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DIGITAL ECONOMY IN KAZAKHSTAN: ANALYSIS OF THE CURRENT STATE AND WAYS OF DEVELOPMENT

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ABSTRACT. In recent years, Kazakhstan has made significant progress in the advancement of digital economy, positioning itself as a promising player in the global IT sector. However, despite notable achievements, the industry faces certain challenges.

The main purpose of this study is to analyze the current state of the digital economy in Kazakhstan, identify the main barriers to its development, and propose measures to overcome them. The research examines the problems and causes contributing to the insufficient development of the IT market in Kazakhstan. Through a comprehensive analysis of the market's state and a survey targeting IT market representatives, the study identifies various factors hindering entrepreneurial activity within the market. These factors encompass legal, infrastructural, and other constraints to growth. The research outcomes provide valuable insights that can serve as a foundation for regulating the information technology market. They offer a basis for the formulation of initiatives aimed at stimulating entrepreneurial activity and enhancing its infrastructure.

KEYWORDS: digital economy, information and communication technology, entrepreneurship, digitalization, Kazakhstan.

ҚАЗАҚСТАНДАҒЫ ЦИФРЛЫҚ ЭКОНОМИКА: АҒЫМДАҒЫ ЖАҒДАЙДЫ ТАЛДАУ ЖӘНЕ ДАМУ ЖОЛДАРЫ

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АҢДАТПА. Соңғы жылдары Қазақстан цифрлық экономиканы дамытуда елеулі жетістіктерге қол жеткізіп, елді әлемдік АТ-секторында перспективалы ойыншы ретінде көрсете білді. Алайда, айтарлықтай жетістіктерге қарамастан, сала әлі де белгілі бір қиындықтарға тап болады.

Бұл зерттеудің негізгі мақсаты – Қазақстандағы цифрлық экономиканың ағымдағы жай-күйіне талдау жүргізу, оның даму жолындағы негізгі кедергілерді анықтау және оларды еңсеру жөнінде шаралар ұсыну. Осы зерттеу барысында Қазақстанда АТ-нарығының жеткіліксіз дамуына ықпал ететін проблемалар мен себептер қарастырылады. Нарықтың жай-күйін жан-жақты талдау және АТ-нарық өкілдерінің сауалнамасы негізінде зерттеу барысында зерттелетін нарықтағы төмен кәсіпкерлік белсенділіктің себептері және нарықтағы кәсіпкерлік қызметке кедергі келтіретін түрлі факторлар анықталды. Бұл факторларға құқықтық, инфрақұрылымдық және басқа шектеулері жатады. Зерттеу нәтижелері ақпараттық технологиялар нарығын реттеуге негіз бола алатын құнды ақпарат береді. Олар кәсіпкерлік қызметті ынталандыруға және оның инфрақұрылымын жақсартуға бағытталған бастамаларды әзірлеуге негіз бола алады.

ТҮЙІН СӨЗДЕР: цифрлық экономика, ақпараттық-коммуникациялық технологиялар, кәсіпкерлік, цифрландыру, Қазақстан.

ЦИФРОВАЯ ЭКОНОМИКА В КАЗАХСТАНЕ: АНАЛИЗ ТЕКУЩЕГО СОСТОЯНИЯ И ПУТИ РАЗВИТИЯ

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АННОТАЦИЯ. За последние годы Казахстан добился значительных успехов в развитии цифровой экономики, позиционируя себя как перспективного игрока в мировом ИТ-секторе. Однако, несмотря на значительные достижения, отрасль все же сталкивается с определенными проблемами.

Основная цель данного исследования – провести анализ текущего состояния цифровой экономики в Казахстане, выявить основные барьеры на пути ее развития и предложить меры по их преодолению. В ходе данного исследования рассматриваются проблемы и причины, способствующие недостаточному развитию ИТ-рынка в Казахстане. На основе всестороннего анализа состояния рынка и опроса представителей ИТ-рынка в ходе исследования выявлены причины низкой предпринимательской активности на исследуемом рынке и различные факторы, препятствующие предпринимательской деятельности на рынке. Эти факторы включают правовые, инфраструктурные и другие ограничения для роста. Результаты исследования дают ценную информацию, которая может послужить основой для регулирования рынка информационных технологий. Они могут служить основой для разработки инициатив, направленных на стимулирование предпринимательской деятельности и улучшение ее инфраструктуры.

КЛЮЧЕВЫЕ СЛОВА: цифровая экономика, информационно-коммуникационные технологии, предпринимательство, цифровизация, Казахстан.

