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ECONOMIC AND SOCIAL BENEFITS OF DIGITALIZATION

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Abstract. *Relevance of the Study.* The digitalization of Kazakhstan’s economy has a direct and positive impact not only on the economic sphere but also on the social development of the country. A key rationale for this study is that the modern digital economy extends beyond purely economic processes: digitalization is increasingly embedded in social interactions, the well-being and successful functioning of individuals depend to a growing extent on digital technologies, and there is widespread adoption of digital solutions in the operations of public institutions and government bodies. ***Purpose of the Study.*** The purpose of the study is to examine current priority areas of digitalization and to substantiate regional development priorities based on the use of advanced digital technologies, including the formation of “hubs” (“growth poles”) of knowledge-intensive production. ***Research Methods.*** The study employs analysis and synthesis of materials on digital achievements, an examination of socio-economic development forecasts for recent years, a comparative analysis of changes in economic sectors with best international practices, as well as regional analysis of mechanisms aimed at enhancing digital competencies and improving the effectiveness of projects with significant socio-economic impact. ***Research Results.*** The study addresses the formation of “growth poles” of knowledge-intensive production, presents selected calculations related to digital achievements, identifies

key sources of modernization in the development of economic sectors, and analyzes factors influencing both the direct impact of digitalization on Kazakhstan's economy and the pace of digital technology adoption. Special attention is given to key aspects of gender equality as a distinctive feature of the regional socio-economic system in the context of the digital economy, as well as to the prerequisites of market reforms and the concept of digital privatization. *Practical Significance.* The study formulates development-oriented recommendations aimed at fostering digital growth, taking into account regional mechanisms for enhancing digital competencies and the outcomes of implemented projects.

Keywords: digitalization, economy and society, regions, modern technologies, gender equality, investments, digital competence, transformation, efficiency

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ЦИФРЛАНДЫРУДЫҢ ЭКОНОМИКАЛЫҚ ЖӘНЕ ӘЛЕУМЕТТІК ЖАҒЫНАН ПАЙДАЛЫ ӘСЕРЛЕРІ

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Аннотация. *Зерттеудің өзектілігі.* Қазақстан экономикасын цифрландыру елдің экономикалық және әлеуметтік салаларына тікелей оң ықпал етеді. *Зерттеудің маңызды негізі* – қазіргі электрондық экономика тек экономикалық үдерістермен шектелмей, цифрландырудың әлеуметтік үдерістерге тұрақты түрде енуі, адамдардың табысты өмір сүруі оған барған сайын тәуелді болуы және цифрлық технологиялардың мемлекеттік ұйымдар мен құрылымдардың қызметіне кеңінен енгізілуі. Зерттеудің мақсаты. Цифрландырудың өзекті басым бағыттарын айқындау және озық цифрлық технологияларды пайдалану негізінде өңірлік дамудың басымдықтарын негіздеу, соның ішінде экономиканың ғылымды қажетсінетін өндірісіндегі «ошақтар» («өсу нүктелері») қалыптастыру мәселелерін зерттеу. *Зерттеу әдістері.* Цифрлық жетістіктер бойынша деректерді талдау және жинақтау, елдің соңғы жылдардағы әлеуметтік-экономикалық даму болжамдарын талдау, экономика салаларындағы өзгерістерді басқа елдердің озық тәжірибесімен

салыстыру, сондай-ақ өңірлерде цифрлық құзыреттілікті арттыру тетіктері мен айтарлықтай әсері бар жобалардың тиімділігін өңірлік талдау әдістері қолданылды. *Зерттеу нәтижелері.* Ғылымды қажетсінетін өндірістің «өсу нүктелерін» қалыптастыру, цифрлық жетістіктер бойынша жекелеген есептеулер, экономиканың секторларын дамытудағы жаңғыртудың негізгі көздері, Қазақстан экономикасын цифрландырудың тікелей ықпалы мен цифрлық технологияларды енгізу жылдамдығына әсер ететін факторлар талданды. Цифрлық экономика жағдайындағы өңірдің әлеуметтік-экономикалық жүйесі ерекшелігі ретінде гендерлік теңдіктің маңызды қырлары, нарықтық реформаға бағытталған алғышарттар және цифрлық жекешелендіру санаттары қарастырылды. *Практикалық маңыздылығы.* Өңірлердегі цифрлық құзыреттілікті арттыру тетіктері мен жобалардың нәтижелерін ескере отырып, цифрлық өсімге бағытталған ұсыныстар берілді.

