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ӨНҮГҮҮНҮН КЫЙМЫЛДАТКЫЧТАРЫ КАТАРЫ****ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ И ЦИФРОВИЗАЦИЯ КАК ДРАЙВЕРЫ
ОРГАНИЗАЦИОННОГО РАЗВИТИЯ****ARTIFICIAL INTELLIGENCE AND DIGITALIZATION AS DRIVERS
OF ORGANIZATIONAL DEVELOPMENT**

Кыскача мүнөздөмө: Жасалма интеллект (AI) жана санариптик технологиялардын тез өнүгүшү жана интеграциясы уюштуруучулук өнүгүүнүн жана экономикалык трансформациянын маанилүү кыймылдаткычтары болуп калды. Бул изилдөө AI жана санариптештирүүнүн уюштуруучулук натыйжалуулукка, атаандаштыкка жана инновациялык потенциалга кош таасирин изилдеп, аларды ишке ашыруу менен байланышкан мүмкүнчүлүктөрдү да, кыйынчылыктарды да баса белгилейт. Изилдөөдө 2019-жылдан 2023-жылга чейин Кыргыз Республикасындагы кичи жана орто ишканалардын (ЧОИ) өсүү динамикасы, ошондой эле санариптештирүүнүн кеңири моделдерин чагылдырган персоналдык компьютерлерди алуу жана пайдалануу тенденциялары талданат. Изилдөө мындан ары AI жана санариптик интеграциянын перспективаларын, анын ичинде оперативдүү натыйжалуулукту, чечимдерди кабыл алууну, инновацияларды, адам ресурстарын өнүктүрүүнү, кардарларды изилдейт.

Аннотация: Стремительное развитие и интеграция искусственного интеллекта (ИИ) и цифровых технологий стали важнейшими факторами организационного развития и экономической трансформации. В данном исследовании рассматривается влияние ИИ и цифровизации на эффективность, конкурентоспособность и инновационный потенциал организаций, выделяя как возможности, так и проблемы, связанные с их внедрением. В исследовании анализируется динамика роста малых и средних предприятий (МСП) в Кыргызстане с 2019 по 2023 год, а также тенденции в приобретении и использовании персональных компьютеров, отражающие более общие закономерности цифровизации. В исследовании дополнительно рассматриваются перспективы интеграции ИИ и цифровой среды, включая операционную эффективность, принятие решений, инновации, развитие человеческих ресурсов и взаимодействие с клиентами.

Abstract: The rapid development and integration of artificial intelligence (AI) and digital technologies have become essential drivers of organizational development and economic transformation. This study examines the impact of AI and digitalization on organizational efficiency, competitiveness, and innovation capacity, highlighting both opportunities and challenges associated with their implementation. The research analyzes the growth dynamics of small and medium-sized enterprises (SMEs) in the Kyrgyz Republic from 2019 to 2023, as well as trends in the acquisition and use of personal computers, reflecting broader patterns of digitalization. The study further explores the perspectives of AI and digital integration, including operational efficiency, decision-making, innovation, human resource development, customer

Негизги сөздөр: жасалма интеллект; санариптештирүү; уюштуруучулук өнүктүрүү; экономикалык эффективдүүлүк; чакан жана орто ишканалар; МКТ интеграциясы; инновациялар; Кыргыз Республикасы.

Ключевые слова: искусственный интеллект; цифровизация; организационное развитие; экономическая эффективность; малые и средние предприятия; интеграция ИКТ; инновации; Кыргызская Республика.

Keywords: artificial intelligence; digitalization; organizational development; economic efficiency; small and medium-sized enterprises; ICT integration; innovation; Kyrgyz Republic.

Introduction Current trends in the global economy demonstrate that digitalization and the introduction of artificial intelligence technologies are becoming key determinants of the sustainable development of organizations. In the context of increasing competition, dynamic changes in market conditions and growing uncertainty of the external environment, it is the intellectualization of management and production processes that allows for the formation of new sources of competitive advantages.