INTRODUCTION. Over the past few decades, Kazakhstan has been actively developing the information technology (IT) industry, striving for a modern digital economy and an innovative society. This is characterized primarily by the emergence of the startup ecosystem, the development of innovative IT companies, the attraction of foreign investments, the introduction of new technologies in various spheres of life and the strengthening of the country's position on the world stage in the field of digital development.

Since the 2000s, the Government of Kazakhstan has been actively supporting the development of information technology, implementing various strategies and programs aimed at creating a favorable environment for innovation. These efforts encompass stimulating investments in IT projects, developing high-tech clusters, providing access to the broadband Internet and developing digital educational infrastructure.

The advancement of information technologies is determined several conditions and factors, such as the increasing significance of computer services in the global market and the provision of support to domestic enterprises and companies engaged in the production and export of IT-services. These efforts are aimed at enhancing the competitiveness of the industry.

One of the most notable achievements in the field of IT in Kazakhstan was the establishment of the cutting-edge IT park "Astana Hub" in the nation's capital. Serving as a hub for startups, innovative companies and investors, it has facilitated the inflow of capital into the field of high technology domain [1]. Moreover, the state export support mechanism, represented by entities such as the Export Credit Agency of Kazakhstan "KazakhExport", the Entrepreneurship Development Fund "DAMU", and the Kazakhstan Industry and Export Center "QazIndustry" remains operational, further bolstering the industry.

Nevertheless, despite the obvious positive, as pointed out by experts, the problems within the digital economy are not diminishing.

Several challenges confront the development of IT sector enterprises in the Kazakhstan, notably the necessity for financial support. Specifically, difficulties arise in accessing government grants for IT projects, alongside limited availability of bank loans due to high interest rates, and insufficient government support backing for the IT sector [2].

Moreover, E. Vechkinzova identified several challenges that have accumulated within the IT sector of Kazakhstan, including limited market capacity, infrastructural isolation, inefficiencies in the personnel training system leading to the outflow of qualified specialists, insufficient competitiveness, and a constrained domestic market with limited expansion into foreign markets, among others [3].

Unfortunately, if the factors driving industry expansion are clear, then the factors impeding growth may not be as readily apparent.

Analyzing the current state of the digital economy and identifying ways for its development will facilitate the identification of measures that can be taken to strengthen the IT sector and achieve strategic goals. This article aims to analyze the current state of the digital economy in Kazakhstan and propose strategies for its development.

The high potential of the digital economy and information technology was recognized by numerous business leaders and innovators, consultants and journalists, researchers and authors.

The significant components of the digital economy, emphasizing the role of information technology in its evolution were highlighted in the research of Luyanda Dube Williams [4]. The author discusses the technological advancements that have shaped the digital economy, including the Internet of Things, big data utilization, automation, and robotics. He emphasizes the concept of digital affordances, which are the actions individuals or organizations can undertake using digital systems within their operational context.

The research conducted by Dr. Kumar and Dr. Sangtani highlights the significant impact of advanced digital technologies on various sectors, emphasizing the benefits of digital transformation in business strategies. It also touches upon the challenges organizations may encounter when implementing digital transformation initiatives, emphasizing the need for strategic planning and integration to drive success in the digital era [5].

Enterprises must modify their business models to sustain competitiveness. To effectively navigate this digital landscape, businesses are encouraged to analyze their current business processes, identify areas for improvement, set strategic goals, and use appropriate technologies [6]. Companies need to constantly improve their strategies to maintain competitiveness in a dynamic digital economy. To stimulate digital transformation and achieve sustainable economic development, a comprehensive approach involving collaboration among government, businesses, and citizens is imperative [7]. Creating a robust digital transformation strategy is crucial for businesses to effectively navigate the challenges of incorporating digital technologies into their operations. Embracing digital tools can increase sales, enhance productivity, foster innovation, and improve customer interaction. Upgrading the skills of current employees and attracting tech-savvy professionals are vital steps in adapting to these technological changes [8].

S. Barlybayeva also underscores the significance of human capital investments in the information age, as well as the transformative effects of new communication technologies on traditional economies, social activities, and individual lifestyles [9].

Baigelova highlights the pivotal role of digitalization in fostering human capital development as a key factor in enhancing competitiveness and driving economic growth in the Republic of Kazakhstan. She underscores

the need for educational reforms aligned with contemporary demands and highlights the transformative role of digital technologies in reshaping the economy. Baigelova asserts that sustainable economic growth and global competitiveness are unattainable without the advancement of human capital. She advocates for enhancing skills in digital technologies, restructuring the education system, and fostering digital literacy to adapt to the evolving labor market [10].

Currently, issues related to the analysis of the digital economy in Kazakhstan and the evaluation of IT companies' effectiveness are properly considered in scientific papers written by local scientists.