Түйін сөздері: цифрландыру, экономикалық және әлеуметтік, заманауи технологиялар, аймақтар, гендерлік теңдік, инвестиция, цифрлық құзыреттілік, трансформация, тиімділік

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ЭКОНОМИЧЕСКИЕ И СОЦИАЛЬНЫЕ ПРЕИМУЩЕСТВА ЦИФРОВИЗАЦИИ

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Аннотация. *Актуальность исследования.* Цифровизация экономики Казахстана оказывает прямое благотворное влияние не только на экономическую, но и на социальную сферу страны. Существенным основанием исследования послужило то, что современная электронная экономика выходит за рамки чисто экономических процессов: цифровизация постоянно внедряется в социальные процессы, от неё всё больше зависит успешное существование людей, а также происходит широкое внедрение цифровых технологий в работу государственных организаций и структур. *Цель исследования.* Исследовать актуальные приоритетные направления

цифровизации и обосновать приоритеты регионального развития на основе использования передовых цифровых технологий, включая формирование «очагов» («точек роста») наукоёмкого производства. *Методы исследования.* Применены анализ и обобщение материалов по цифровым достижениям, анализ прогнозов социально-экономического развития страны за последние годы, сопоставление изменений в сферах экономики с передовым опытом других стран, а также региональный анализ применяемых механизмов повышения цифровой компетентности и эффективности проектов со значимыми эффектами. *Результаты исследования.* Рассмотрены вопросы формирования «точек роста» наукоёмкого производства, приведены отдельные расчёты по цифровым достижениям, определены основные источники модернизации в развитии секторов экономики, проанализированы факторы, влияющие на непосредственное влияние цифровизации экономики Казахстана и скорость внедрения цифровых технологий. В полной мере рассмотрены важнейшие стороны гендерного равенства как специфики социально-экономической системы региона в условиях цифровой экономики, а также предпосылки рыночной реформы и категории цифровой приватизации. *Практическая значимость.* Сформулированы рекомендации по развитию, направленные на цифровой рост, с учётом региональных механизмов повышения цифровой компетентности и результатов реализации проектов.

Ключевые слова: цифровизация, экономические и социальные, современные технологии, регионы, гендерное равенство, инвестиции, цифровая компетентность, трансформация, эффективность

Introduction. The idea of a comprehensive digital transformation is a global trend, and digital technologies are playing an increasingly important role in the development of the economies of most countries. In contemporary circumstances, digitalization has been a nationwide priority for Kazakhstan. We aim to be one of the major and most leading digital centers in Eurasia. Kassym-Zhomart Tokayev, the President of the Republic of Kazakhstan marked: «The digitalizing progress is already defining current agenda, making a pivotal influence on the economic growth. The wide implementation of such new conceptions and technologies as block chain, artificial intelligence, Big Data and the Internet of Things (IoT) causes an alteration in the principles of the game in actually all sectors – beginning from agriculture to finance». We should also note that digitalization has already become a defining element in the marketability of all states and regions. It is supposed that thanks to the digitalization of the regions new technologies will be entirely implemented into the development. «The digitalization degree in Kazakhstan was increased by 12% in 2022; local digital goods are getting more competitive in international markets.

We all know that human capital is a priority, but at the same time it is a big problem on the way to digital transformation. We must understand that managing digital trends will require changing our approach to digital literacy and education.

The final purpose is to establish a creative society concentrated on digital growth.

Consequently, both economic and social digitalization spheres should be activated (Mizaev et al., 2025). The level of development of the digital economy and the country's rating are measured on the basis of various composite indices integrating individual sub-indices that are responsible for the digital transformation of individual sectors of the economy and society.

