The main indicators of the state program «Digital Kazakhstan»

Mukanov Askar

1 1st year Ph.D. candidate at the Department of Economics and International business; Karaganda Buketov University; Republic of Kazakhstan

Abstract.
Digitalization has become an essential aspect of daily life in Kazakhstan, and it is viewed as a critical strategy for promoting and speeding up economic growth in the country. The program "Digital Kazakhstan" focuses on the industrial trajectory of the digital transformation of the economy. The digital transformation involves incorporating digitalization into existing business models and structures to enhance their economic performance in a global market. Digital transformation has had a profound impact not only on the structures of public administration, medicine, and education, but also on numerous large and medium-sized entities within Kazakhstan's business sector. These are a number of enterprises of industry, energy, transport, logistics, agriculture, financial technologies and other areas of entrepreneurial activity. The potential of digitalization offers significant opportunities for the business environment, including access to new markets and channels, innovative technologies, and ideas, and the ability to increase productivity and utilize technical resources more efficiently. Therefore, digitalization can be considered as a new evolutionary step in the industrial transformation of the Kazakhstan economy. The establishment of digital transformation leads to a new era or industrial transformation, allowing businesses to track their activities, increase productivity, expand business strategies and interact with customers in the digital world. In the article, the authors analyze how digitalization affects economic indicators and serves as a measure to evaluate its effectiveness in driving technological advancements in different sectors of the economy.

Keywords:
digitalization
transformation
indicators
business environment
efficiency
industrial transformation
digital transformation
economic entity
The current trends in the global economy are characterized by instability, uncertainty, and ambiguity due to the rapid integration of innovative technological ideas in its industrial segment. In such circumstances, the economies of nations that can swiftly and adeptly adapt to fluctuating market conditions gain a competitive edge. This is achieved through an industry structure that can skillfully manage resources and nimbly navigate the selection of viable and efficient business strategies. Based on the harsh conditions of the current global market, ensuring the strategic maneuverability of industry business entities of any economy in the world cannot do without digitalization of managerial, technological and communication processes today. Therefore, digital transformation in the economy of Kazakhstan is considered as a key program, the implementation of which will increase its industry potential, capable of providing a quantitative increase in gross domestic product due to a new level of a number of key competitive advantages of business entities in the external economic environment. Presently, the changes in economic indicators - whether they show growth or decline - are more indicative of the internal dynamics of industry development. The objectives of the "Digital Kazakhstan" state program in the economy are not solely focused on achieving quantitative growth, but rather on achieving a balance of indicators that are capable of evaluating competitive positions within the global industry structure. This approach follows from the fact that the Digital Kazakhstan program in its priorities is aimed at implementing projects in which the extensive path of development of business entities is changing to the path of intensification in the current sectoral economic structure of the country. The economic indicators of the state program "Digital Kazakhstan" are considered at the stage of its systematic implementation as a quantitative contribution to the support of a new industrial breakthrough. The article discusses the importance of the Digital Kazakhstan program and how evaluating its success through economic indicators can provide insights into the program's impact on the country's economic development and competitiveness in the global economy.
Kazakhstan's digitalization of its economy is a necessary strategic move to enhance competitiveness and ensure long-term growth in the global economic system. Matteo Rizzi's opinion that digitalization serves as the engine of progress and is essential for achieving sustainable growth is undoubtedly accurate, emphasizing the crucial role of proper implementation of digital technologies in driving progress and development. [1]. According to N.V. Kushzhano and U.Zh. Aliyev, the State Program of Digitalization of the Economy of Kazakhstan addresses tasks of a global nature, as it aims to tap into a new economic potential created by technological advancements that define today's economy. In other words, the program recognizes the transformative power of technology and aims to leverage it to enhance Kazakhstan's economic competitiveness and sustainability in the global market. [2, p. 332]. From the very beginning, of the State Program "Digital Kazakhstan", the key strategic objectives of its implementation were to solve social problems and improve the quality of life of the population through the use of digital technologies to accelerate the pace of development of the country's economy. The economic objectives of the digital economy program in Kazakhstan were informed by rigorous analysis of analytical data and projections by both domestic and foreign researchers, and were not formed spontaneously. M.A. Polozhin's research on the European digital economy identified it as a multifaceted socio-economic phenomenon that has become a defining feature of the modern world. [3, p. 65]. A number of foreign researchers such as R. Inclan, M. Timmer, and B. van Ark have emphasized the significant role of the digital economy and its potential to boost productivity and foster economic growth through efficient investment mechanisms in information and communication technologies [4]. Kazakhstani scientists and analysts such as M.F. Baymukhamedov, G.S. Bamukhamedov, K.S. Sapargaliyeva, Z.K. Ayupova, D.U. Kusainov, A.A., and V. Smirnova played a crucial role in the preparation and implementation of the State Program "Digital Kazakhstan". The results of the implementation of the digital economy program in Kazakhstan were also devoted to the conclusions and analytical material of international experts, including V. Dirker, A. Turpits [9].
and Kazakhstani experts, among whom M. Abdrakhmanov, K. Akhmetov [10] and expert analysts of the non-profit organization "INTEGRITY ASTANA". Indicators for the implementation of the Kazakhstan digital economy program have become the object of study at the interstate level, the subject of discussion of the largest international forum of the EAEU member states "Digital Almaty: the digital future of the global economy" in 2020 [11].