The implementation of the Digital Kazakhstan State Program has led to significant economic impacts, with sectors like transportation, healthcare, education, and mining showing promising results in implementing of digital technologies. Overall, digitalization within Kazakhstan's industrial landscape is regarded as a pivotal driver of economic expansion, enhancing efficiency, ensuring safety, and creating new income sources through innovative business models and customized products [11].

In their study, Z. Kenzhebaeva, A. Toiganbayeva delve into Kazakhstan's economic shift towards digitalization, underlining the importance of integrating ICT across all spheres of public life to foster a digital economy. They highlight Smart City initiative in Kazakhstan as an example of adopting digital technologies to improve urban services and overall quality of life. Furthermore, the authors outline the goals of digitalization, including cost savings, improved decision-making processes, and reduced crime rates [12].

The research provided by A. Kireyeva and coauthors aims to assess the influence of ICT on economic growth in various regions of Kazakhstan. The findings revealed differences in the adoption and development of ICT across regions, with less developed areas lagging in Internet usage. The influence of economic factors, such as currency devaluation and changes in technology usage on economic growth is emphasized [13].

The state of enterprise innovation activity in Kazakhstan, as well as effective innovation management, holds significance for socio-economic development. For instance, key indicators of innovative activity, such as R&D expenditure, number of enterprises engaged in R&D, and employee involvement in R&D. Moreover, the state's involvement in fostering innovative economic advancement, encompassing initiatives implemented by foreign nations and Kazakhstan alike, holds equal importance. It is imperative to provide instruction on commercialization, cultivate human resources, and extend financial backing for the commercialization of technologies. Various financial institutions in Kazakhstan are notable for their contribution to financing innovative projects. The researchers suggest measures such as increasing microcredits, developing equity financing tools and promoting corporate venture capital to support innovation in Kazakh enterprises [14].

Another study made by Tagay and colleagues demonstrates a method to assess the level of digital technology transformation in the context of innovative growth. The authors underscore the significance of digital technologies in facilitating trade among the member states of the Eurasian Economic Union (EAEU) and highlights the need for specialized regulations to stimulate the development of digital trade ecosystems [15].

Alternatively, organizing a regional financial mechanism involving social and entrepreneurial corporations could be considered [16].

Digitalization exerts influence on various facets including GDP growth, venture financing of digital projects, and the labor market. Leveraging crowdfunding platforms becomes imperative to draw private investment towards digital economy development. Competent regulation within the IT domain, robust infrastructure, national competence centers, and digital platforms are essential components of the digital economy framework. Additionally, it's crucial to acknowledge and address challenges and risks such as cybersecurity threats and potential unemployment resulting from automation [17].

Furthermore, it is essential to adapt Kazakhstan's strategy by crafting a new digitalization program and identifying priority areas, considering the nation's strengths and weaknesses [18].

Hence, Agumbayeva and Abdirov explore various perspectives on industrialization, emphasize the need for new industrialization

strategies to modernize the economy, and advocate for continuous expansion of the IT and telecommunications sector market [19].

Alibekova and her coauthors also analyzed Kazakhstan's digital indicators by examining domestic statistics and international indices like the Global Innovation Index and the ICT Development Index [20]. Their findings revealed that despite endeavors toward digitalization, the digital economy's contribution to Kazakhstan's economy has not augmented; rather, it has diminished. Based on the research presented, the main factors are:

- access to digital technologies;
- favorable business environment;
- protection of minority investors, potentially attracting foreign investment;
- developing ICT infrastructure;
- supporting digitalization efforts.

And the barriers are:

- challenges in developing a skilled workforce for the ICT industry;
- delays in innovation linkages, impacting its ability to collaborate in the digital ecosystem;
- limited venture capital deals, hindering innovation within the digital sector;
- knowledge and technology outputs, as well as creative outputs;
- difficulties in e-participation.

Hypothesis: The development of the digital economy in Kazakhstan is significantly influenced by the level of digital infrastructure, government policies, and the digital literacy of the population, which together determine the effectiveness of digital transformation initiatives and economic growth.

Research questions:

1. What is the current state of digital economy in Kazakhstan?

2. How do government policies and initiatives support the development of the digital economy in Kazakhstan?

MATERIALS AND METHODS OF RESEARCH. As part of the research, an integrated approach was employed, encompassing various scientific research methods such as comparative and statistical analyses of secondary data. The investigation into the digital economy entailed a thorough study of the evolution of the IT industry in the Republic of Kazakhstan and analyzing key performance indicators thereof. Furthermore, a thorough examination was conducted to identify barriers hindering the development of the digital economy. To formulate recommendations for enhancing measures aimed to support and stimulate the IT market in Kazakhstan, an analysis of existing state-supported initiatives and instruments for businesses within the field of study was undertaken.

