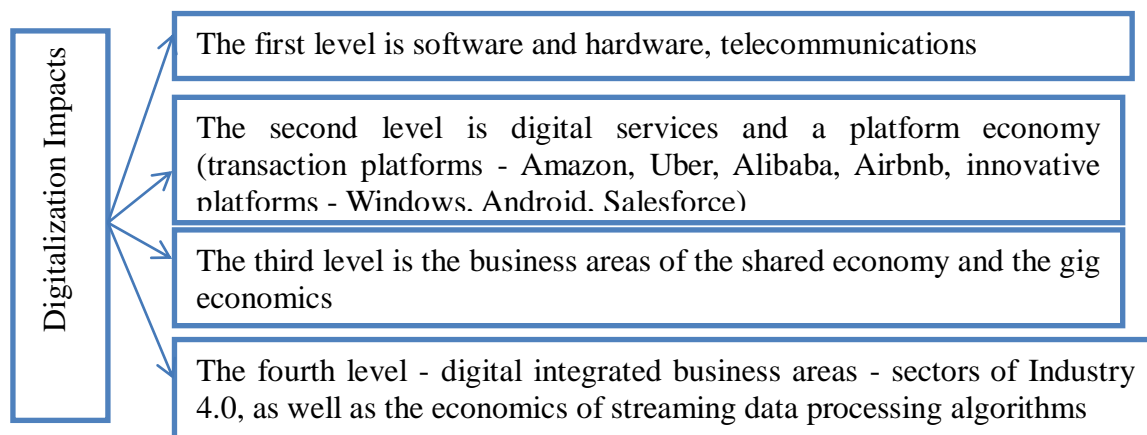


Fig.3. Areas of economic transformation

The objects of the influence of digitalization can also be divided into four levels. The first level is software and hardware, telecommunications [4]. The second level is digital services and platform economy (transactional platforms - Amazon, Uber, Alibaba, Airbnb, innovative platforms - Windows, Android, Salesforce) [8].

The third level includes the business areas of the shared economy and the gig economy. Gig economy- based on one simple principle. Everything you own should be beneficial. In this case, financial gain. Experts around the world call gig economy the economy of the future.

At the fourth level are digital integrated business areas - sectors of Industry 4.0, as well as the economics of stream data processing algorithms. Spheres and directions are presented in Figure 3.

Thus, we can conclude that the influence of the digital economy has gone far beyond the scope of traditional technological sectors, and, therefore, hypothetically, the digital economy can affect almost all areas of society, depending on the degree of its development in a particular country in the world.

In addition to being directly involved in the transformation of objects and areas of the global economy, digitalization directly affects the state, society and business. We turn to the World Bank Group's 2016 World Development Report, which is dedicated to digital dividends, which states that in order to strengthen the foundation of digitalization, it is necessary to do an aspect on three key components: integration, efficiency and innovation.

According to the results of a study by Boston Consulting Group (BCG), reflected in the article "Kazakhstan on the path to the digital economy", Kazakhstan ranked 50th in the ranking of 85 countries in 2016 in terms of digitalization of the economy and is in the group with an emerging digital economy. The digital divide between leading countries and lagging countries is increasing year by year. The key to maintaining the competitiveness of the economy of Kazakhstan is the development of the digital component through the joint efforts of the state and business, including in such sectors as industrial, transport and logistics infrastructure, agriculture, subsoil use, energy, education and healthcare.

### Conclusion

Thus, the state program - "Digital Kazakhstan" has become an important tool in the development of modern Kazakhstan. It is designed for 2017-2020 and has strategic importance for the country. The main goal of the program is "improving the quality of life of the population and the competitiveness of the economy of Kazakhstan through the progressive development of the digital ecosystem". It is no accident that the basis for its development was the Decree of the President of the Republic of Kazakhstan dated February 1, 2010 No. 922 "On the Strategic Plan for the Development of the Republic of Kazakhstan until 2020".

