

Article

The Impact of Artificial Intelligence Technologies on The Development of The Digital Economy

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Citation: Takhirovna, I. G., Ikhtiyorjon kizi, B. D. The Impact of Artificial Intelligence Technologies on The Development of The Digital Economy. American Journal of Economics and Business Management 2026, 9(5), 197-203.

Received: 25th Mar 2026

Revised: 05th Apr 2026

Accepted: 20th Apr 2026

Published: 12th May 2026



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Abstract: This article examines the role and impact of artificial intelligence (AI) technologies in the development of the digital economy. In the context of rapid digital transformation in the 21st century, AI is analyzed as a key driver of economic efficiency, innovation, and structural change. The study highlights how AI contributes to optimizing production processes, improving decision-making, and expanding opportunities across sectors such as finance, healthcare, education, and industry. At the same time, the article explores the challenges associated with AI adoption, including labor market transformation, data security concerns, ethical issues, and digital inequality. Special attention is given to the case of Uzbekistan, analyzing internet accessibility, digital infrastructure, and the country's position in global AI readiness rankings. Based on theoretical and empirical analysis, the paper concludes that while AI significantly enhances economic growth and productivity, its effective implementation requires a balanced approach that considers social stability and human-centered development. The article also provides practical recommendations, including strengthening digital infrastructure, improving education systems, and developing regulatory frameworks to ensure sustainable and inclusive digital transformation.

Keywords: Digital Economy, Artificial Intelligence, Economic Efficiency, Digital Transformation, Labor Market, Innovation, Data Security, Internet Access, Uzbekistan, AI Readiness

1. Introduction

In the 21st century, human development is experiencing a fundamental turning point. As a result of the rapid development of information and communication technologies, traditional forms of the economy are fundamentally changing, and a new model of the digital economy is being formed. This process is not only modernizing the production and service sectors, but also has a significant impact on the social structure of society, the labor market and management systems. In this regard, the digital economy is emerging as one of the main drivers of global development today.

Artificial intelligence technologies play a special role in the development of the digital economy. Artificial intelligence serves to increase economic efficiency as an innovative tool that allows analyzing large amounts of data, automating complex processes and developing accurate forecasts. In particular, the use of artificial intelligence in the fields of finance, healthcare, education, industry and services is expanding the possibilities of reducing production costs, rationally using resources and creating new value.

At the same time, the introduction of artificial intelligence technologies also creates a number of new problems. In particular, issues such as the transformation of professions, data security, ethical standards and technological inequality in the labor market are gaining relevance. This requires the development of mechanisms for the rational and effective use of artificial intelligence in the digital economy.

The main purpose of this article is to analyze the role and impact of artificial intelligence technologies in the development of the digital economy, to reveal their positive and negative aspects in the economic and social spheres. Also, an important task is to identify existing problems in this area and develop scientific and practical proposals to eliminate them.

2. Materials and Methods

The interdependence of the digital economy and artificial intelligence technologies has been widely studied by many foreign and domestic scholars. In particular, studies conducted by the Organization for Economic Co-operation and Development emphasize that the development of the digital economy is closely related to innovative technologies, especially artificial intelligence [1]. According to OECD reports, artificial intelligence technologies are an important factor in increasing production efficiency, optimizing business processes, and forming new market segments. At the same time, the organization also notes the importance of state policy and regulatory mechanisms in the process of digital transformation. The effective development of the digital economy depends not only on technology, but also on its proper management and state policy. In particular, the proper direction of artificial intelligence plays an important role in ensuring economic stability.

Also, in *The Age of Surveillance Capitalism*, Shoshana Zuboff deeply analyzes the impact of new forms of the digital economy and artificial intelligence-based platforms on society [2]. The author argues that the collection and processing of large amounts of data using artificial intelligence, while bringing economic benefits, also raises privacy and information security concerns. This approach suggests that the digital economy needs to be studied not only from an economic perspective, but also from a social perspective. As the digital economy develops, the protection of personal data must become a priority, along with its benefits. Otherwise, technological progress can create social problems.

