



THE ROLE OF MODERN TECHNOLOGIES AND ARTIFICIAL INTELLIGENCE IN ENSURING SUSTAINABLE ECONOMIC GROWTH

Mirzaeva Sabina Khushnudovna
Student of Group BHA-22. Faculty: "Accounting"
Tashkent State University of Economics
mirzayevasabina76@gmail.com

Khaydarova Dildora Djakhongirovna
Scientific Supervisor, PhD, Senior Lecturer
hajdarovadildora3@gmail.com

ABSTRACT	KEYWORDS
<p>Modern technologies and artificial intelligence (AI) play a decisive role in economic development, transforming key industries and increasing the efficiency of production and management processes. This article analyzes the impact of AI on the global threat, the key main areas of its application, and also considers the challenges and forecasts associated with its implementation. The study is based on a literature review, as well as an analysis of data on the impact of AI on economic development in various countries and industries.</p>	<p>Artificial intelligence, technology, economy, productivity, innovation.</p>

Introduction

The rapid growth and adoption of digital technologies are becoming key factors influencing economic development. Artificial intelligence (AI) is central to this transformation, significantly impacting industries such as manufacturing, healthcare, finance, logistics, and public administration. The primary objective of this article is to examine how modern technologies and AI are changing economic processes and driving growth, as well as to identify the challenges associated with their implementation. The topic is relevant because the successful implementation of AI is becoming a competitive advantage for countries and companies. Analyzing the economic impact of AI application across various industries allows us to identify the potential for its further use for sustainable economic growth.

Literature Review

There are numerous studies confirming the positive impact of AI and modern technologies on the economy. Let's consider the main areas and results of these studies: Improving labor productivity. The works of S.A. Ivanov and Yu.N. Petrov emphasize that the automation of routine processes and the use

of AI algorithms can reduce costs and increase productivity. Machine learning algorithms, for example, effectively analyze large volumes of data, which contributes to improved decision quality [1].

Several studies note that the implementation of AI and related technologies is creating new economic sectors, such as data analysis, software development, and robotics. This expands opportunities for job creation and contributes to economic diversification [2].

AI is being used in government agencies and large companies to improve resource management and optimize processes. Using AI to predict market trends and manage inventory helps increase businesses' resilience to changing economic conditions [3].

In the study by V.N. Sidorov, questions are raised regarding the impact of AI on employment and the need to create conditions for the retraining of workers who can be replaced by automated systems [4]. The role of AI and technology in economic growth has been widely explored in the scientific literature. Research shows that AI contributes to increased productivity, reduced production costs, and improved service quality. An article by the Ministry of Investment and Trade of Uzbekistan examines how AI is transforming national economies, creating new opportunities for the development and modernization of industries. An analysis of materials on the UN website (OHCHR) highlights the role of AI in supporting sustainable development, reducing inequality, and addressing global social challenges.[5]

Research Methodology

The study is based on quantitative data analysis and a comparative analysis of AI implementation in countries with varying levels of economic development. Data from national and international reports, statistical data, and open-source research are used. The methodology also includes an analysis of best practices for implementing AI to improve economic efficiency and sustainability. Data collection was based on a review of articles, analytical reports, and data from statistical agencies. Research publications on the implementation of AI and digital technologies in the economy were analyzed, enabling the identification of key areas and challenges.

Analysis and discussion of results

The analysis shows that integrating AI into the economy contributes to sustainable growth by: 1. Optimizing resources and reducing operating costs. Thanks to automation and big data processing, companies can more accurately plan and allocate resources. Artificial intelligence is widely applied in various fields, such as:

In the banking sector: the use of AI technologies to improve the efficiency of monitoring the activities of commercial banks and simplify their compliance with regulatory requirements (SubTech and RegTech), as well as to analyze the quality of banking services, remote biometric identification (Face-ID) of users and assess credit risks;

In finance: using AI technologies to analyze and improve the efficiency of budget expenditures, pension, social and insurance payments, and benefits;

in taxation: using AI technologies to analyze legal entities' tax revenues and identify tax deduction deviations;

In the transportation sector: the use of AI technologies in locomotive control to track their movements and warn drivers in dangerous situations, analyze public transport movements and determine their optimal routes, and monitor vehicle traffic and traffic congestion;

in the energy sector: the use of AI technologies to forecast energy production and consumption and optimize the operation of process equipment;

In healthcare: the use of AI technologies to diagnose pneumonia based on the analysis of human lung CT scans, as well as early-stage breast cancer based on mammography analysis;

in pharmaceuticals: the use of AI technologies to analyze and forecast market demand for medicines and medical devices;

In the field of e-government: the use of artificial intelligence technologies for remote biometric identification of users in the provision of electronic government and financial services (Face-ID).

Funding for scientific research and innovative development in the field of AI will be provided by the Fund for the Support of Innovative Development and Innovative Ideas through a separate bank account opened for these purposes[6].

2. Increased labor productivity. The implementation of AI enables the automation of routine operations, freeing up human resources for higher-value-added tasks. The use of artificial intelligence in manufacturing significantly improves the accuracy of decision-making, ensures the flexibility and adaptability of business processes to changing realities, reduces production costs and product costs, and contributes to increased production efficiency. Furthermore, the positive effects of AI technologies include:

- Improving the quality of products and manufacturing processes;
- Improving production safety;

The Impact of AI on Manufacturing Processes. AI and automation have a direct impact on manufacturing processes, increasing productivity and reducing costs. Table 1 shows the growth rate of companies implementing AI from 2010 to 2023. Table 1. AI Implementation in Industry, 2010–2023 AI is also facilitating the development of new industries. For example, algorithm development and data analysis are becoming one of the fastest-growing sectors in the labor market. Table 1 shows the number of jobs created through the implementation of AI in different countries.