The effects of digitalization on the socio-economic development of Kazakhstan are

significant in the framework of the results. In the project of the state program “Digital Kazakhstan”, which was published in 2016 by Zerde National Infocommunication Holding JSC, in 2017, 12 billion tenge were to be spent on projects under the state program, in 2018 - 57.3 billion tenge, in 2019 - 25.7 billion tenge, in 2020 - 37.9 billion tenge, finally, in 2021 - 17.8 billion tenge. As a result, it is planned to total the budget of more than 150 billion tenge.

Also in Kazakhstan, a number of elements of the innovation ecosystem have already been created, the SEZ “PIT Alatau”, AEO “Nazarbayev University” are functioning, and the international technology park Astana hub has been launched. 3/4 of the country's adult population has a basic level of digital literacy; more than 3/4 have Internet access [1].

According to the Kapital.kz business information center, 35 billion tenge was spent from the republican budget over the past 2 years of work on the implementation of the State program “Digital Kazakhstan”. The economic effect of the ongoing digitalization work amounted to 803 billion tenge. “32.8 billion tenge was attracted to the innovation ecosystem. Considering related industries, 120 thousand jobs were created. Moreover, 78 thousand of them appeared in 2019.”

Thus, digitalization has an impact on all sectors and will lead to a change in the structure of the economy of Kazakhstan as a whole by diversifying and unlocking the potential of non-primary industries, stimulating startup activity and opening new industries.

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**Түйін:** Бұл ғылыми мақалада авторлар осы әлеуметтік-экономикалық даму драйверлеріне және дамыған және дамушы елдер, оның ішінде Қазақстанның әл-ауқатына цифрландырудың әсерін бағалауға әрекет жасады, сондай-ақ Қазақстан мен басқа да дамыған мемлекеттердің цифрлануын жүзеге асыру процестері мен әдістері арасындағы салыстыру келтіріледі. Дамыған және дамушы елдерде, соның ішінде Қазақстанда цифрландыруды жылдам енгізуден әсерлерді анықтаудың өзектілігі зерттеу мақсатын анықтады. Сонымен қатар, сандық технологияларды пайдалану елдің даму қарқынын жеделдетуге мүмкіндік беретін Қазақстанда цифрлық

экономиканы құруды көздейтін дамудың мүлдем жаңа траекториясына көшуді білдіреді. Алайда, жаһандық ауқымда ақпараттық технологиялардың қарқынды дамуы өз ережелерін талап етеді және біздің Үкімет тарапынан барабар және уақтылы реакцияны талап етеді. Сондықтан келесі қадам жасау қажет – ұлттық экономиканың, білім берудің, денсаулық сақтаудың негізгі салаларын, сондай-ақ мемлекеттің жеке меншік пен бизнестің өзара іс-қимыл саласын қайта құру процесіне уақытында бастамашылық ету.

**Аннотация:** В этой научной статье авторами предпринята попытка оценить влияние цифровизации на данные драйверы социально-экономического развития и на благосостояние в группе развитых и развивающихся стран, в том числе Казахстана, а также приводятся сравнения между процессами и методами осуществления цифровизации Казахстана и других развитых государств. Актуальность определения эффектов от стремительного внедрения цифровизации в развитых и развивающихся странах, в том числе в Казахстане предопределила цель исследования. В то же время, предполагается, использование цифровых технологий означает переход на совершенно новую траекторию развития, которая предусматривает создание цифровой экономики в Казахстане, которая позволит ускорить темпы развития страны. Однако стремительное развитие информационных технологий в глобальных масштабах диктует свои правила и требует адекватной и своевременной реакции со стороны нашего правительства. Поэтому необходимо сделать следующий шаг – вовремя инициировать процесс преобразования ключевых отраслей национальной экономики, образования, здравоохранения, а также сферы взаимодействия государства сообществом и бизнесом.