In addition, Stuart Russell and Peter Norvig, authors of *Artificial Intelligence: A Modern Approach*, provide a broad overview of the theoretical foundations and practical applications of artificial intelligence [3]. In this work, the use of artificial intelligence technologies in decision-making processes, forecasting, and the management of complex systems is explained as an important tool for increasing economic efficiency. In particular, machine learning and data analysis are considered key components of the digital economy. I consider artificial intelligence to be the “smart assistant” of the economy. It does not completely replace human labor, but rather speeds up decision-making and reduces errors.

Another important source is *Machine, Platform, Crowd: Harnessing Our Digital Future*, whose authors Erik Brynjolfsson and Andrew McAfee analyze the impact of digital technologies, including artificial intelligence, on economic systems [4]. In their opinion, artificial intelligence will not completely replace human labor, but will serve to make it more efficient. At the same time, they justify the emergence of new professions and the transformation of old ones in the conditions of the digital economy. It is very important to manage this process correctly. If people adapt to new technologies, artificial intelligence will not eliminate jobs, but, on the contrary, create new opportunities.

The analysis of the above scientific views shows that artificial intelligence technologies play a decisive role in the development of the digital economy. However, its impact is multifaceted, and in addition to increasing economic efficiency, it also raises

social, ethical and institutional problems. Therefore, it is necessary to study this area on a deep scientific basis and apply a comprehensive approach.

3. Results and Discussion

Today, the main support for the effective use of artificial intelligence and increasing economic efficiency is the Internet, its capabilities and the implementation of the digital economy. Information exchange, e-commerce, online services and digital platforms are carried out via the Internet. Therefore, problems with the use of the Internet directly affect the development of the digital economy and the effective use of artificial intelligence.

According to the 2025 study, almost three quarters of the world's population already uses the Internet. However, progress is slowing down, and 2.2 billion people still do not have access to the Internet - most of them live in low- and middle-income countries [5]. If we analyze this information by region and group: (table 1)

The share of Internet users by region and group in 2025 according to Data Hub.

No	Names of regions and groups	From the Internet user contribution. % (in percent)
Regions		
1	Africa	20,9
2	Arab States	51,2
3	Asia-Pacific	65,9
4	CIS	87,5
5	Evropa	87,1
6	Americas	75,0
Grouping of countries by level of economic development		
1	High income	89,6
2	Landlocked developing countries (LDCs)	26,7
3	(EKM) Least developed countries (LDCs)	24,9
4	Low-income countries	13,7
5	Lower-middle income countries	53,2
6	Small island developing states (SIDS)	34,4
7	Upper-middle income countries	82,6
8	World	58,2

Source: Authors' elaboration based on 2025 Data Hub data. <https://www.itu.int/itu-d/sites/statistics/> [6].

The 2025 Data Hub data page "Assessing Digital Development: Facts and Figures 2025" provides statistical information on the population's access to Internet networks in the context of the digitalization of the national economy of Uzbekistan.