Literary review. The current importance of digitalization and all the essential technologies and priority areas being developed on these sides, and also the direct benign influence on the country's economic and social fields, are considered in the works of native and foreign scientists and media data. The whole data were analyzed in the research on the basis of the review of special literature. The analysis of the program data and economical digitalization indexes is presented in the article on recent years indicators.

There was also a manual search for some details. Based on the conducted research on statistical indicators.

Materials and methods. Nowadays digital technologies as the basic substantiation are aimed at solution of the grades of steady growth connected with the economic fields, applying all new digital technologies in the regions, and activation of economic and social sectors. As the main method of solving the problem of assessing the digital gap between the regions of Kazakhstan, the methods of rating analysis of indicators will be used to characterize the objects of research of the regions of Kazakhstan with the largest share of the gross regional products and services sector. The structure will show the most compact and comprehensive coverage of the main trends of digitalization in the country and regions of the country. To carry out this analysis, a set of indicators reflecting the degree of penetration of ICT into regional markets in the period 2022 was considered: information technology costs; the quantity of IT staff; the number of enterprises that use computers; the quantity of enterprises having an Internet access. A number of offers in these spheres is under consideration.

The present condition of Kazakhstan economy is the formation time of the world economic relations and the restructuring of the organizational and economical management system. In this period of time, the questions of stable growth of territories and diversification of the structure of regional economic systems are actualized, the economy of which can independently provide solutions of the tasks of their long-term growth. This is primarily due to the fact that traditional factors of production are almost exhausted and today the question of finding new ways of economic development is acute. Meanwhile, as we think, the primary task is to review the previously established priorities of economic development of regions that cannot play the role of locomotives of the country's regional policy. In this regard, there is a problem of formation of «hotbeds» or «growth points» of knowledge-intensive production in Kazakhstan economy that is tightly connected with the substantiation of regional growth priorities of the basis of the usage of leading digital technologies (Kireeva et al., 2021).

Digital achievements according to preliminary estimates, by 2025 the direct

impact of digitizing of Kazakhstan economy will amount to 1.7 – 2.2 trillion tenge, thus, it is supposed that the reimbursement on investment will be 4.8 – 6.4 times to the total investment volume, taking into account private investment by 2025.

12 key projects have the most significant impact on GDP:

- Foundation of a multinational IT startups (Astana Hub) tech park;
- Implementation of 4.0 technologies industry, including the realization of «intellectual sphere» projects, the formation of model factories;
- Implementation of the «paperless» principle;
- Creation of an intelligent transport system;
- E-commerce promotion;
- Creation of a digital platform for SMEs (one window);
- Formulation of an informational system on marking products for minimization of shady trading 17-55;
- Implementation of a complex of actions on the development of cashless payments;
- Development of open platforms (Open API), artificial intelligence and Big Data;
- Development of telecommunication infrastructure, including provision of broadband Internet access;
- Improvement of customs and tax administration and transition to electronic declaration;
- Implementation of Smart City components.

As a consequence, the influence of the qualitative progress of health care, education and the investment environment in these spheres will be evident in the long-lasting future and will allow to cut the gap with developed states both in social and economic terms (Tsifrovoy Kazakhstan 2025).

According to preliminary estimates, the direct effect of the digitalization of the economy of Kazakhstan by 2025 will create an additional value of 1.7 - 2.2 trillion. tg, thus ensuring a return on investment of 4.8 — 6.4 times by 2025 to the total volume of investments, taking into account private investments. In general, digitalization, along with achieving economic effectiveness and raising competitive ability, makes a positive influence on the social sector.

Results and discussion. Industry and trade stay the moving power of the Kazakhstan's economy, supplying 46 percent of the country's GDP. While the proportion of the service industry is increasing and has achieved 52.6%, share of the manufacturing industry has decreased to 13.2%. This indicates the prospects for further economical elaboration of the service industry and innovative technologies. The share of construction by 2022 has also increased, reaching 5.3% compared to 4.5% in the first quarter, indicating an increase in investment in this sector. However, the share of transport and warehousing continues to decline and amounts to 6.1%, which is lower than the level of the first quarter of 2022. Generally, economic development stays steady, and the state keeps working under the growth of new economic fields, like digitalizing, innovative technologies, industrial and agricultural production. This reveals new possibilities to decrease economical risks

on a universal dimension, consolidate Kazakhstan's place in the universal economy and involve investors with the purpose to grow the local economy and the citizens' welfare (Ekonomika Kazakhstana6 2024).