The analysis of the progress and execution of Kazakhstan's digital economy by local and international scholars, analysts, and professionals is currently a topic of investigation. The extensive body of scientific literature, analysis, and statistics regarding the economic achievements and future potential of Kazakhstan's digital economy, as outlined by the "Digital Kazakhstan" state program, attests to the widespread academic interest in the subject.

The development of the analytical material presented in the article was guided by a six-step process that employed a comprehensive and iterative methodology: the process of analyzing the implementation of the Digital Kazakhstan program involves defining the scope, gathering information from reputable sources, validating data accuracy against official statistical publications and government reports, analyzing program indicators, triangulating data, and presenting the findings. The information was sourced from both primary and secondary sources. Primary sources included official resources from relevant ministries and departments. Secondary sources included periodic journals such as "Sayasat" and "Alpari," as well as electronic databases of scientific publications on the internet.

Now Kazakhstan has integrated fully into the global economy as a participant in the world market's process of globalization. The implementation of the Digital Kazakhstan program through significant financial investments has been instrumental in strengthening Kazakhstan's economic position in the global economic community. At the beginning of the project implementation, the evident issue of an innovative lag in several key sectors of the Kazakh economy had adverse effects on the competitiveness of large and medium-sized businesses in the industry. This critical situation led to
the fact that enterprises of many sectors of the economy important for the economy of Kazakhstan did not arouse investment interest. Considering the expert assessments given at the World Economic Forum in 2017, it can be noted that the indicators of "innovative opportunities" moved Kazakhstan to 87th place in the rating, and according to the index of the World Intellectual Property Organization, the republic took 74th place in the world rating [12]. The implementation of the Digital Kazakhstan program in 2018 resulted in significant improvement in the Global Cybersecurity Index, elevating the republic's ranking from 82nd to 40th place.

This gives grounds to assert that already at the initial stage of the implementation of the Digital Kazakhstan program, success was ensured through the use of an effective model of its implementation, which included the following areas in the economy:

- creation of the "Digital Silk Road", which allows to support the expansion of digital infrastructure;
- development of activities in the field of information support and awareness of business entities in ensuring their competitiveness;
- creation of a digital government to ensure openness and transparency in the provision of public services;
- providing access to new technologies by improving digital literacy of the population and education at all levels [13].

The implementation mechanism of "Digital Kazakhstan" aims to remove obstacles that impede sectoral economic progress.

The main problems constraining the digital transformation processes of the sectoral infrastructure of the economy of Kazakhstan were:

- limited resource of qualified personnel;
- lack of investment funds for industry digitalization;
- lack of suppliers who have the necessary expertise and resources to support digital transformation in certain sectors of the economy;
- the inadequate infrastructure hinders the complete transformation of individual businesses in the industry;
- underestimation by business entities of the benefits of digitalization.
REGIONAL ECONOMY

- the implementation of standards, norms, and certifications creates obstacles or hindrances;
- insufficient cybersecurity creates problems like data breaches and leaks that threaten corporate data confidentiality.