Table 1. The number of jobs created by AI in different countries

Country	Number of jobs created by AI
USA	200,000
China	180,000
Germany	90,000

Table 1 shows that the development of artificial intelligence has led to an increase in jobs, which has a positive impact on economic development.

3. Improvements in environmental sustainability. AI technologies allow for more accurate monitoring of environmental indicators, waste management, and emission reduction. There is hope that artificial intelligence (AI) will help solve the world's major environmental disasters. AI is already being used to map destructive sand mining.

However, according to a growing body of research, the rapid development of AI and its associated infrastructure also has a negative environmental impact. The proliferating data centers housing AI

servers generate electronic waste. They are major consumers of water resources, which are depleted in many places. They rely on essential minerals and rare elements, the extraction of which is often unsustainable. Furthermore, they consume enormous amounts of electricity, resulting in the release of greenhouse gases that cause global warming. “We still don’t know much about the environmental impacts of artificial intelligence, but some of the data we do have is concerning,” said Golestan (Sally) Radwan, chief digital officer at the United Nations Environment Programme (UNEP). “We need to make sure that the ultimate impact of artificial intelligence on the planet will be positive before we begin to deploy this technology at scale.”[7]

Conclusions and Suggestions

Based on the above analysis, the following measures and recommendations can be proposed for a more effective and sustainable implementation of artificial intelligence in the economy:

1. Developing strategies and programs for training personnel. Governments and companies should develop and implement programs to improve the skills of employees to prepare them for working with new technologies and minimize the risk of job losses.
2. Developing environmentally sustainable AI technologies. To reduce the negative impact on the environment, it is necessary to support projects aimed at developing energy-efficient and environmentally sustainable algorithms and technologies. This could include switching to renewable energy sources for data centers and creating standards for the disposal of electronic waste.
3. Developing legal and ethical standards. It is important to create frameworks and legal norms that govern the use of AI in areas such as data protection, privacy, and environmental responsibility. This will allow for safer and more responsible implementation of AI in various economic sectors.
4. Support scientific research and monitoring of AI impacts. Since many aspects of AI's impact on the environment and society remain poorly understood, it is essential to support scientific research aimed at monitoring and assessing AI's environmental and social impacts. Continuous analysis and monitoring of the impact of these technologies will help adjust approaches to their application.
5. Enabling international cooperation. Since the development and impact of AI on the economy and environment extend beyond the borders of a single country, it is important for countries to collaborate on information sharing, standard development, and coordination. International organizations can play a key role in creating global standards and methodologies for assessing the economic and environmental impacts of AI.

In conclusion, AI is a powerful tool that can significantly contribute to economic development and improve quality of life. However, its implementation requires a responsible and balanced approach. Both the positive aspects of AI and the potential risks must be considered in order to maximize benefits and minimize negative impacts on society and the environment.

Artificial intelligence significantly facilitates human life in the modern world, where processing speed, information, and the efficient allocation of resources (time, finance, and material assets) are crucial. The introduction of artificial intelligence technologies into various areas of life has the potential to fundamentally transform them and improve the effectiveness of any work. Today, in a context where information and communications technologies are developing rapidly, ensuring economic growth and increasing national income is impossible without innovative development. Technological progress, particularly with regard to internet-based information technologies, is giving rise to new areas of scientific development. Particular attention is currently being paid to the field of artificial intelligence

(AI). Artificial intelligence is defined as the ability of intelligent systems to perform creative functions that are traditionally considered the prerogative of humans.

Uzbekistan is implementing comprehensive measures to actively develop the digital economy and widely implement modern information and communication technologies across all sectors and areas, primarily public administration, education, healthcare, and agriculture.[8] In conclusion, AI is a powerful tool that can significantly contribute to economic development and improve quality of life. However, its implementation requires a responsible and balanced approach. Both the positive aspects of AI and the potential risks must be considered in order to maximize benefits and minimize negative impacts on society and the environment.

References

1. Ivanov, S.A. “Application of AI in Industrial Production” // Bulletin of Economics and Law, 2021, pp. 12–18.
2. Petrov, Yu.N. “Supply Chain Optimization Using AI” // Logistics and Management, 2020, pp. 45–52.
3. Sidorov, V.N. “Social Aspects of AI Implementation” // Russian Economic Journal, 2022, pp. 98–104.
4. “Development of Artificial Intelligence in the Modern Economy” // Russian Economic Journal, 2022, pp. 98–104.
5. OHCHR. “Artificial Intelligence: A Game Changer for Sustainable Development.” Official website of the OHCHR, 2024.
6. <https://www.gazeta.uz/ru/2021/02/18/artificial-intelligence/>
7. <https://www.unep.org/ru/novosti-i-istorii/istoriya/iskusstvennyy-intellekt-sozdaet-ekologicheskie-problemy-cto-my-mozhem>
8. <https://reu.uz/novosti/razvitie-ii-intellektualnyj-i-tehnologicheskij-potencial-strany/>