And if we consider in more detail the socio-economic development, we can see the following indicators for the execution of the republican budget for 2022 (Fig. 1):

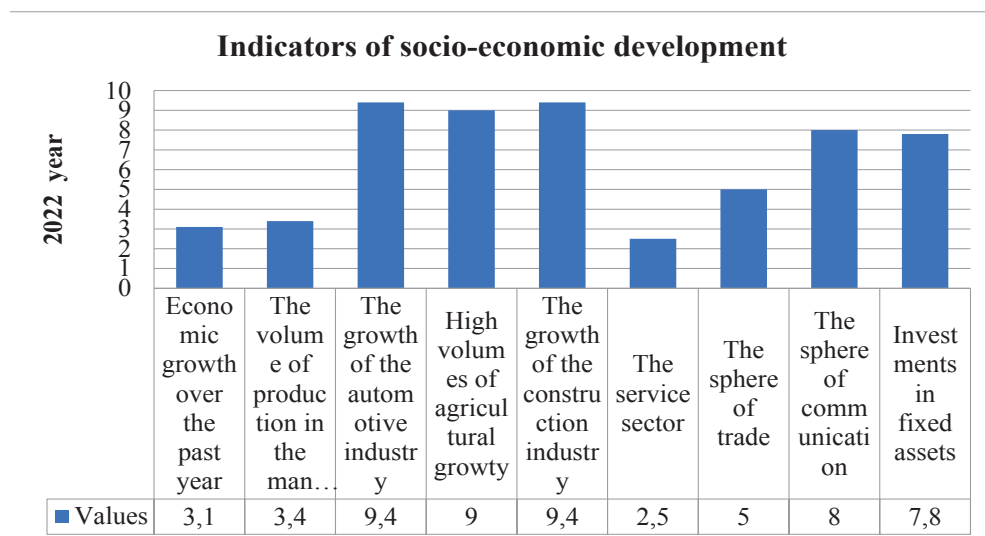


Figure 1 - Execution of the republican budget for socio-economic development for 2022

Note: the drawing is compiled by the authors.

As can be seen from the figure, according to the indicators of 2022, the economy grew by 3.1% last year. An important determinant of economic progress is the attraction of internal and external investments. The growth of investments in fixed assets in real terms amounted to 7.8%. Simultaneously, activity in attracting investments in unproductive industries was noted (VVP Kazakhstana6 2022).

The execution of the republican budget of Kazakhstan for 2022–2025 demonstrates stability and a focus on socio-economic development. In 2022, the budget revenues and expenditures amounted to approximately 24.6 trillion and 24.8 trillion tenge, respectively. In 2023–2024, the budget was executed almost fully, with a deficit of around 2.7% of GDP. In 2025, revenues in the first half of the year exceeded the planned level by 6.4%, while expenditures remained high. The main priorities of the budget include funding social programs, increasing productivity, and supporting economic growth.

It should be emphasized that in general, the trend of indicators that determine the economic and societal growth of Kazakhstan regions corresponds only to an increase. And this assumes that the indexes of the state development as a whole correspond to a positive trend (Turysbekova et al., 2021).

Digitalization requires investment, so businesses need to formulate short-run and long-lasting tactical, also long-lasting purposes and elaborate a work flow chart and

business case to increase the necessary digital knowledge. As part of pilot projects or in the framework of the introduction of solutions based on machine learning and artificial intelligence around the perimeter of small processes using big data analytics, enterprises need to test the technology and calculate economic efficiency. To solve these issues, it is necessary to attract foreign consultations from equipment suppliers, IT companies and consultants. As regarding the implementation of digitizing projects of systemically significant mining entities, we note that by 2025 we should bring 18 projects to full capacity. Digital technologies in 102 subjects of large and medium-sized industry are intended to be implemented by 2022, inclusively as part of the project «exemplary digital plants».