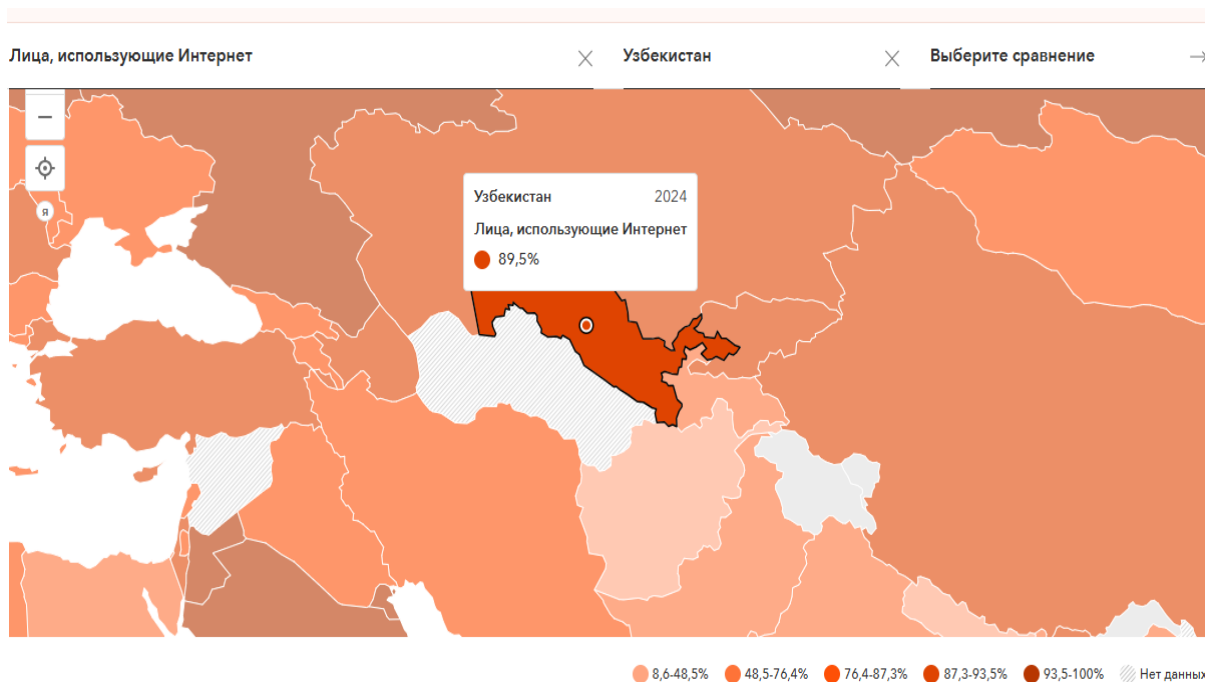


Figure 1. Uzbekistan's share of internet usage by 2025 [6].

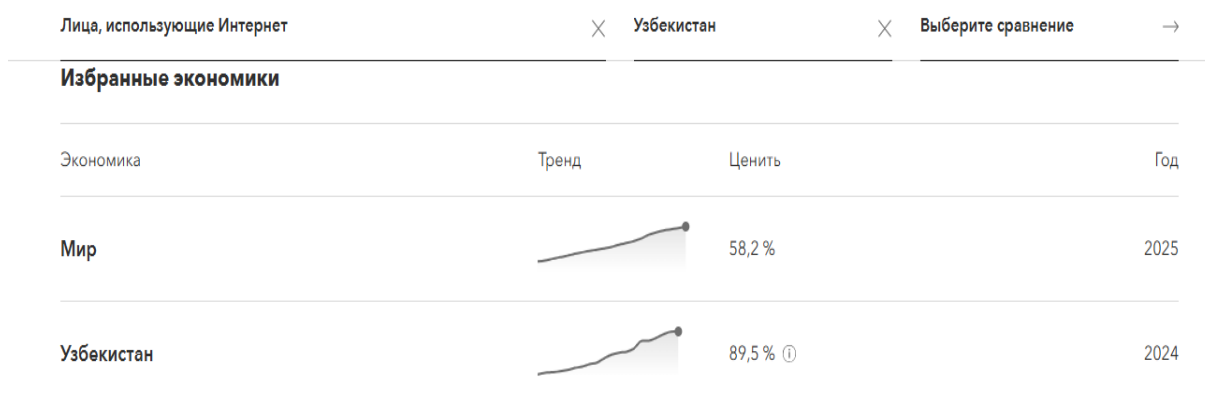


Figure 2. Uzbekistan's share of internet usage compared to the world [6].

As can be seen from the table and the data in the figure, if we consider the regional share of Internet users in Uzbekistan, it is 2% higher than the CIS countries. In terms of economic development, Uzbekistan is currently in the group of lower-middle-income countries, since the country's economy is at a developing stage, and industry, services, and the digital economy are developing. In this case, it can be seen that our country is 36.3% higher than the 53.2% indicator of lower-middle-income countries, and 31.3% higher than the global indicator of 58.2%.

Nevertheless, infrastructure coverage in the country is uneven: only 66% of the population has access to 4G, and this access is concentrated mainly in large cities, where about 43% of the total population lives. The level of Internet and digital services in rural areas is relatively low [5].

The introduction of artificial intelligence technologies into the economy is one of the most important factors in the development of the digital economy. As Stuart Russell and Peter Norvig point out in their work *Artificial Intelligence: A Modern Approach*, AI systems significantly increase economic efficiency by processing large amounts of data and automating decision-making processes [3]. This is especially evident in the finance, industry and service sectors. The greatest advantage of artificial intelligence is not to

completely replace human labor, but to support it and reduce errors. Therefore, it is very important to maintain human control when implementing AI technologies.

According to the Organization for Economic Cooperation and Development, GenAI is currently used by 31% of small and medium-sized enterprises worldwide, and 65% of them have noted an increase in production efficiency [7].

