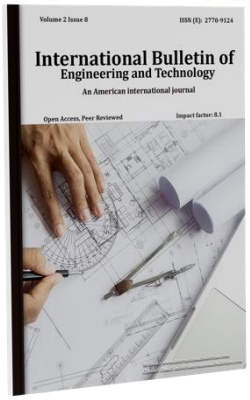

THE IMPACT OF DIGITALIZATION AND ARTIFICIAL INTELLIGENCE ON THE ECONOMY

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Abstract: This article analyzes the impact of digitalization and artificial intelligence on the economy. The views and research of scholars on digitalization and artificial intelligence are also discussed. It is emphasized that modern technologies play an important role in optimizing business processes, increasing efficiency, and creating new economic opportunities. The research results demonstrate the positive impact of digital transformation on the economy and help identify future directions.

Keywords: digitalization, artificial intelligence, economy, technological development, business processes, innovation, industry, finance, services, agriculture, digital transformation.

Introduction

In order to create conditions for the development of artificial intelligence technologies, the President of the Republic of Uzbekistan adopted Resolution No. PQ-4996 on February 17, 2021, "On measures to create conditions for the rapid implementation of artificial intelligence technologies."[1] According to this resolution, starting from the 2021–2022 academic year, 15 higher education institutions introduced courses and subjects on the practical application of artificial intelligence technologies in the economic sectors and the system of public administration. From the 2023–2024 academic year, 572 students (510 undergraduate and 62 graduate) were admitted to 12 higher education institutions for training in the field of "Artificial Intelligence." The "El-yurt umidi" Foundation sent young people who expressed a desire to study in the field of artificial intelligence to leading foreign higher education institutions. The Scientific Research Institute for the Development of Digital Technologies and Artificial Intelligence with specialized laboratories was established under the Ministry of Digital Technologies. Within the framework of the Open Data Portal of the Republic of Uzbekistan, a digital data platform (data.egov.uz) was launched to provide access to government data and other datasets for the use of AI-based software. As part of this resolution, pilot projects for introducing artificial intelligence were implemented in priority sectors such as agriculture, banking, finance, transport, healthcare, pharmaceuticals, energy, taxation, and others.

Review of Literature Related to the Topic: According to Klaus Schwab, the founder of the World Economic Forum, humanity can achieve economic growth and prosperity through the proper management of digitalization and artificial intelligence. At the same time, he warns that misdirecting these technologies could lead to deep social and economic problems in society.

Professors Erik Brynjolfsson and Andrew McAfee, in their book "The Second Machine Age," analyze the socio-economic impacts of digital technologies and artificial intelligence. They

[1] The Resolution of the President of the Republic of Uzbekistan No. PQ-4996 dated February 17, 2021, "On measures to create conditions for the rapid implementation of artificial intelligence technologies" was adopted.

argue that while modern technologies may increase social inequality, they can also create new jobs and opportunities.

Professor Bruce Schneier, a cybersecurity expert, emphasizes that issues of data security should concern everyone during the processes of digitalization and artificial intelligence development. He warns that the rapid advancement of technologies may affect privacy and innovation.

Professor Hal Varian, Google's chief economist, highlights that artificial intelligence and big data analysis allow organizations to make better-quality decisions. He believes that through the effective use of data, companies can gain a deeper understanding of market demands.

Technology expert Hikmatulla Ubaydullayev, discussing the impact of artificial intelligence on the media industry, notes that this technology has expanded the possibilities of processing images and sounds, but has also increased the risk of spreading fake content. He stresses the importance of using artificial intelligence efficiently and responsibly.

Darxan Mirzabayev, Director of the Innovation Development Department under the Ministry of Digital Development, Innovation, and Aerospace Industry, states that artificial intelligence can complement certain human functions but cannot fully replace humans. According to him, AI can make the work of consultants and translators easier, but it cannot completely substitute them.

Research Methods: During the research, various methods were used, including the study of works and findings of scholars in the field, abstract logical thinking, induction and deduction, monographic observation, systematic analysis, comparison, and economic analysis.

Analysis and Results: Digitalization is the process of transforming procedures and data into digital formats to bring changes across different sectors of the economy and society. It has both positive and negative aspects, and balancing them is of great importance. The process of digitalization has gradually expanded into various areas of society. Currently, digitalization is integrated into the state's social, economic, legal, and other sectors, becoming an inseparable part of these fields. In particular, the impact of digitalization on the economy is significant, as it has led to the transformation, development, and creation of new sectors within the economy. As a result of the introduction of digitalization into the economy, production efficiency has been further improved, strengthened, and developed. In other words, due to the digitalization of economic sectors, many labor-intensive work processes have been automated. This has reduced both the time and costs spent on these tasks, thereby increasing the efficiency of operations in these sectors. Consequently, costs have decreased, and labor productivity has increased.

According to data from the State Committee on Statistics, as of June 2025, the Gross Domestic Product (GDP) reached 807.9 trillion soums, which represents a 7.2% increase compared to the same period in 2024. [7]

Secondly, the introduction of digitalization into the economy has led to the emergence of new business sectors. As a result, new industries such as e-commerce and online markets have developed (especially during the pandemic and in subsequent years, the demand for online stores has increased significantly compared to previous years). These sectors have been growing and developing year by year in our country.