To activate the digital modification of Kazakhstan's industry, only targeted measures are needed that promote specific enterprises or projects, it is insufficient to compel ventures, it is not as this makes it easier to simulate the necessary changes. Systematic actions are necessary to provide the usage of innovative digital technologies: formation of a favorable business climate, tax incentives to improve the efficiency of technological modernization and high-quality corporate governance, increased investment in the upgrowth of staff attributions.

Digitalization is hindered by a specially established digital transformation strategy in the ventures, the lack of managerial assistance and technical skills necessary for personnel, low production and technical level, lack of competent personnel and industry competencies. Several most significant obstructions are solving organizing problems and establishing coordinated work between IT services and production departments. Therefore, enterprises, together with specialists from various services, should draw up a roadmap in advance, according to which new technologies and work process adjustment plans will be developed, the results of each stage will be analyzed; justify the expediency of investing in personnel and adjusting production processes.

Factors affecting the speed of digital technology adoption are divided into internal capabilities and interests of the subject.

Internal capabilities of the enterprise:

- the availability of a strategic conclusion characterized by management skills and the quality of managerial procedures, and the availability of specific resources for its implementation;
- efficient allocation of labor resources, taking into account the competencies of personnel (not only IT specialists, but also other specialists), skills and knowledge necessary for digital transformation.

Stimulating the introduction of digitalization:

- the level of competition in the industry, stimulating the company's management to increase labor productivity;
- access to digital technologies, access to the market, ease of crediting investments; understanding the economic benefits of digitalization;
- the ability to achieve flexibility in entering and exiting projects, considering the risk of investing in new technologies;

- flexibility of labor legislation in terms of redistribution of resources, availability of additional tax and regulatory benefits.

Working with these factors, the state can manage enterprises, strengthening their competitiveness through digitalization.

Opportunities in production and additional interest in digitalization open up the possibility of a progressive movement towards transformation. In addition, even with the necessary resources, enterprises face internal resistance, lack of motivation to regulate business processes, problems in combining new technologies with already formed solutions. Many managers are confident that digitization will create additional jobs without reducing their number, they will not see the expansion of opportunities offered by new technologies (Aubakirovam et al., 2021).

In Figure 2 below, you can fully see the advantages of the economical and societal impacts of digitization.

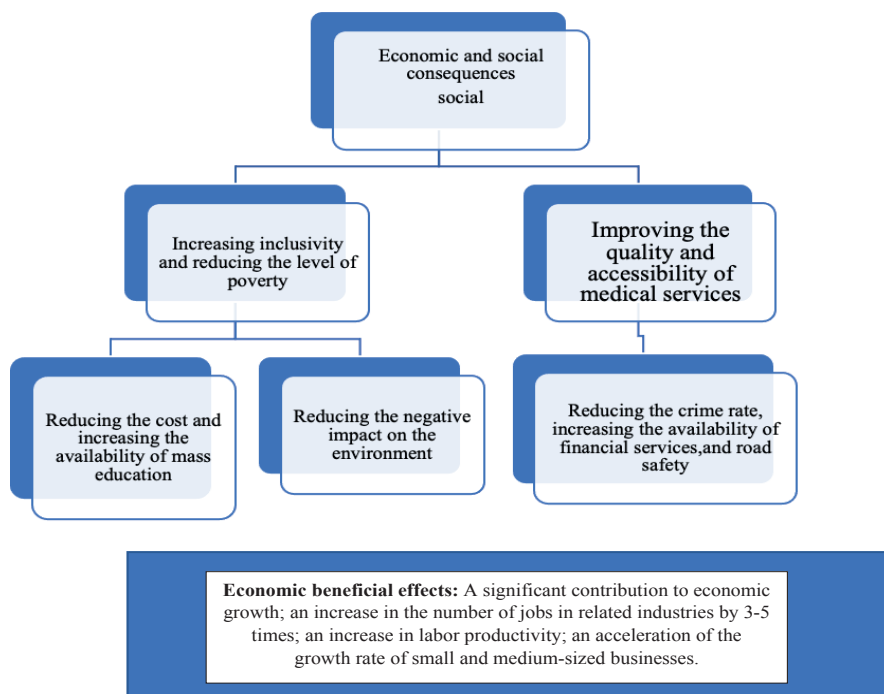


Figure 2 - Analysis of the economic and social benefits of digitalization

Note: the drawing is compiled by the authors.