The research drew upon a diverse array of information sources, including regulatory statutes of the Republic of Kazakhstan concerning digitalization, official datasets from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan [21], export indicators from the National Bank of the Republic of Kazakhstan [22], data sourced from foreign and international IT associations, ratings compiled by esteemed analytical agencies.

As part of the employed methodology, data spanning from 2021 to 2022 served as the primary focus, while an expanded set of indicators was utilized covering the period from 2018 to 2022.

The analytical approach facilitated the formulation of a comprehensive understanding of the current state of the digital economy in the Republic of Kazakhstan.

Additionally, a survey was conducted with the participation of 74 companies representing the IT market. These companies were identified based on the following criteria: a) engagement in activities generating regular market revenue; b) demonstrated expertise in IT products, services, or solutions; c) innovation in technology development or application; d) market presence and recognition within the IT industry; e) contribution to the advancement of the digital economy.

This survey was undertaken to gather the most reliable information into the prevailing circumstances within the industry directly from members of the business community. The survey results serve as foundational data for this study. The information obtained as part of the survey will enable to adjust and further improve work in various areas such as export, import substitution, human capital, and government support.

RESULTS AND THEIR DISCUSSION. According to the World Bank, Kazakhstan has maintained an average annual GDP growth rate of 3.7% in recent years. Concurrently, the ICT market has exhibited a growth rate of

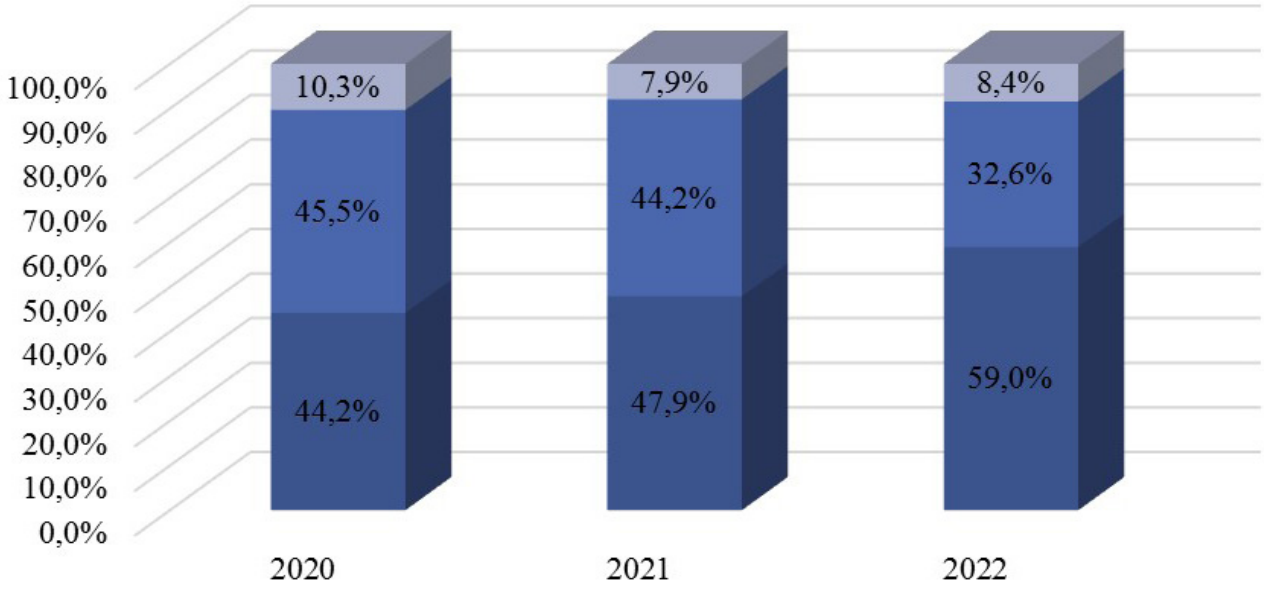

Figure 1 – The structure of the IT market in Kazakhstan
Note 1 – Compiled by the authors based on data from the source [21]
Note 2 – At the time of writing, statistics for the years 2023 and 2024 were not available.

approximately 10% during the period spanning from 2018 to 2022. This trend primarily stems from the significant surge in demand for remote work formats, alongside the expansion of digital educational and entertainment services, which gained widespread adoption amid the COVID-19 pandemic [23].