Upon closer examination, it becomes evident that the mining industry had an insufficient strategic orientation towards digitalization. First of all, digital transformation may not have been implemented in some business entities due to a lack of available providers for solutions and persistently high cybersecurity issues.

The woodworking industry in Kazakhstan faces similar challenges as the mining industry, while also lacking awareness of potential future benefits from collaboration with other economic entities.

In mechanical engineering, the digital transformation was constrained by financial problems, uncertainty of top management, and cybersecurity problems, but also certification problems, lack of standards and norms.

In metallurgy, in addition to these barriers, as in no other industry, there was a shortage of personnel, which required state support in training and training of specialists.

Insufficient investment and management resistance are hindering the adoption of digitalization in light industry.

Highlighting the industry barriers in the digital transformation of individual sectors of the economy, it becomes obvious that it is necessary to reformat the positions of industry business entities that had to qualitatively and quantitatively change the economic indicators that determine the dynamics and trends of their changes. This involved significant efforts in overcoming intra-industry barriers, improving the investment climate, revising business entities' strategic directions, and changing societal attitudes.

Considering that the low level of labor productivity and production efficiency in a number of sectors of the economy of Kazakhstan makes the quantitative growth of the main economic indicators of industry business entities noticeable only on the scale of the microenvironment. The objectives of digitalizing the economy were broader in scope, focused on enhancing the competitive standing of entities in the global
Therefore, a more objective approach to evaluating the impact of digitalization on Kazakhstan's economy is to analyze economic indicators, such as the country's economic potential and position in the global economy, through ratings by reputable international agencies.

In September 2022, according to the results of the IMD-2022 digital competitiveness rating, Kazakhstan took 36th place ahead of Slovenia (37th place), Portugal (38th place), Italy (39th place), Poland (46th place) and Turkey (54th place). This success was a reflection of overcoming a number of cardinal problems hindering the digital transformation of the subjects of Kazakhstan's sectoral economy. International experts emphasized the need to mitigate cybersecurity risks and safeguard confidentiality by preventing information leaks [14].

Another priority achievement was the improvement of the position on the "Training and education" sub-factor, according to which Kazakhstan took the first place, ahead of such countries as Hong Kong (2nd place) and Canada (3rd place). It can be said that the growth of economic indicators in the sectoral context was the result of the active implementation of training programs for specialists, including managers and top managers of strategic management.

It can be said that the growth of economic indicators in the sectoral context was the result of the active implementation of training programs for specialists, including managers and top managers of strategic management. However, the success in the positions of the "Knowledge" and "Technology" rating is overshadowed by the low prospects of the "Readiness for the Future" factor. The low position on this factor in the assessment of international experts was influenced by the sub-factor "IT Integration", which currently does not have sufficient legal protection of confidentiality.

The low position on this factor in the assessment of international experts was influenced by the sub-factor "IT Integration", which currently does not have sufficient legal protection of confidentiality. This confirms the qualitative changes in the industry environment and the impact of digital transformation on the quantitative economic indicators of the subjects of the industry segment in Kazakhstan.
Digitalization covers the solution of a wide range of economic problems in the sectoral structure of the Kazakh economy and is aimed at increasing the gross domestic product in the industrial sector, in which the average annual rate should be at the level of 4.5-5.0% and provide 70% of GDP growth. The economic costs of implementing the projects of the Digital Kazakhstan program in the context of industry will amount to 1.7-2.2 trillion tenge. The plan aims to address cost reduction, labor productivity, energy efficiency, employment, and generate 300k jobs, while also increasing tax revenues to the budget by more than 100 billion tenge [15].