Today, digitalization of business is a necessary condition of existence and prospects for its growth. The digitizing conversion of certain industries is changing business processes, where priority is given to companies that have made the transition to a digital system a priority and invested in technology and human capital. A large-scale, almost unobstructed market is being formed on the Internet with really high dynamics of global competition and all its elements (companies, products and services, consumers).

Preparedness of Kazakhstan to implement leading technologies is upper-middle; the country takes 62nd place among 158 countries. Mainly, when it is needed to evaluate the growth of digitalization in the country, they apply the volume of the ICT sphere, which in 2021 will comprise 4.3% of GDP, and the IT sphere volume-2%.

However, digitalization covers all economic spheres; for example, the “smart farm” is also part of the digital economy and contributes to its development. Therefore, it is important today to assess not only the IT sector, but also the general application of innovative technologies in firms, the degree of citizens’ digital competencies, the institutional environment of digitalization, and other factors. At the same time, international assessments serve as a basis for analyzing the current situation, tracking progress, and making further decisions regarding the growth of the country’s digital economy (International experience in the development of digitalization in agriculture: state support, regulation, practice, 2023).

«In the modern world, one of the major determinants of competitiveness is deep digitalization. The transfer of modern digital technologies and the implementation of Industry 4.0 components are extremely important for Kazakhstan. ... Moreover, it is vital to develop and consolidate the local IT sphere», - the President of Kazakhstan said. So that Kazakhstan becomes a digital centre, it is needed to train at a minimum one thousand highly skilled IT specialists within the framework of the national digitalization project. «...All business processes of government agencies will be reviewed and digitized. ... We should establish contemporary centers of data processing which is able to give services to neighbor states», - President Kassym-Zhomart Tokayev marked.

In order to develop digital competencies in Kazakhstan, the state program «Digital Kazakhstan» has been elaborated, introduced from 2018 to 2022. One of the 5 functions of this program is the evolution of human assets, one of 12 purposeful indexes is the degree of the population’s digital literacy (%), which in 2022 should be 83%. It is necessary to mark that in accordance with the data for 2020, in case of the purposeful index of the program 80%, the Kazakhstan population’s degree of digital literacy increased by 2 percentage points compared to 2019 and amounted to 84.1%, that is, the program plan for this indicator was completed ahead of schedule (Karakozhaeva et al., 2022).

In 2021, the national project «Technological Breakthrough through digitalization, science and innovation» was approved. In this project, the persons responsible for developing activities for each industry are fixed. Also, the allocated funds are clearly spelled out in this project. The purpose of the national project is to be a single powerful country able to make solutions under efficient public management on the basis of credible data through the digital conversion of the country, and also providing the effective and secure usage of infrastructure in the digital epoch, rising the science contribution to the country’s social and economic growth implementation for 2021-2025.

The formulation of regional development currently used in Kazakhstan is recognized as having a big quantity of gaps as well as disagreements. Kazakhstan’s

view of regional policy shows several gaps. The prepared regional development plans and sectoral plans are measures capable of responding to incentives. In conclusion, these plans can reflect specific local priorities and comprehensively pave the way for the growth stages of the region. In some cases, there is no harmony between national and regional plans. Almost all plan-based initiatives are not used by partners because there is a lack of trust in some institutions. There are those who do not know about the availability of information on the regional business development map of Kazakhstan. It will be efficient to encourage the conceptions and complex tools of regional growth politics in order to develop pilot economical activities in Kazakhstan regions.

The main effects of digital transformation are considered at all levels of the social and economical system, the results and benefits of which we can see in table 1 below.

Table 1. Positive results and benefits of quantitative transformation in socio-economic systems.