Artificial intelligence integrated into the corporate governance system makes it possible to transition from traditional decision-making models to adaptive and predictive mechanisms based on big data analysis, machine learning and predictive analytics algorithms. In turn, digitalization is the foundation of transformation processes that cover not only the technological, but also the institutional, organizational and socio-economic spheres of companies' activities.

Scientific interest in this issue is due to the need to develop conceptual foundations and practical tools that make it possible to use the potential of digital technologies and artificial intelligence to improve the efficiency of business processes, optimize resource provision and form the long-term sustainability of organizations.

In recent decades, the global socio-economic system has been experiencing qualitative changes due to the large-scale spread of digital technologies and the rapid development of artificial intelligence. These processes are forming a new paradigm of organizational development, within which the key factor of efficiency is the ability of companies to quickly adapt, transform innovatively and use intellectual resources to achieve sustainable growth.

Artificial intelligence is no longer exclusively a subject of academic research and is becoming a tool for practical management, allowing organizations to integrate intelligent algorithms into the system of strategic and operational planning. The use of machine learning technologies, predictive analytics and intelligent automation helps to optimize business processes, improve the quality of management decisions and reduce transaction costs.

Digitalization, in turn, is a system-forming condition for the transformation of modern

business, ensuring the creation of digital platforms, the formation of new business models and the transition from traditional production and management mechanisms to innovative ones based on end-to-end digital solutions.

The relevance of the study is determined by the need for a comprehensive analysis of the impact of artificial intelligence and digitalization on organizational development processes, which allows identifying the potential of these technologies to increase the competitiveness and sustainability of enterprises in the digital economy. The purpose of the article is to substantiate the role of artificial intelligence and digitalization as drivers of organizational development, as well as to identify areas of their effective application in modern conditions. Thus, the study of the relationship between artificial intelligence, digitalization and organizational development acquires not only theoretical significance, but also high applied value, as it determines the directions of strategic renewal and increasing the competitiveness of modern organizations in the digital economy.

Results The implementation of artificial intelligence and digitalization in organizational development has become a defining trend of the modern economy, profoundly reshaping business models, management practices, and competitive strategies. On the one hand, these technologies create unprecedented opportunities for efficiency enhancement, cost reduction, and innovation, enabling organizations to respond more flexibly to market dynamics and global challenges. On the other hand, the integration of artificial intelligence and digital tools brings with it a range of challenges, including high implementation costs, technological dependence, and potential social and ethical implications. Therefore, a balanced analysis of both the advantages and disadvantages of these transformative processes is essential for understanding their real impact on organizational growth and for identifying pathways to their sustainable and effective application.

The implementation of artificial intelligence and digitalization has a pronounced dual effect on organizational development. On the one hand, these technologies contribute to the growth of the efficiency and productivity of business processes, the reduction of transaction costs and the

improvement of the quality of management decisions. Their use facilitates the automation of routine operations, ensures a more rational use of resources, creates conditions for strategic forecasting and strengthens the competitive position of the organization in the digital economy. In addition, digital technologies open

up new opportunities for personalization of customer service and contribute to the emergence of innovative business models. On the other hand, the implementation of artificial intelligence and digitalization is associated with a number of risks and limitations [1, 2, 3, 4, 22, 23, 24].

Table 1. Positive and negative aspects of implementing artificial intelligence and digitalization in organizational development

Positive Aspects	Negative Aspects
Increased efficiency and productivity of business processes	High initial costs of technology implementation
Reduction of transactional and operational expenses	Risk of technological dependence on external solution providers
Improved quality and speed of managerial decision-making through big data analysis	Potential errors in algorithms and misinterpretation of data
Automation of routine tasks and optimization of resource utilization	Job reduction in certain sectors leading to social tension
Strengthened competitiveness and resilience in the digital economy	Need for constant updates and adaptation of technologies
Enhanced strategic planning and forecasting capabilities	Threats of cyber risks and data leakage
Improved customer service quality through personalization and digital channels	Insufficient digital literacy among employees
Creation of new business models and innovative development opportunities	Possible widening gap between organizations with different levels of access to technologies

Source: compiled by the authors.