The "Digital Kazakhstan" program's target indicators include economic metrics such as sectoral productivity growth, investment attraction volume, and job creation. According to statistics, labor productivity growth in the "Mining industry and quarrying" in 2022 increased by 38.9% compared to the indicator of 2016. In the section "Transport and warehousing" in 2022, compared with the indicator of 2016, productivity increased by 21.2%. The industry segment of "Agriculture, Forestry, and Fisheries" had the highest labor productivity increase in 2022, with a reported 82% growth from the 2016 indicator. The "manufacturing industry" experienced a breakthrough in labor productivity with a 42.0% increase in 2022 compared to 2016. However, given the low level of the industry indicator of labor productivity, we can only note the positive shifts in the dynamics of this economic indicator. In 2022, the indicator reflecting the growth of the share of e-commerce improved, which increased by 2.2% compared to 2016. In 2022, the annual volume of transit traffic increased, which amounted to 1,498 thousand. DEF and exceeded the volume of 2021 by 10.0%, and the volume of traffic in 2018 by 2.8 times. At the end of 2022, the growth in the export volume of food increased by 69% compared to the same indicator in 2017. Despite various growth rates and the impact of the pandemic, the state program "Digital Kazakhstan" successfully maintained positive growth and sustained economic indicators as target indicators throughout its implementation and in 2022. [16].

The state program "Digital Kazakhstan" serves as a means of state assistance to elevate technological and innovative
business development in critical sectors such as fuel and energy, agriculture, and manufacturing, with a focus on providing support for innovation. Despite the fact that the actualization of local digitalization tasks echoes the Kazakhstan program of industrial and innovative development, the models and the mechanism of their implementation are different. The state program "Digital Kazakhstan" not only fosters manufacturing industry growth through tax incentives, technology attraction, and support but also transforms the social, economic, and informational environment. Key indicators for evaluating the scale of target priorities in "Digital Kazakhstan" include accessible communication to government information resources, technological potential within specific sectors, and the ability to exchange information, with virtual connections currently accounting for 80% of transmission.

Digitalization has not only provided investors with incentives and benefits but also facilitated online access to digitized information on all mineral resources in Kazakhstan, thereby attracting investments to various economic sectors. The transition to online operations for license issuance, tender applications, agreement signings, and geological information provision not only reduces conciliation time but also eradicates bureaucratic delays and instances of corruption.

The information capabilities achieved as a result of digitalization achievements already allow conducting electronic auctions for mineral resources; this will allow attracting 96 billion dollars of foreign investment by 2030. However, investments in the sphere of subsoil use have always been a priority investment segment, which cannot be said about the manufacturing industry. However, investments in the sphere of subsoil use have always been a priority investment segment, which cannot be said about the manufacturing industry. According to statistics, at the beginning of 2023, about 70% of business entities operating in the manufacturing industry have an extremely low level of digitalization, a low level of digitalization, 25% of the total have an average level of digitalization and 5% digitalization has almost not affected. The analysis of the level of digitalization development in the industry aspect, conducted by QazIndustry
in 2022, showed that a low level of digitalization was established among business entities carrying out their economic activities in the construction industry, in the pharmaceutical industry, in the energy industry, in the chemical industry. Despite government reimbursements of up to 300 million tenge to businesses for implementing automated management systems and up to 40% funding for new advanced technological tools under the "Digital Kazakhstan" program, the low assessment of digitalization by businesses is impeding the growth of industry segments in the Kazakhstani economy. Today, at the government level, there is a question about the growth of cost compensation for business entities for consulting in the field of IT technologies [17, c. 19].

Increasing compensation for the implementation of innovative projects and information technologies could serve as a crucial incentive for improving the low level of digitalization and technology adoption in the Kazakhstan agricultural sector. The consequences of the brake in the development of digitalization of the agricultural complex are extremely depressing, since they do not allow minimizing climate risks, solving problems of irrational use of land resources, etc. The implementation of digital systems in the management and technological processes of crop production and animal husbandry can minimize agricultural risks and create efficient agricultural production in the Kazakhstan agricultural sector. The energy crisis in agricultural regions presents a significant obstacle to the adoption of digitalization in the Kazakhstan agricultural sector, despite the potential benefits and understanding of its importance. In 2021, although there was breakthrough green economy projects, renewable energy sources accounted for only 5% of the energy consumption in the Kazakhstan agricultural sector. [18].

Considering the problems associated with digitalization in various industry segments of the Kazakh economy, we can say that the stalling of her idea is due to the lack of an integrated approach to solving problems. To be effective, digitalization efforts should be region-specific and comprehensive, taking into account the economic segments and particularities of each region.

The impact of "Digital Kazakhstan" on the Kazakhstani
Regional Economy

economy has been significant, with notable successes observed in the mining, oil and gas, and other sectoral segments [19].