The impact of digital transformation on the country as a whole		
A new source of GDP growth		
Positive net impact on the number of jobs		
Improving resource efficiency		
Direct impact on the public sector	Effects for businesses and organizations	Effects for consumers
Improving the efficiency of processes	Promote revenue growth related to other markets	The best price and the opportunity to buy the best goods and services
Reducing the possibility of abuse in obtaining public services	Improving the efficiency of internal processes	Increase the likelihood of using a previously unavailable product
Work on effective interaction with citizens and the private sector	The digital communication channel is designed to achieve the best possible workforce by	Get information about the most interesting employment opportunities
Identification and analysis of social tenders using big data	Increasing transparency and mutual interaction with the public sector	Simplification of access to public services through digital portals
<i>Note - obtained from the source [10] (2023).</i>		

Nowadays, digitalization of digital conversion in social and economic systems is able to make a positive influence on all countries around the world.

Currently, more than fifteen countries have been able to identify priority areas for their digital development by investing their main efforts and directions in national digitalization programs. Denmark, South Korea and New Zealand, China and Singapore are at the forefront of making effective use of these destinations. Through the program Internet Plus, China was able to combine digital India with its traditional methods to realize a smart economy in which Singapore is the driver and Canada is the ICT. South Korea has demonstrated human capital in the creative economy program, demonstrated the development of entrepreneurship and real results in other ICT industries, the Danish state is intensively accelerating efforts to digitalize specific sectors.

The significance in the program realization of the mentioned states lies in the

success, as well as in the possibility of defining categories for digital privatization. The improvement of conscious digitalization in the state's economic systems involves the development of several examples, the priority of what is the notification of their tenders in order to eliminate the identified inefficiencies.

Currently, technoparks have been established in Kazakhstan with the goal of business incubation. They do not work completely as they do not correspond to the quality standards as in developing countries. As a consequence of the mass transformation to digitalization, changes may occur in several sectors of our economy. Therefore, despite the troubles that have arisen, we must make efforts to bring Kazakhstan among the advanced technological countries.

Now our country must do their best in order to digitalize in the process of several societal spheres, including education, healthcare, revitalizing the national economy, strengthening public relations, and developing entrepreneurship, which requires proper leadership of its initiative (Kazakhstan – 2020).

In general, as declared in the Message of the State's Head, the growth of digitalizing will give other impulse to the progress of all other spheres. On this backdrop, the 3rd step of upgrade has opened up possibilities for the growth of a new sector being formed. The most important is to get into the 30 developed countries, it is necessary to increase the economic growth rate by 5 percent. At the same time, they consolidate priority areas in the Third Modernization by increasing the new growth model by 70 percent and ensuring mass employment of half of the population, activating the work of economic sectors to attract investment and increase exports. The main thing is that, according to the forecast, it is necessary to fully cover the fields of information technology and social spheres in the short term (Message 2025). This importance of shaping all spheres of life with the help of information technology can equally shape an innovative economy and competitiveness.

The prognosis of social and economic development of the Kazakhstan Republic as for the recent years imply for a upgrade foundation for the growth of economical fields:

- raising in labour efficiency;
- increasing export potential;
- carrying out technological modernization;
- investment promotion;
- innovative development, improvement of agricultural technology with consideration of scientific research of agriculture (agro-industrial complex);
- updating of equipment;
- growth of the agricultural complex;
- optimizing the work of governmental house building programmes;
- attracting modern technologies to the construction sector;
- attracting investments in the following areas;
- determination of the quality of work of enterprises, improvement of competitiveness;
- acceleration of digitalization (Duiskanova et al., 2020).

Meanwhile, based on the denoted indications in the direction, preliminary conditions have been prepared for the creation of works and the application in the right direction of the changes recognized as necessary. The application of technology from China, which has achieved some success in this digital technology, will be a good starting point for our country. It would be wise for qualified specialists to maximize their digital experience not in another country, but in our own.

We can call gender equality as one of the peculiarities of the region's social and economic system in the context of the digital economics in the country. This is connected with the fact that one of the most significant points of the universal focus of each state in the 21st century is the accomplishment of gender equality. Towards the growth of the Kazakhstan Republic, lots of attention is paid to this problem as gender equality can be the bases of the country's social and economic development. The initial steps to the market reforms have revealed the inequality of social and economic alterations in the status of men and women in society. This, from one side, could point out the fall of social programs and the social sector, from other side, rising in the need for labor (Duiskanova et al., 2019).