The key ones among them are significant initial investments, technological dependence on external developers and the likelihood of algorithm errors that can negatively affect decision-making. Automation of processes is often accompanied by job cuts, which gives rise to social tension, and the constant need to update digital solutions requires additional costs. The threat of cyber risks and leaks of confidential information cannot be ruled out, and the low level of digital literacy of personnel hinders the effective use of the latest technologies. An additional challenge is the growing inequality between companies with access to modern digital tools and those with limited resources.

Thus, the impact of artificial intelligence and digitalization on organizational development is ambivalent: their use opens up significant opportunities for business growth and transformation, but at the same time requires a comprehensive approach to risk management and the development of strategies to minimize negative consequences.

The process of digital transformation has emerged as a critical determinant of contemporary economic development, influencing all major sectors of the economy. The systematic integration of digital technologies has facilitated the restructuring of business models, the enhancement of managerial and organizational processes, and the efficient allocation and utilization of resources. Profound transformations have occurred in public administration, industrial production, the financial sector, and logistics, thereby underscoring the need for a comprehensive evaluation of digitalization's effects at both macroeconomic and microeconomic levels. Simultaneously, the widespread adoption of digital technologies has encountered a range of challenges, including institutional limitations, financial constraints, and regulatory complexities. Considering the accelerated evolution of the digital economy, it is imperative to identify prevailing trends, assess associated risks, and explore emerging

opportunities within diverse economic systems. [5, 6, 7, 8, 9, 19]

The examination of digital transformation's impact on economic processes necessitates engagement with the scholarly literature that investigates sector-specific digitalization and its outcomes. In light of the extensive body of research, a comparative analysis of empirical findings against the conclusions of leading scholars has been conducted. This approach not only corroborates certain established patterns of digital change but also highlights critical gaps in current knowledge. The following section presents a systematic review of key scientific contributions

that analyze the influence of digital transformation on business operations, public administration, and other pivotal economic domains. [10, 11, 15, 17, 20, 21]

The analysis of the presented dynamics of the number of small and medium-sized enterprises (SMEs) in the Kyrgyz Republic for 2019–2023 shows that the small business sector is demonstrating steady growth. Thus, the number of small enterprises increased from 16,199 units in 2019 to 19,245 units in 2023, which indicates a gradual expansion of entrepreneurial activity and the creation of new jobs.