Thirdly, the implementation of digitalization in the economy has created new job opportunities. The formation of new categories of employees engaged in digitalization

processes has resulted in the creation of employment opportunities in fields such as data analysis, digital economy, and digital marketing.

Fourthly, with the introduction of digitalization, spatial distance has ceased to be a key factor in the relations between enterprises and organizations. In particular, digitalization has enabled companies to enter the global market.

There are four major revolutions in the field of digitalization that define the key stages of industrial development.

"Digitalization and artificial intelligence fundamentally transform economic processes and create new opportunities. At the same time, society must acquire new knowledge and skills to adapt to these technological changes." — Klaus Schwab, "The Fourth Industrial Revolution" [3]

Stages of the Industrial Revolution

1-table

Names	Date	Causes
The First Industrial Revolution	Late 18th – early 19th century	The invention of the steam engine and mechanical weaving machines. Automation of manual labor in production
The Second Industrial Revolution	Late 19th – early 20th century	The widespread adoption of electricity and the emergence of mass production systems. Introduction of conveyor-based production (as exemplified by Ford automobile factories).
The Third Industrial Revolution	Mid-20th – early 21st century	The advent of computers and digital technologies. The use of programmable control systems in manufacturing.
The Fourth Industrial Revolution	Early 21st century – present	The development of artificial intelligence (AI), the Internet of Things (IoT), big data, and automated systems. The extensive implementation of cyber-physical systems, smart factories, and digital technologies in production.

These revolutions have fundamentally transformed industry and society, making a significant contribution to the formation of modern technologies.

Artificial Intelligence (AI) — from the English term Artificial Intelligence (AI) — is a field of science and technology aimed at creating machines capable of imitating human intelligence. Today, artificial intelligence technologies are widely used in various domains, such as intelligent web search systems (for example, YouTube Search), recommendation systems (YouTube, Amazon, and Netflix), natural language understanding (Google Assistant, Siri, and Alexa), self-driving cars (Waymo, for instance), and many others.

Alan Turing was the author of the first research conducted in the field of artificial intelligence. Artificial intelligence was established as an independent scientific discipline in 1956. During a conference held that summer at Dartmouth College, John McCarthy first introduced the term "artificial intelligence", becoming recognized as the originator of the term. Although research on artificial intelligence has been ongoing since the mid-20th century, public interest in the field grew sharply in 2012, when deep learning demonstrated superiority over

other AI methods, and again in 2017 following advancements achieved through transformer architectures. In the early 2020s, the field began to flourish rapidly, with many companies, universities, and laboratories achieving remarkable progress in artificial intelligence. [1]. This field is based on the assumption that the intelligence of Homo sapiens can be described so precisely that it can even be modeled by a machine — an entity exhibiting the main features of intelligent beings. This raises philosophical questions about the nature of intelligence and the ethics of creating artificial beings, which have been explored since ancient times in mythology, science fiction, and philosophy. Artificial intelligence is often viewed with optimism. Such optimism was present in the predictions of early AI researchers (see: optimism in the history of AI) and in the ideas of modern transhumanists such as Ray Kurzweil. However, the field has also experienced periods of crisis, which can be seen in events such as the ALPAC report (1966), the limitations of perceptrons (1970), the Lighthill report (1973), and the decline of the Lisp machine market (1987). Today, artificial intelligence has become an essential part of the technology industry, offering solutions to many of the most complex problems in computer science. AI research is a high-tech and highly specialized field that is often divided into smaller "deep" subfields that may not always directly interact with one another. [2]

Conclusion and Analysis: Digitalization and artificial intelligence are fundamentally transforming the economic sector, making a significant contribution to increasing efficiency and innovation. Artificial intelligence expands opportunities for automating business processes, reducing costs, and enabling data-driven decision-making. Digital technologies create new opportunities in industries such as manufacturing, finance, services, and agriculture, increasing production capacity and improving the quality of services for consumers. However, despite the positive impact of digitalization on the economic sector, certain challenges remain. Issues such as cybersecurity, the digital divide, and information privacy represent the negative aspects of technological development, and addressing them requires cooperation between the public and private sectors. In conclusion, digitalization and artificial intelligence contribute to making the economy more efficient, innovative, and sustainable. In the future, it will be essential to properly direct these technologies and manage their socio-economic consequences.

Analyses show that artificial intelligence and digitalization not only accelerate economic growth but also lead to the creation of new jobs and the restructuring of the labor market. For instance, while automation in manufacturing may reduce the demand for manual labor, it simultaneously increases the demand for professionals in technological services and IT. Moreover, artificial intelligence promotes the development of automated systems in the financial and trade sectors, reducing operational costs and enabling faster customer service. In agriculture, smart technologies help increase productivity, contributing to food security. However, the impact of digitalization on the economy is not uniform. In developed countries, the integration of artificial intelligence is progressing more rapidly, whereas in developing countries, a lack of infrastructure and skilled personnel may hinder this process. Overall, while digitalization and artificial intelligence produce positive outcomes across various sectors of the economy, they also bring certain challenges. Therefore, to ensure effective use of technological advancement in the future, state policy, public-private cooperation, and the adaptability of the education system play a crucial role.

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