The mining and metallurgical industry stands out as a crucial sector for leveraging digitalization to enhance production efficiency. Over the last five years, beginning in 2018, the mining sector's contribution to Kazakhstan's GDP has remained in the range of 12.0–12.2 percent. The mining industry in Kazakhstan was able to boost its contribution to the country's GDP through digital transformation, as the industry previously had lower labor productivity than foreign counterparts due to a lack of advanced technological equipment. Digital transformation in the mining sector of the Kazakh economy is expected to yield up to $9 billion in economic benefits, accounting for 36% of the total industry impact projected for the Digital Kazakhstan program, which is estimated at $25 billion. However, at the time of the adoption of the Digital Kazakhstan program, the mining segment did not have sufficient competitive potential. Weak technological equipment was established and confirmed in 2017 by experts and specialists of the Ministry of Investment and Development of the Republic of Kazakhstan. The study revealed that a mere 21% of deposits in the country had modern equipment and established networks, while a significant 56% of industry businesses lacked efficient equipment and had no networks at all. Despite the broad program of industrial and innovative development, its goals in the industry were poorly achievable, and no significant changes were achieved in the formation of a competitive industry. Over a period of five years, a methodical execution of mining sector digitalization was conducted, leading to the realization of promising projects such as Smart Quarry and incorporation of smart intelligence elements in partnership with ERG and Russian firm Redmadrobot Data Lab, among others. Several prominent companies in the industry, such as Aluminum Kazakhstan, Sarbay, Kurzhunkul mine management of SSGPO JSC, and the Vostochny coal mine, have been able to achieve sustainable development initiative made it possible [20].

The current focus of the "Digital Kazakhstan" state program is on achieving specific economic targets for various sectors of the economy in order to drive growth and
development. Although the pandemic has hindered the progress of digitalization goals, adjustments have been made to long-term plans up to 2030 to address the challenges and continue moving towards the set objectives. The achievement of the objectives set forth in the "Digital Kazakhstan" state program will involve the creation of seven "model digital factories" through the establishment of advanced technological business entities. The attainment of economic targets set in the assessment of the effectiveness of the "Digital Kazakhstan" program will rely on the establishment of innovative, high-tech productions with strong competitive potential in the global market, even during the initial stages of their development.

The development of the digital economy in Kazakhstan includes the transformation of existing business entities and the creation of new high-tech industries. This strategy acknowledges the need for industrial modernization in both established sectors that currently contribute significantly to the country's GDP and emerging industries that can create or take over new niches in the global economy. The key economic indicator of the effectiveness of the implementation of the Digital Kazakhstan program in the economy should be the achievement of the economic effect of its implementation in the amount of 25 billion US dollars. At present, the evaluation of progress in sector-specific projects is hindered by the fact that most of the significant obstacles to digital transformation across various industry segments in Kazakhstan have already been removed. The establishment of a successful mechanism for personnel support in technological re-equipment has enabled Kazakhstan businesses to significantly improve their competitive advantages in the global market. A qualitative assessment of competitive positions in the IMD-2022 digital competitiveness rating, established by international experts in September 2022, shows that economic achievements and the growth of economic indicators of the Kazakhstan industry segment have growth trends that reflect the strengthening of the positions of business entities in the global economic market. At the present stage of the planned implementation of the large-scale and multi-year implementation of the Digital Kazakhstan program, digital transformation processes are becoming more
REGIONAL ECONOMY

and more active, allowing to improving the indicators of labor productivity growth, increasing the level of capital and energy availability, contributing to the renewal of fixed assets, etc. While the Digital Kazakhstan program is achieving progress in several areas, it remains focused on technological and economic priorities that enable industry businesses to compete effectively in the global market.

References:
[11] In two years of implementing state program „Digital Kazakhstan“. 32.8 billion tenge attracted to innovation ecosystem. 2020. 4 February. URL: https://eur-lex.europa.eu/LexUriServ/LexUriServ. do?uri=COM:
REGIONAL ECONOMY


[18] Tuleubekova A. Tokayev on digitalization: if we talk about problems, we will simply fall behind. 24.01.2020. URL: https://www.zakon.kz/5004191-tokaev-o-tsifrovizatsii-esli-budem.html (date of application 14.03. 2023).