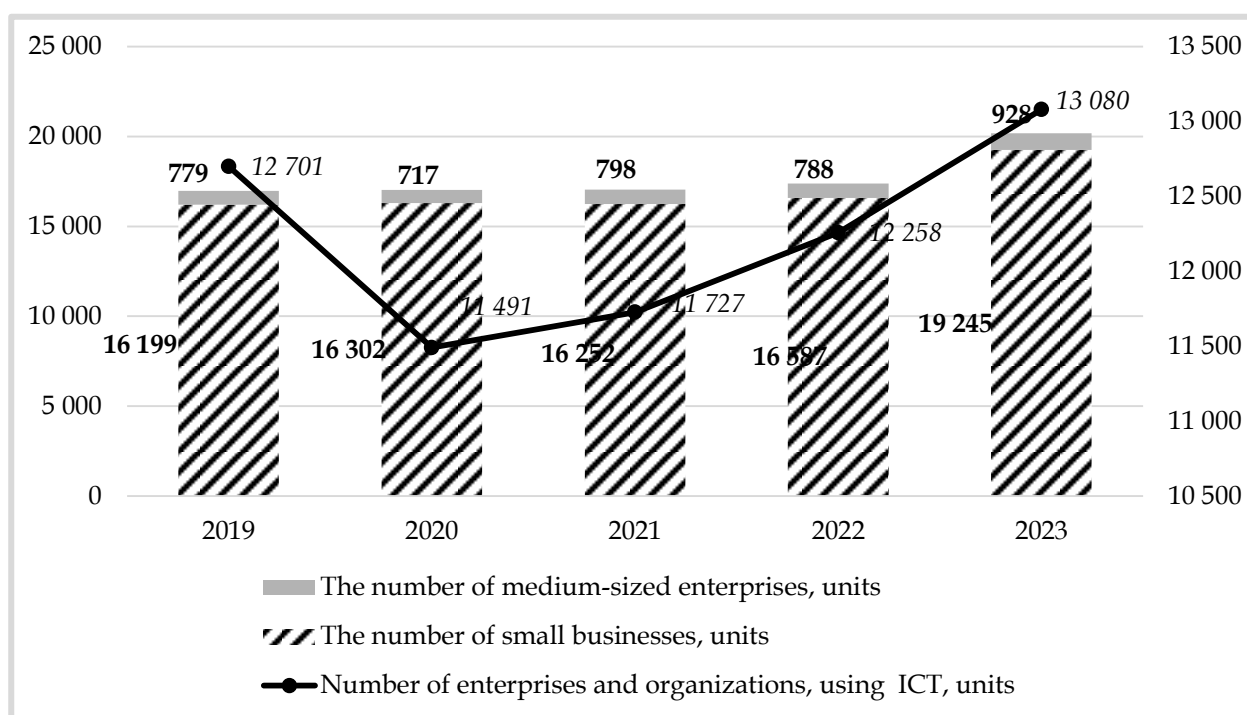


Figure 1. Dynamics of the number of small and medium-sized enterprises in the Kyrgyz Republic for 2019-2023, units

Source: compiled according to data from the National Statistics Committee of the Kyrgyz Republic. [18]

Medium-sized enterprises in the period under review also show a positive trend, despite some fluctuations: from 779 units in 2019, their number reached 928 units in 2023. At the same time, there is an increase in the number of enterprises and organizations using information and communication technologies (ICT). From 12,701 units in 2019, this figure increased to 13,080 units in 2023. This indicates a gradual digitalization of business and the introduction of modern technologies in management and production processes. In general, the dynamics show that the development of SMEs is accompanied by the active integration of digital tools, which increases

the efficiency of enterprises and helps strengthen their competitiveness in the domestic and foreign markets.

An analysis of the dynamics of the number of personal computers in the Kyrgyz Republic for the period from 2019 to 2023 demonstrates a steady trend towards an increase in the computer fleet in the country. The total number of personal computers increased from 221,548 units in 2019 to 301,544 units in 2023, indicating a significant expansion of the digital infrastructure and an increase in the availability of computing resources for the population and organizations.