Currently, the information technology sector of Kazakhstan is experiencing comprehensive development. From 2018 to 2022, there has been a stable growth in the production and sale of goods and services within the digital economy. By the end of 2022, the market volume reached 1,655.4 billion tenge, marking a 3.9% increase compared to the preceding year. Notably, the IT market's share of the country's total GDP in 2022 stood at 2%. However, despite the annual growth in volume, there exists a negative trend regarding the sector's share in the national GDP. The share of the volume of production and sale of goods and services in the ICT industry to the total GDP of the country was 3.3%, exhibiting a decline of 0.3% from the figures observed in 2022 [21].

Taking into account the structure of the IT market, it is noteworthy that the predominant segment is the IT services sector, constituting 59% of the overall IT market. Following closely is the IT equipment sector, comprising 32.6% of the market, albeit experiencing a reduction. The residual 8.4% is allocated to the licensed software sector (see Figure 1).

In terms of monetary value, the breakdown of the IT market in Kazakhstan for the year 2022 is as follows: the IT services, licensed software, and IT equipment sectors collectively generated approximately 1,655.4 billion tenge. This growth is attributed to an expansion in the volume of two market segments. Specifically, the IT services sector experienced a notable increase of 28.2%, reaching 977,321 million tenge, while the licensed software sector saw a rise of 9.6%, totaling 138,952 million tenge compared to the previous year's figures.

Regarding the shifting dynamics in the percentage allocation of the aforementioned segments, there was a conspicuous decrease in the share of IT equipment by 1.3 times in 2022, contrasting with a substantial increase in the share of IT services, which demonstrated a surge of 1.3 times. Notably, the considerable rise in the expense of imported software has played a pivotal role in driving the significant growth observed in IT services. These changes suggest a maturation of the domestic market, further accentuated by the significant increase

in the cost of imported software.

By the end of 2022, the most substantial growth rates were exhibited by various IT services, notably in the development of system and application software, computer systems management, Internet website processing, and repair of computers and communication equipment. Specifically, in 2022, the volume of IT services pertaining to computer programming and consulting in the sector amounted to 499 billion tenge, marking a notable 40% increase compared to the corresponding period of the previous year. Concurrently, services related to data placement and processing experienced a growth of 14.3% over the course of the year, reaching 266 billion tenge.

Analyzing the volume of IT services across the regions of the republic reveals that over 80% of the total volume is concentrated in the cities of Almaty and Astana, amounting to 307.5 billion and 243.8 billion tenge, respectively. This distribution underscores a notable disparity among the remaining regions, as the bulk of large companies are registered in Almaty and Astana, although their operations extend to other regions.

The positive trajectory in the development of the digital economy is underscored by the consistent annual increase in the number of operating companies within the country. Notably, the year 2022 stands out for hosting the highest number of companies over the past five years, with 10,989 IT enterprises active in Kazakhstan's IT sector as of the beginning of 2023. These companies collectively contributed 147.5 billion tenge in taxes for the year 2022. Notably, more than 30% of the tax contributions emanate from companies specializing in wholesale trade of computers and equipment, amounting to 45 billion tenge. Software companies accounted for approximately 25% of taxes paid, totaling 34.8 billion tenge, while companies engaged in data processing contributed 13% with 18 billion tenge. Remarkably, approximately 66% of the IT market taxes, totaling around 100 billion tenge, were paid by a mere 174 companies.

Thus, the volume of taxes paid within the industry, observed in annual dynamics, serves as a tangible indicator of the pace of development of the digital economy.

Nevertheless, it's important to highlight a finding from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, which indicates that by the end of 2022, out of the total 10,989 companies, only 766 are actively involved in their operations. These encompass activities such as software development and maintenance, manufacturing of proprietary IT solutions, computers, and equipment, as well as offering consulting and practical services in the IT domain. These companies are competitive and export-oriented. Among them, 343 companies (44.8% of the active companies) provide IT services, 221 companies (28.9%) specialize in the development and promotion of their proprietary IT solutions and products, and 202 companies (26.4%) have proprietary solutions while also engaging in custom software development.

The subsequent analysis delves into the findings of a survey conducted among IT companies, focusing on various domains including government support measures, export activities, import substitution efforts, investments, and human capital.

Among the 74 participating companies, 75.7% operated in the cities of Astana and Almaty, attributed to the concentration of the country's IT firms in these urban centers. Additionally, companies from various regions including Karaganda, Aktobe, West Kazakhstan, Akmola, Almaty, Kostanay, East Kazakhstan, North Kazakhstan, and Shymkent also contributed to the survey.

Nearly half of the respondents (48.3%) identified as software developers, while smaller percentages engaged in software maintenance (3 companies), wholesale equipment (3 companies), wholesale of diverse goods (3 companies), and other IT-related activities (4 companies).

