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DEVELOPMENT OF ARTIFICIAL INTELLIGENCE IN CENTRAL ASIA

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Abstract

This article examines the trends, characteristics, and prospects of artificial intelligence (AI) development in the countries of Central Asia. It analyzes national digital transformation strategies, scientific and educational initiatives, as well as the role of international cooperation in advancing AI technologies. Special attention is given to Uzbekistan, Kazakhstan, and Kyrgyzstan as countries demonstrating active policies in digitalization and innovation.

Keywords: artificial intelligence, digital transformation, Central Asia, innovation, technology, sustainable development.

Introduction

The development of artificial intelligence (AI) technologies has become one of the key factors driving global transformation in economics, science, and education. AI contributes to improving management efficiency, enhancing digital services, and advancing healthcare and education systems. For the countries of Central Asia, which are undergoing an active modernization process, the implementation of AI technologies represents an essential component of the transition to a knowledge-based and sustainable economy.[1]

Despite differences in economic and technological capacities, all countries in the

[1] Artificial Intelligence Index Report 2024. Stanford University, Human-Centered AI Institute.

region—Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, and Turkmenistan—are striving toward digitalization, the creation of innovative infrastructure, and the development of human resources in AI.

Main Part

1. Government Policy and National Strategies

In recent years, Central Asian governments have adopted a number of programs aimed at digital development. In Kazakhstan, the "Digital Kazakhstan" strategy prioritizes the introduction of AI into the economy and public administration. The country is actively developing research institutions such as Astana Hub and the Nazarbayev University AI Lab.[2]

In Uzbekistan, the Artificial Intelligence Development Strategy until 2030 was approved in 2021. It envisions the creation of a National AI Center, the integration of AI technologies into industry, transport, and healthcare, as well as training of AI specialists at leading national universities. The country is developing a digital government system, e-services, and open data infrastructure.

"Artificial intelligence technologies are being applied in e-commerce in Uzbekistan." In Uzbekistan, electronic commerce is at the stage of its development. Today, it is about one percent of the country's GDP. In order to further develop electronic commerce, it is necessary to determine the factors affecting it, to study the appearance of connections between them, and to make forecasts for future periods on this basis. In the coming years, the growth of the ecommerce market in Uzbekistan can be ensured on the basis of the following factors:

- Increase in population income levels;
- Internet audience growth;
- Level of attraction of Internet users to electronic commerce;
- Increase in product categories;
- Growth of purchases within product categories.[3]

[2] Nazarbayev University (2023). *AI Research in Central Asia: Challenges and Opportunities*.

[3] Rizayeva N.O. THE PLACE OF E-COMMERCE PLATFORMS IN THE DEVELOPMENT OF SMALL BUSINESS IN UZBEKISTAN. AMERICAN JOURNAL OF EDUCATION AND LEARNING. Vol 3, №6, Page

In Kyrgyzstan, the Digital Kyrgyzstan 2019–2023 program promotes digital technologies in education, healthcare, and public governance, including the use of AI and Big Data elements.

2. The Role of Education and Science in AI Development. Human capital is a key success factor in AI development. Universities across Central Asia are introducing new educational programs in Artificial Intelligence, Machine Learning, and Big Data. For example, the Tashkent University of Information Technologies (TUIT) and Inha University in Tashkent are actively developing AI research laboratories. Similar initiatives are being implemented in Kazakhstan and Kyrgyzstan.[4]

Moreover, international organizations such as UNESCO, UNDP, and the Asian Development Bank provide significant support to the region in developing digital competencies and promoting research in AI.

3. Challenges and Barriers

Despite positive dynamics, several challenges hinder the accelerated adoption of AI in Central Asia:

- insufficient data infrastructure and computational resources;
- shortage of qualified specialists and research institutions;
- weak cooperation between universities and industry;
- need for legal and ethical regulation of AI and data protection.

Addressing these issues requires a comprehensive approach that includes the establishment of research centers, support for AI startups, strengthening international cooperation, and knowledge exchange.[5]

4. International Cooperation and Prospects

Central Asian countries are increasingly involved in global AI initiatives. Regional projects with the participation of the European Union, South Korea, China, and the United Nations are aimed at developing innovation ecosystems. The Shanghai Cooperation Organization (SCO) and the Eurasian Economic Union (EAEU) digital agenda also play an important role in fostering dialogue on AI ethics, cybersecurity, and sustainable development.

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[4] Government of Kazakhstan. *Digital Kazakhstan Program*, 2018.

[5] UNDP (2022). AI for Sustainable Development in Central Asia. New York: United Nations.

Conclusion

The development of artificial intelligence in Central Asia is a strategic priority shaping the region's competitiveness in the 21st century. Uzbekistan, Kazakhstan, and Kyrgyzstan are taking active steps toward creating a digital economy and fostering innovation. However, future progress depends on strengthening educational and research capacities, increasing investment in R&D, improving legal frameworks, and expanding international partnerships.

Artificial intelligence can become a powerful tool to address regional challenges — from water resource management to the development of smart cities and sustainable agriculture.

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