Oxford Insights, an independent company, is an international consulting and research organization working in the areas of public administration, artificial intelligence policy and digital transformation. Its "Government AI Readiness Index 2025" page provides statistical information on the readiness and index of countries in implementing AI.

Government AI Readiness Index 2025

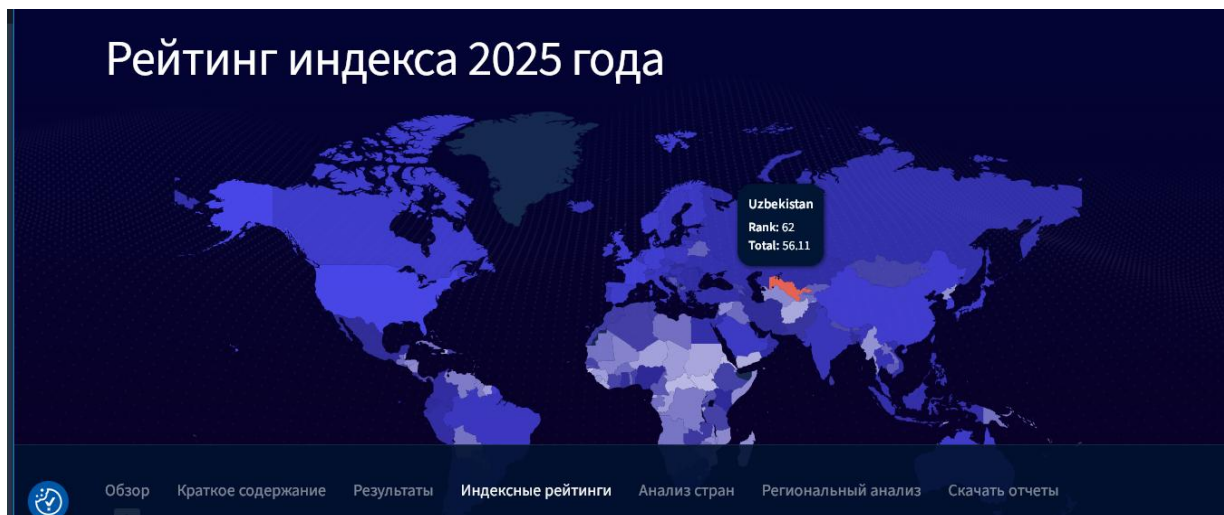


Figure 3. Government Readiness Index for Artificial Intelligence, 2025 [8].

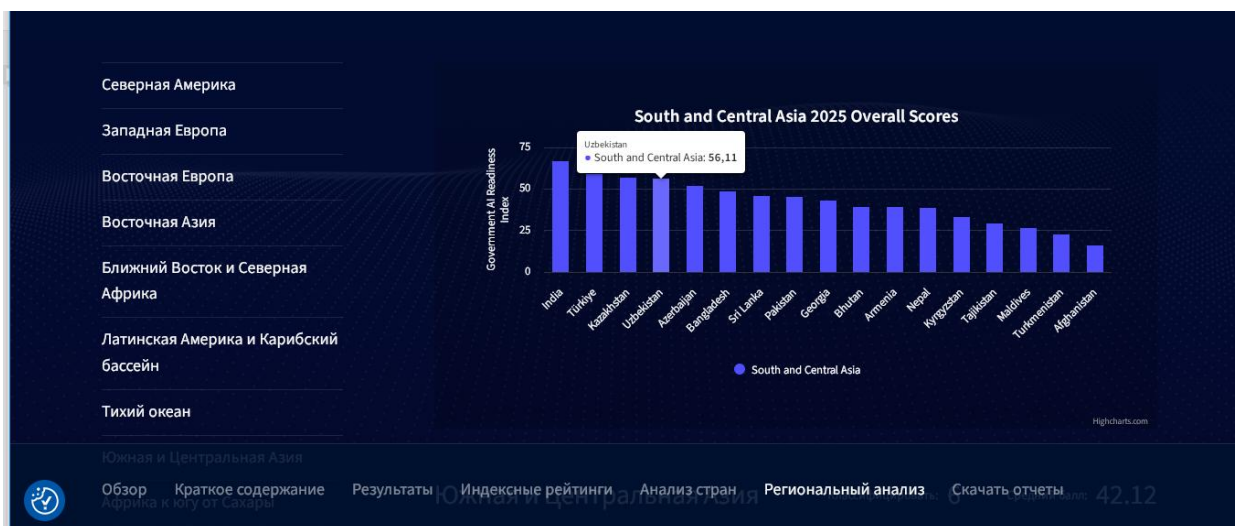


Figure 4. Artificial Intelligence Readiness Index for South and Central Asian countries in 2025 [8].