Regarding company size, 25% of respondents were small enterprises with 0-5 employees, 20% employed 5-15 individuals, 16% had 15-30 employees, 20% reported staff sizes of 30-50 people, and 19% were enterprises with over 50 employees.

Government support measures. According to the survey findings, merely 25% of companies acknowledged utilizing government support mechanisms, which included tax incentives for organizations operating within designated zones such as Special Economic Zone, Tech Garden, and Astana Hub, as well as innovative

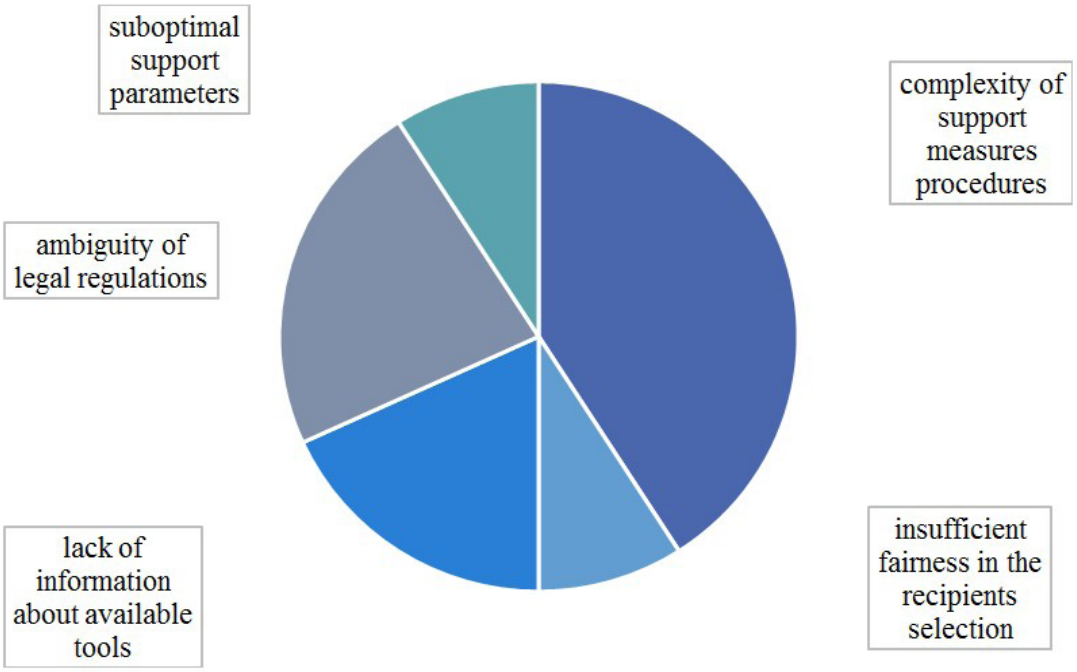

Figure 2 – Key measures of state support

grants, lending, and subsidies facilitated through the Damu Fund. Conversely, the remaining 75% of companies did not avail themselves of any government support measures.

Companies that have utilized government support mechanisms reported the following changes in their activities:

- 37% noted an increase in the volume of new products production within the company;
- 32% observed a rise in the company's revenue;
- no companies indicated that government support influenced the growth of their market share in foreign markets;
- 16% of companies stated that the received government support had no impact on their activities;
- 16% of companies reported an increase in the volume of investments in the enterprise as a result of the support received;
- in 16% of companies, spending on innovation within the company has increased;
- 16% of companies noted growth in the company's market share in the domestic market.

As per the survey findings, 70% of respondents identified the complexity of procedures for obtaining certain support measures and bureaucratic barriers as the primary issue with state support. Meanwhile, 43% of respondents cited a lack of information about available tools and support conditions as the main barrier. Additionally, 42% of companies indicated that the ambiguity of legal regulations in the relevant area posed a significant problem.

According to the survey results, 73% of companies advocate for enhancing financial support through benefits, tax preferences, and grants for business entities. Additionally, 57% emphasize the significance of bolstering state support for human capital development, particularly staff training. Moreover, 51% of respondents underscore the importance of directing state support towards the development of information technology infrastructure, while 47% believe that government assistance in stimulating research and innovation should be augmented.

Import substitution. As part of the survey, companies evaluated the quality of their products relative to similar offerings from foreign manufacturers in the market. The results indicate that 60% of companies perceive their products as not inferior to those of foreign counterparts. Conversely, 19% of companies believe their products are inferior to foreign equivalents. Additionally, 13% of companies consider their products superior to foreign alternatives, while the remaining 8% believe their products have no equivalents abroad.

