

The Impact Of Artificial Intelligence On The Economy And Its Future Prospects: A Case Study Of Uzbekistan

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ABSTRACT

This article examines the impact of Artificial Intelligence (AI) on Uzbekistan's economy, emphasizing its current applications, associated challenges, and prospects. Employing a qualitative analysis methodology, the study uses secondary data interviews with key stakeholders, including policymakers, business leaders, and academics, to elucidate the transformative potential of AI technologies within the Uzbek context. The findings indicate that AI offers substantial opportunities for economic growth and operational efficiency. However, to fully realize these benefits, it is imperative to address critical challenges, including inadequate technological infrastructure, workforce readiness, and the establishment of robust regulatory frameworks. Additionally, this study highlights the importance of fostering collaboration among government entities, the private sector, and educational institutions to facilitate the integration of AI across economic sectors. This holistic approach is essential for ensuring that Uzbekistan can effectively navigate the complexities of AI adoption and leverage its capabilities for sustainable economic development.

Key words: *Artificial Intelligence (AI); Economy; icebef; Uzbekistan; Central Asia.*

INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force globally, particularly in emerging markets such as Uzbekistan. As the world enters the Fourth Industrial Revolution, characterized by significant advancements in machine learning, data analytics, and automation, understanding the implications of these technologies on evolving economies becomes crucial. The Republic of Uzbekistan, with its rich historical background, abundant natural resources, and strategic geographic location, presents a compelling case study at the intersection of AI and economic development.

Uzbekistan's government has recognized AI's potential to drive economic growth and improve living standards. Initiatives to integrate AI across sectors, including agriculture, healthcare, and finance, are already underway. AI technologies are being used to enhance agricultural productivity through precision farming techniques that optimize resource use and increase yields. In healthcare, AI applications are improving diagnostic accuracy and patient management, thereby enhancing the overall quality of care (Rustamov et al., 2020).

The role of AI in fostering innovation and efficiency cannot be overstated. AI-based algorithms are essential for optimizing processes and automating routine tasks, resulting in significant economic benefits. However, successful AI implementation in Uzbekistan faces challenges, including infrastructure limitations, a shortage of skilled professionals, and the need for a robust regulatory framework to ensure ethical AI deployment (Kobilov et al., 2022).

The integration of AI into Uzbekistan's economy presents both opportunities and challenges. This research aims to analyze these aspects comprehensively and provide insights into how Uzbekistan can harness AI's transformative power for sustainable economic development. The study addresses the following research question: What are the economic impacts of AI adoption in Uzbekistan, and what measures are necessary to maximize its benefits while mitigating associated risks?

METHOD

This research employs a rigorous qualitative analysis methodology, utilizing secondary data sources including government reports, peer-reviewed scholarly articles, and comprehensive case studies. Data from the Uzbek Ministry of Economic Development and Poverty Reduction, international organizations such as the International Monetary Fund (IMF), the World Bank, and McKinsey & Company, and pertinent academic literature are analyzed to elucidate the multifaceted economic implications of AI in Uzbekistan.

The analysis is systematically organized into two principal themes: the beneficial impacts of AI technologies on economic growth and productivity, and the significant challenges they present to various sectors of the economy. The study examines AI adoption rates across different sectors, infrastructure readiness, workforce capabilities, and regulatory frameworks. Comparing regional and global trends provides context for Uzbekistan's

AI development trajectory. Through this structured approach, the research aims to deepen understanding of AI's role in shaping Uzbekistan's economic landscape.

RESULTS AND DISCUSSION

Positive Impacts of AI Technologies

AI has the potential to significantly boost Uzbekistan's GDP by enhancing productivity across various sectors. According to the International Monetary Fund (2023), AI integration could increase Uzbekistan's GDP by up to 7% annually by 2030, translating to an additional \$9 billion in economic output. The application of AI in agriculture alone could improve yields by 20% through advanced predictive analytics and automated farming technologies, leading to more efficient resource management and improved service delivery (Kobilov et al., 2022).

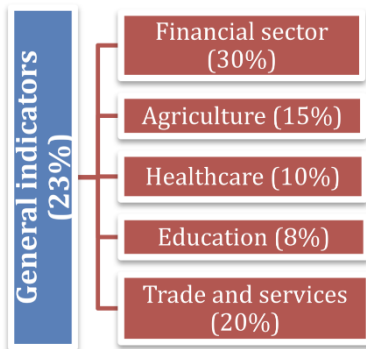


Table 1. Sectors of AI use in Uzbekistan. Compiled by the author.

According to a 2022 Deloitte study, approximately 23% of enterprises in Uzbekistan have adopted AI technologies or plan to do so. The financial sector shows the highest adoption rate at 30%, primarily for credit analysis and fraud prevention. In agriculture, 15% of farmers utilize AI-driven data analytics for crop yield prediction and resource optimization. Healthcare institutions (10%) implement AI for patient diagnostics and monitoring, while the education sector (8%) shows growing interest in online learning and adaptive technologies. The trade and services sector demonstrates 20% adoption for customer service and inventory management improvements.

The rapid integration of AI technologies is projected to contribute 1.2% of global GDP by 2030. However, economic benefits will materialize gradually due to substantial initial investments required for implementation and subsequent technological advancements (Umarova, 2021). The implementation of generative AI possesses the potential to catalyze productivity growth, thereby offsetting observed declines in employment growth. These technologies could yield annual productivity increases for the global economy ranging from 0.5 to 3.4 percent between 2023 and 2040, with generative AI contributing between 0.1 and 0.6 percentage points (McKinsey & Company, 2024).