Owing to the development of the digital economic system in the Republic of Kazakhstan, firstly, it is feasible to raise the population's life quality and the competitive ability of the economy. In addition, in the conditions of the digital economy, it is necessary to create a modern regulatory framework for the promotion of personnel, intellectual, technological directions, and the introduction of digital technologies. It is needed to provide support to companies that are engaged in equipping with digital technologies. We should keep under control all information related to the country's digital information connected with the state's digital economy (Baymukhamedov, 2019). Currently, an in-depth study of such areas is proposed.

Global policies must be implemented with the participation of all stakeholders to ensure inclusive digital development outcomes. It also highlights the need to introduce new business models, policies and strategies to ensure the positive impact of digital development on sustainability and at the same time minimize its negative consequences (Report on the Digital Economy in 2024). The development of digital technologies should be assessed taking into account several important tasks: the need to reduce overall consumption and optimize the use of limited resources without compromising the prospects of future generations; the need to reduce carbon emissions and prevent catastrophic climate change; the need to turn the accumulation of waste associated with digitalization into an opportunity for recovery, recycling and reuse.

In the context of a pandemic, the digital transformation of the economy and society is relevant. And the problems of involving labor resources in the modernization of the economy are of particular importance. Digital technologies make it possible to build effective communications, new relationships between people. High-quality labor resources are the main factor of economic growth and in the context of a pandemic, the level of necessary professional skills is rapidly changing in the labor market. In this regard, it is necessary to prepare the younger generation - potential labor

resources for the digital future with appropriate knowledge and skills, as well as for a healthy lifestyle, which will undoubtedly allow the country to achieve success.

Conclusions and recommendations. Effective development of markets under the conditions of the digital economics is possible only with the availability of developed technologies, therefore, measures to stimulate it should be directed in two directions. The first are institutions; to make conditions for the growth of the digital economics, their reorganization and modernization are necessary. The other is technical infrastructure, the creation of which requires not only significant efforts, but also investments.

The following recommendations are given:

1. Widespread adoption of new concepts and technologies such as blockchain, artificial intelligence, big data and the Internet of Things

2. Development of telecommunication infrastructure, including broadband Internet access;

3. Improvement of customs and tax administration and transition to electronic declaration;

4. Implementation of Smart City components.

5. Artificial intelligence and machine learning, in particular, require large computing resources and special equipment

6. Digitalization has enormous potential to create environmental benefits. Thus, digital technologies can contribute to energy efficiency, and can also be used to reduce greenhouse gas emissions in the transport, construction, agricultural and energy sectors.

7. To solve the problem of the impact of digitalization on sustainable development, global consolidated solutions related to the development of a circular economy are needed.

8. Managing digital trends will require a change in our approach to digital literacy and education.

Digitalization of quality management using artificial intelligence and data analytics is a key factor for improving production efficiency and ensuring a high level of product quality. By overcoming challenges and using new technologies, companies can achieve significant success in quality management and strengthen their market positions.

Thus, it is necessary to strengthen investment activity in the field of the digital economy, stimulated by appropriate government policy, and further digitalization of business processes in companies is also necessary, which will entail an increase in efficiency, reduction of time and cost costs.

The issues of the forming of «hotbeds» or «growth points» of knowledge-intensive production of our economy show that it is needed to differentiate and justify the priorities of regional growth on the basis of the maximum possible usage of leading digital technologies. To increase digital competence in the regions of Kazakhstan, the following mechanisms can be proposed and work with maximum effort: first, it is needed to create centers for confirming digital competence, to develop work under the implementation of a new method of managing vocational education in

the regions having the organization of sectoral functionality. In order to establish all this, it is necessary to open supervisory boards for training personnel in economic sectors, as well as in digital industries, introduce digital technologies into the group training system, as well as introduce artificial intelligence into training practice. The domestic project, taken as a foundation, requires a positive approach of the social and economical beneficial digitizing impacts.

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