Below are the criteria by which 13% of companies believe that their products surpass

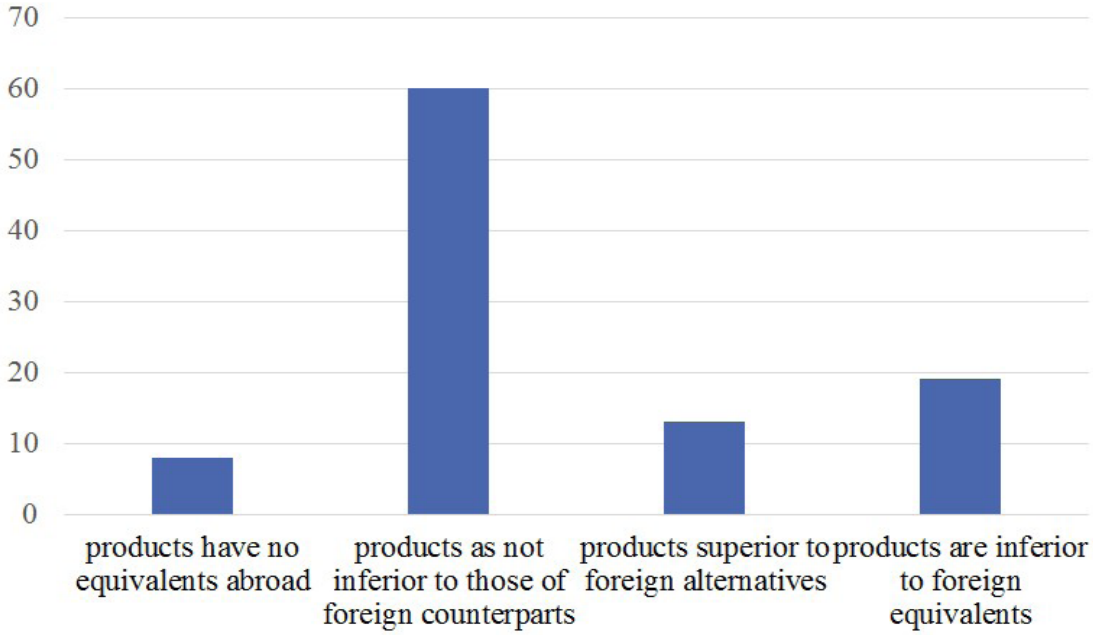

Figure 3 – Product quality of domestic companies

those of foreign manufacturers:

- superior quality standards in terms of durability, reliability, and performance;
- incorporation of cutting-edge technologies and features not present in foreign counterparts;
- ability to tailor products to meet specific customer needs and preferences;
- offering competitive pricing without compromising quality or features;
- providing exceptional after-sales service and support to ensure customer satisfaction;
- understanding and addressing local market needs better than foreign competitors;
- establishing a strong brand reputation and trust among customers for product excellence;
- adapting quickly to changing market demands and customer requirements;
- seamless integration with existing systems and compatibility with other products;
- meeting or exceeding regulatory standards and requirements, ensuring product legality and safety.

The opinions of the respondents were nearly evenly split regarding the presence or absence of barriers to ensuring the competitiveness of companies' products compared to their foreign counterparts in the Kazakh market.

Below are the opinions of 51% of companies that identified the presence of barriers regarding the main obstacles to ensuring the competitiveness of their products compared to foreign counterparts in the Kazakh market:

- the absence of technologies within the country capable of producing products that meet the highest foreign standards;
- the shortage of qualified personnel within the country;
- the challenge of attracting essential investments and the extended payback period;
- insufficient state support for import substitution projects undertaken by Kazakhstani companies;
- insufficient state support for stimulating domestic demand for products from domestic producers;
- the low level of confidence among domestic consumers in products from Kazakhstani companies.

Furthermore, companies expressed their primary requirements for substituting foreign products.

- the implementation of customs barriers to imports;
- financial support from the state;
- access to tax benefits;
- overall enhancement of the investment climate;
- increasing consumer confidence in domestic products;
- access to qualified personnel;
- acquisition of new equipment;

- introduction of new products.

Staffing. According to the survey, the most sought-after positions in companies include software developers, system analysts/business analysts, project managers, and mobile app developers

A primary challenge for companies in the recruitment of specialists is the shortage of candidates with adequate professional digital competencies. The lack of candidates with versatile competencies across various domains is also identified as a key challenge for companies. The inadequate level of foundational education among candidates is recognized as a significant challenge for companies.

Export. As per the survey respondents, 44 out of 73 companies do not currently export their solutions or products abroad. However, 18 companies are considering entering foreign markets, while 4 companies already have agreements or memoranda of cooperation with foreign entities. The primary export destinations for domestic companies currently are Uzbekistan and Russia.