This year, our leading AI index is assessing 195 governments around the world on their ability to use AI for the benefit of society. According to the 2025 Government AI Readiness Index, Uzbekistan ranks 62nd in the world with a score of 56.11, and 2nd among Central Asian countries after Kazakhstan (58th with a score of 56.70).

The development of the digital economy is also having a significant impact on the structure of the labor market. According to the authors of Machine, Platform, Crowd:

Harnessing Our Digital Future, while digital technologies are creating new professions, they are also leading to the disappearance or transformation of some traditional professions [4]. This process is increasing the importance of flexibility and digital skills in the labor market. Because in the current era, it is difficult to be competitive without digital literacy. Therefore, the education system must be modernized in accordance with new technologies.

This issue has also been widely covered in scientific journals. In particular, studies published in the *Journal of Economic Perspectives* noted that artificial intelligence technologies can increase labor productivity and reduce costs in enterprises.[9] At the same time, the article also notes that the development of the digital economy can increase social inequality. Technological progress should not be limited only to economic benefits [10], [11], [12]. If the state and society do not manage this process correctly, the digital divide may widen further. In this regard, the National Development Strategy for 2030 states that by the end of the current decade, Uzbekistan is aimed at transforming into a leading IT center in Central Asia. At the same time, it is planned to increase the export of IT services to \$5 billion per year, attract 1,000 foreign IT companies to the country, and create employment opportunities for 300,000 young people in the IT sector [7].

“A new World Bank-supported project will help Uzbekistan use IT services as a catalyst for economic growth, job creation, and foreign investment,” said Marco Mantovanelli, Country Manager for the World Bank in Uzbekistan. “It will be implemented by the IT Park under the Ministry of Digital Technologies to train thousands of people under the age of 30 living in rural and remote areas. The project will also provide incentives for ITES companies to employ these trained individuals” [7].

To achieve these ambitious goals, Uzbekistan will need to invest significantly in improving its skills development system, developing modern IT and office infrastructure, and creating an effective legislative framework, strategies, and incentive mechanisms to attract foreign and domestic investment in the IT sector. At the same time, investments in the digital economy will also play a key role in reducing the number of uneducated, unskilled, and unemployed youth, especially women.

4. Conclusion

The development of digital economy and artificial intelligence technologies is emerging as one of the most important directions of the global economic system today. An analysis of the studied scientific sources shows that artificial intelligence is becoming the main driving force of the digital economy by automating economic processes, quickly and accurately analyzing large amounts of data, and increasing the efficiency of decision-making. As noted in the work *Artificial Intelligence: A Modern Approach*, artificial intelligence systems significantly increase economic efficiency by optimizing complex processes.

Also, according to the authors of *Machine, Platform, Crowd: Harnessing Our Digital Future*, digital transformation is fundamentally changing the labor market and leading to the emergence of new professions, but at the same time it is also causing the disappearance or transformation of some traditional professions. Analyses presented in scientific journals show that artificial intelligence, while increasing economic efficiency, can also increase social inequality and the digital divide.

As a general conclusion, it can be said that artificial intelligence is an integral part of the digital economy, which accelerates economic growth and creates new opportunities, but in order to achieve its positive results, it is necessary to take into account the social balance and the human factor.

In this regard, it is necessary to integrate the education system with modern digital technologies and artificial intelligence, expand retraining and advanced training programs to adapt to changes in the labor market, develop digital infrastructure and expand high-

speed Internet and data centers, strengthen mechanisms for ensuring information security and protecting personal data, and expand the opportunities for the effective use of artificial intelligence technologies through the development of an innovative ecosystem in cooperation between the public and private sectors.

As a final thought, it can be said that artificial intelligence is not only a technological tool for economic development, but also a strategic factor that determines the future direction of development of society. Therefore, its development should be carried out in harmony with human interests and social stability.

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