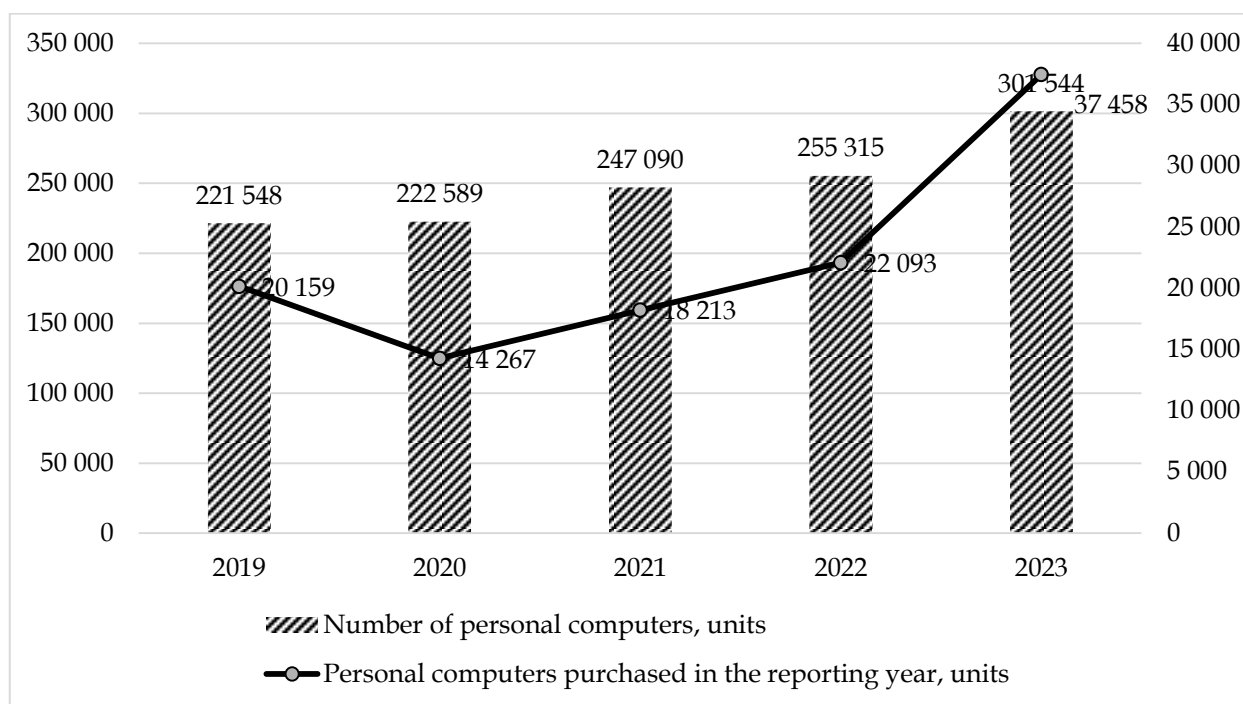


Figure 2. Dynamics of the number of personal computers in the Kyrgyz Republic for 2019-2023, units

Source: compiled according to data from the National Statistics Committee of the Kyrgyz Republic. [18]

This growth reflects not only the expansion of the use of information and communication technologies in the educational, industrial and administrative spheres, but also the formation of prerequisites for the development of the digital economy and increasing the technological literacy of the population. When analyzing the purchases of personal computers in the reporting year, fluctuations are observed due to various economic and social factors. Thus, the number of purchased computers decreased from 20,159 units in 2019 to 14,267 units in 2020, which is likely due to the effects of global economic shocks, including the COVID-19 pandemic. Already in 2021, the indicator has recovered to 18,213 units, and in 2022 and 2023, the growth in acquisitions accelerated, reaching 37,458 units in 2023, which reflects the active renewal of the computer fleet and an increase in demand for modern digital devices.

Thus, the presented dynamics indicate a systemic digitalization of the economy and a gradual increase in the level of computerization in the country. The growth in the number of personal computers and their active renewal create the preconditions for a wider introduction of innovative technologies, expanding the possibilities of remote work and learning, as well as increasing the efficiency of management and production processes at all levels.

Discussion

Analysis of research by contemporary scholars shows that digital transformation has had a profound impact on economic productivity and the development of leading sectors, in particular energy, entrepreneurship and logistics. The study conducted by F. Mihai et al. [16] examined the digitalization of the energy sector and underscored the primary challenges associated with ensuring its operational resilience. The authors demonstrated a clear interdependence between the extent of digital technology adoption and the operational efficiency of energy enterprises. These findings align with the results of the present study, reinforcing the notion that digital modernization constitutes a pivotal instrument for enhancing economic efficiency and reducing operational costs across multiple sectors.

Digitalization of the business environment is also recognized as a critical determinant of regional economic competitiveness. In the research by D. Virjan et al. [25], the authors analyzed the correlation between the degree of digital integration and economic performance, concluding that active adoption of digital technologies fosters higher labor productivity, attracts investment, and stimulates innovation capacity. Comparative analysis of the studied countries corroborates these findings, revealing that Kazakhstan and Uzbekistan exhibit higher levels of digital integration, which in turn

positively influences their macroeconomic indicators.

In the agricultural sector, the development of digital technologies is regarded as a strategic axis for economic modernization. D. Arivazhagan et al. [13] investigated the principal challenges associated with the digitalization of agriculture in Ukraine, identifying critical institutional and financial barriers to technology adoption. Their conclusions resonate with the observations of the present study regarding Kyrgyzstan and Tajikistan, where the agricultural sector continues to demonstrate low levels of digital integration due to similar financial and institutional constraints.