According to the companies surveyed, the primary challenges with exports include:

- limited trust among foreign consumers in Kazakhstani products;
- challenges in securing suitable local partners in foreign markets;
- high barriers to entry into international ICT markets, such as legal disparities and obtaining requisite licenses;
- shortage of skilled personnel.

The companies surveyed view the following as key strategies for boosting exports:

- promotion and marketing of products and services;
- offering extra tax benefits, customs privileges, and export duties;
- providing reimbursement for expenses related to exports;
- organizing international ICT business forums.

Investment. In the upcoming 1-2 years, 44 companies aim to provide investments for their projects, primarily opting to do so through borrowed capital.

CONCLUSION. The results of analysis allow us to conclude that, despite significant achievements in the development of the IT digital economy in Kazakhstan, a number of problems remain.

1. *Lack of highly qualified personnel*. One of the main problems is the lack of qualified specialists in the field of information technology. A significant disparity exists between the demand for specialists in the private sector and the available pool of talent. The need to educate and attract skilled personnel remains an urgent task.

2. *Limited access to funding*. Numerous startups and emerging IT companies face difficulties in obtaining adequate financing and investments, hindering their development and expansion. It is crucial to establish an environment favorable to accessing funding and bolstering venture capital support within the private sector.

3. *Disconnection between the academic sphere and business*. Insufficient communication and cooperation between universities and businesses within the information technology domain pose another challenge. The absence of practical experience and real projects within training programs can impede graduates' ability to transition smoothly into roles the IT industry.

4. *Bureaucratic obstacles*. Certain entrepreneurs and IT companies face bureaucratic obstacles and complex procedures during business registration and operations. Streamlining administrative processes and fostering a conducive business environment can stimulate the growth of the digital economy.

5. *Limited awareness of IT opportunities*. Certain sectors of the economy, particularly in regional areas, may lack sufficient awareness of the advantages derived from leveraging information technology. It is imperative to implement information campaigns and educational initiatives to raise awareness and foster innovation.

6. *Cybersecurity and data protection*. The spread of information technology also brings about a surge in cybersecurity threats. Data protection and information security are critical issues for the digital economy. It is necessary to strengthen measures aimed to protect against cyberattacks and raise awareness about cybersecurity among businesses and the general public.

Solving these problems will require joint efforts involving the government, businesses, educational institutions and the broader business community. By removing these barriers and supporting the growth of the IT

industry, Kazakhstan will be able to realize its potential in the digital economy and emerge as a significant player in the global IT sector.

Here are the proposed strategies for developing the digital economy in Kazakhstan:

1. *Investment in education and training*. Enhance educational programs to meet the evolving needs of the IT industry, focusing on practical skills and industry-relevant knowledge. Establish partnerships between universities and businesses to facilitate internships, training, and collaborative research projects.

2. *Talent attraction and retention*. It is necessary to create conditions for attracting and retaining highly qualified specialists. This can be achieved through the establishment of professional networks, hosting conferences and events, and offering incentives and benefits tailored for IT specialists.

3. *Streamlining administrative procedures*. Simplifying bureaucratic processes and reducing administrative barriers for business registration and operations in the private sector is essential. This initiative aims to attract investments and cultivate a conducive business environment.

4. *Access to financing*. Implement measures to improve access to financing for startups and small IT companies, including venture capital funds, government grants, and tax incentives for investors in the IT sector.

5. *Investment in infrastructure*. Enhance digital infrastructure, including broadband internet connectivity and data centers, to support the growth of the IT sector and enable digital innovation.

6. *Support for research and development*. Allocate resources for research and development initiatives in the IT sector, fostering innovation and the creation of new technologies related to AI.

7. *Promotion of digital literacy*. Implement programs to enhance digital literacy among the population, including training initiatives for both students and professionals to ensure a skilled workforce capable of leveraging digital technologies effectively.

8. *Encouragement of entrepreneurship*. Foster a supportive ecosystem for IT startups and entrepreneurs through the establishment of incubators, accelerators, and venture capital funds, as well as by simplifying administrative procedures for starting and running IT businesses.

9. *International collaboration*. Foster collaboration with international partners, including tech companies, research institutions, and governments, to leverage expertise, access markets, and facilitate technology transfer.

10. *Emphasis on cybersecurity*. Strengthen cybersecurity measures to protect digital infrastructure, data, and systems from cyber threats, thereby enhancing trust and confidence in the digital ecosystem.

11. *Government support and policy framework*. Develop comprehensive policies and regulatory frameworks that support the growth of the digital economy, including measures to promote innovation, protect intellectual property rights, and ensure fair competition.

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