While concerns about job displacement exist, AI also creates new opportunities. The World Economic Forum (2023) projects that by 2025, AI could create approximately 133 million new roles globally, particularly in data analysis, machine learning, and AI development. In Uzbekistan, demand for skilled professionals in AI and data analytics is expected to rise, with an estimated need for a 25% increase in graduates from technical fields over the next five years (Kobilov et al., 2022).

AI technologies foster innovation by enabling businesses to develop new products and services. The Asian Development Bank (2023) found that AI implementation could lead to a 30% increase in innovation output of Uzbek enterprises, enhancing competitiveness in domestic and international markets (Kobilov et al., 2022).

Challenges Posed by AI Technologies

The successful implementation of AI in Uzbekistan faces several significant challenges. Infrastructure limitations pose a major obstacle, with internet penetration at approximately 66%, below the global average of 75%. Only 20% of rural areas have reliable internet access (ITU, 2022), severely restricting access to AI technologies for businesses and consumers (Abdurashidova et al., 2023).

A substantial skills gap exists, with only 23% of university graduates educated in STEM disciplines encompassing AI-related fields (World Bank, 2023). Additionally, 65% of businesses face difficulties finding qualified tech talent (Uzbekistan Ministry of Employment and Labor Relations, 2022). This skills gap significantly challenges companies looking to adopt and implement AI technologies effectively (Kobilov et al., 2022).

The regulatory environment remains nascent, with only 40% of AI-related projects complying with existing regulations that are often outdated or unclear (World Economic Forum, 2023). Experts emphasize the need for clear policies and guidelines to ensure ethical AI use while fostering innovation-conducive environments (Kobilov et al., 2022).

Table 2. Contributions to publicly available AI projects by country and their impact on the global economy, in %. Compiled by the author.

Countries	2011	2015	2020	2021	2022
USA	41,30	32,33	22,61	20,90	21,11
Europe	25,06	22,35	18,08	17,33	16,15
China	1,86	8,00	8,23	10,55	12,00
India	0,65	2,39	16,25	13,85	12,97
Japan	6,89	2,95	1,77	1,78	1,41
Russia	0,08	0,52	1,31	1,04	0,89
Kazakhstan	0,00	0,02	0,03	0,05	0,06
Uzbekistan	0,00	0,00	0,03	0,04	0,09

The data reveals that while the United States maintained the largest share of global AI investments (declining from 41.3% in 2011 to 21.11% in 2022), Uzbekistan did not engage in AI investments until 2020. Following the Presidential Resolution "On Measures to Create Conditions for the Accelerated Implementation of Artificial Intelligence Technologies" on February 17, 2021, investments began, reaching 0.09% of global AI investments by 2022.

Recent developments show promising progress. The volume of digital services in Uzbekistan has surpassed 21 trillion sums in the current fiscal period, with projections of 43 trillion sums by year's end. Service exports reached \$ 367 million, while IT Park residents increased by 577 to exceed 2,000, employing 32,000 young professionals.

The Global Center for Governance of AI's Global Index for Responsible AI (GIRAI) identified Uzbekistan as the foremost nation in Central Asia regarding responsible AI, achieving a score of 11.27 and ranking 70th globally among 138 countries. This assessment evaluates responsible AI across 19 thematic areas in three dimensions: human rights and AI, responsible AI governance, and accountable AI capabilities.

The findings indicate that while AI offers substantial opportunities for economic development in Uzbekistan, addressing the identified challenges is crucial to maximizing its benefits. Policymakers should prioritize strategies promoting equitable access to education and training, particularly in technology sectors, to mitigate skill gaps (World Bank, 2020). Establishing partnerships among government entities, educational institutions, and the private sector can facilitate comprehensive workforce development approaches (OECD, 2021). Furthermore, establishing ethical guidelines and regulatory frameworks is critical for effective governance of AI deployment, ensuring the protection of citizens' rights (European Commission, 2021).

CONCLUSION

Artificial Intelligence represents a powerful tool for economic advancement in Uzbekistan, potentially driving growth and innovation across various sectors. AI integration can enhance productivity, optimize resource allocation, and facilitate data-driven decision-making, transforming industries such as agriculture, manufacturing, and services. The potential for 7% annual GDP growth by 2030 demonstrates AI's transformative capacity for the Uzbek economy.

However, AI implementation requires a careful approach that considers the socio-economic landscape and mitigates associated risks, including job displacement and ethical concerns about data privacy and security. To harness AI's full potential, Uzbekistan must strategically invest in several key areas: enhancing the education system to include AI and data science curricula, developing robust digital infrastructure to support AI applications, and establishing comprehensive regulatory frameworks that address ethical considerations.

Uzbekistan's position as Central Asia's leader in responsible AI, despite challenges in infrastructure and workforce readiness, demonstrates the government's commitment to AI development. The country's increasing investment in AI projects, growth in IT Park residents, and rising digital services exports indicate positive momentum; however, the 0.09% share of global AI investments in 2022 highlights the need for accelerated efforts.

Promoting public-private partnerships can facilitate innovation and accelerate AI technology adoption. Collaboration among governmental agencies, educational institutions, and private-sector entities can lead to the development of targeted initiatives that address specific challenges and effectively leverage local resources. By focusing on education, infrastructure, and regulatory frameworks, Uzbekistan can fully leverage AI's potential while ensuring inclusive growth, ultimately contributing to sustainable development.

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