Furthermore, the analysis conducted by N. Doytch [14] addressed the impact of foreign direct investment on the economic development of Central Asian countries, establishing that the magnitude of investment inflows into the digital economy is contingent upon the quality of the institutional framework and the availability of a skilled workforce. The findings corroborate that sustained investment in digital transformation has contributed to economic growth in Kazakhstan and Uzbekistan, whereas Kyrgyzstan and Tajikistan require enhanced investment in digital infrastructure to achieve comparable levels of development.

Conclusion The analysis of artificial intelligence and digitalization as drivers of

organizational development demonstrates that these technological paradigms play a transformative role in shaping modern business practices. Their integration enables organizations to optimize operational processes, enhance decision-making quality, and increase overall efficiency, while also creating opportunities for innovation and the development of new business models. At the same time, the adoption of AI and digital technologies entails significant challenges, including high implementation costs, technological dependency, cybersecurity risks, and the need to develop digital competencies among personnel.

Despite these challenges, the positive impact of AI and digitalization on organizational competitiveness, resilience, and adaptability in a rapidly evolving economic environment is evident. Organizations that strategically embrace these technologies can achieve sustainable growth, strengthen their market positions, and respond effectively to emerging trends and disruptions. Future research and practice should focus on developing frameworks that maximize the benefits of digital integration while mitigating potential risks, ensuring that AI and digitalization become not only tools for operational improvement but also catalysts for long-term organizational transformation.

Table 2. Model of implementation and use of Artificial intelligence and digitalization in organizational development

Perspective Area	Description
Operational Efficiency	AI and digital tools will further automate routine tasks, optimize resource allocation, and reduce operational costs, leading to more agile and efficient organizations.
Decision-Making and Analytics	Advanced data analytics and predictive modeling will enhance strategic and operational decision-making, enabling organizations to respond faster to market changes.
Innovation and Business Models	AI and digitalization will foster the creation of new business models, products, and services, supporting organizational growth and competitive advantage.
Human Resource Development	The integration of digital technologies will require upskilling employees, promoting digital literacy, and enabling new forms of collaboration and knowledge management.
Customer Experience	Personalized services, improved responsiveness, and digital customer engagement platforms will enhance client satisfaction and loyalty.
Sustainability and Resource Management	Digital solutions will enable more sustainable business practices, including efficient energy use, supply chain optimization, and environmental monitoring.
Global Competitiveness	Organizations leveraging AI and digital transformation will strengthen their positions in international markets through innovation, speed, and adaptive capabilities.
Risk Management and Security	Advanced monitoring systems and predictive analytics will improve organizational risk management, including cybersecurity and operational continuity.

Source: compiled by the authors.

The analysis outlining the perspectives of artificial intelligence and digitalization in organizational development indicates that these technologies offer multidimensional opportunities for enhancing business performance and competitiveness. Operationally, AI and digital tools are expected to further automate routine processes, optimize resource utilization, and reduce costs, which will improve organizational agility and efficiency. In the realm of decision-making, advanced analytics and predictive modeling will enable organizations to make more informed strategic and operational choices, responding more rapidly to dynamic market conditions. Furthermore, the adoption of these technologies is anticipated to foster innovation, supporting the creation of new business models, products, and services that strengthen competitive advantage.

Human resource development emerges as a critical area, as organizations will need to invest in upskilling employees, enhancing digital literacy, and promoting effective knowledge management and collaboration. The customer experience is also set to improve through personalized services and digital engagement platforms, increasing satisfaction and loyalty. In terms of sustainability, digital solutions facilitate more efficient use of resources, optimized supply chains, and enhanced environmental monitoring, aligning organizational operations with global sustainability goals.

Additionally, organizations that strategically integrate AI and digitalization are likely to strengthen their global competitiveness by increasing speed, adaptability, and innovation capacity. Risk management and security also benefit, as predictive analytics and monitoring systems allow for better management of operational, technological, and cybersecurity risks. Overall, the table demonstrates that AI and digitalization serve as comprehensive drivers of organizational growth, with significant potential to transform multiple dimensions of business operations while simultaneously requiring careful management of human, technological, and strategic challenges.

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