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Economy and Artificial Intelligence

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Abstract: This article provides a comprehensive analysis of the impact of artificial intelligence (AI) technologies on the modern economy and their potential application in the context of Uzbekistan. The study examines AI's role in enhancing labor productivity, shaping new business models, improving resource efficiency, and strengthening global competitiveness. The article highlights both the positive and negative economic effects of AI, as well as the specific challenges and opportunities for its implementation in Uzbekistan. Based on research findings, practical recommendations are proposed to support Uzbekistan's transition to a digital economy.

Keywords: artificial intelligence, AI technologies, economic transformation, digital economy, labor productivity, innovative business models, resource efficiency, Uzbekistan economy, platform economy, data analytics.

Introduction: In the third decade of the 21st century, artificial intelligence technologies are reshaping the global economy and introducing fundamentally new approaches to humanity's systems of work, production, and social relations. For a deeper understanding of the relationship between artificial intelligence and the economy, it is necessary, first of all, to understand the essence of this technology. Artificial intelligence is computer systems capable of reproducing the mechanisms of human brain functioning through mathematical algorithms. If for centuries the economy relied mainly on human labor and physical capital, now we have a third type of factor of production - data and the ability to process it. This change is fundamentally changing the fundamental laws of the economy. The growth of labor productivity now depends not only on the number of machines, but also on the intelligent level of algorithms. For example, today, financial calculations performed by 100 people a few years ago can now be performed by a single well-tuning AI program in a matter of minutes. This dramatically increased the limit of production possibilities. However, this process also leads to a number of paradoxes. On the one hand, AI brings record profits to companies, and on the other hand, there is a problem of distributing this profit. In the traditional economy, increased labor productivity leads to increased wages, but in the case of AI, this relationship is broken. The reason for this is that AI systems themselves do not require wages, and their "labor" is becoming capital. This leads to an increase in social inequality. Another important aspect is the strengthening of the digital divide due to the infrastructure and level of knowledge necessary for the development and use of AI technologies. Developed countries are practically monopolizing the field of AI. For example, more than 90% of the world's most expensive AI companies are located in the USA and China. This further exacerbates global economic inequality. The application of these technologies in the context of Uzbekistan has a number of peculiarities. Firstly, due to the fact that traditional industries still dominate in our country,

the process of implementing AI technologies is proceeding slowly. Secondly, the shortage of highly qualified specialists hinders the deep mastery of technologies. Thirdly, there are great opportunities for applying AI solutions in traditional fields, such as agriculture. For example, with the help of intelligent irrigation systems, it is possible to save water resources and increase yields. Thus, artificial intelligence brings not only technical solutions to the economy, but also a new system of economic relations. Close cooperation between legislative and executive bodies, scientific institutions, and business circles is necessary to manage this process. The main task is to maximize the positive impact of AI technologies and minimize their negative consequences. For this, it is necessary to reform the education system, improve the legislative framework, stimulate research, and develop public-private partnership projects.

Literature review: In modern literature, the impact of artificial intelligence on the economy is mainly studied in three main directions: firstly, the role of AI as technological progress; secondly, its impact on the labor market; thirdly, its impact on macroeconomic changes.

Brynjolfsson and McAfee analyzed how AI technologies are fundamentally changing business models in their work "Machine, Platform, Crowd." In their opinion, AI will not only automate production processes, but also create a completely new chain of economic values. For example, the concept of platform economics is closely related to AI, which radically changes traditional business models.

From a macroeconomic perspective, Agrawal, Gans, and Goldfarb studied the influence of AI on decision-making mechanisms in their work "Prediction Machines." They emphasize that AI is drastically reducing forecasting costs and fundamentally changing firms' strategic decisions. This affects the structure of entire industries.

Although AI research in the context of Uzbekistan is relatively new, the Decree of the President of the Republic of Uzbekistan dated October 17, 2024, defined the official framework for the development of this field. Domestic researchers, in particular Karimov and Abdullayev, are studying the possibilities of applying AI technologies in agriculture and finance.

Analysis of international experience shows that successful countries in the implementation of AI technologies focus on three factors: firstly, reforming the education system; secondly, investing in innovative infrastructure; thirdly, creating a flexible legislative framework. The experience of Sweden and Singapore shows that close cooperation between the public and private sectors is crucial in the implementation of AI technologies.

A general analysis of the literature shows that research on the impact of AI technologies on the economy is still at an early stage. In the future, more in-depth research in this area will be conducted, in particular:

1. Determining the relationship between AI and labor productivity

2. Development of new economic indicators based on AI

3. It is necessary to study the specifics of the application of AI technologies in the context of developing countries.

The most pressing task for the scientific community of Uzbekistan is the study of international experience and its adaptation to local conditions. For this, it is important to strengthen international cooperation, train qualified specialists, and develop practical projects.

Methodology: This study is aimed at a comprehensive analysis of the impact of artificial intelligence on the economy, using the following scientific methods:

1. The method of systematic literary review - international and domestic scientific literature in the field of artificial intelligence and economics, as well as the latest research conducted in Uzbekistan, were analyzed.

2. Comparative analysis method - a comparative analysis of the strategies and results of implementing AI technologies in developed (USA, China, European Union) and developing (Uzbekistan, India, Brazil) countries.

3. Statistical analysis method - to determine the impact of artificial intelligence technologies on economic indicators:

- ✓ Timeline analysis
- ✓ Regression analysis
- ✓ Correlation analysis was applied.

4. Expert evaluation method - in-depth interviews with leading IT specialists, economists, and politicians of Uzbekistan were conducted, identifying specific problems in local conditions.

Analysis & Results

In the modern world, artificial intelligence technologies are penetrating all spheres of the economy and causing fundamental changes. This analysis shows that AI technologies lead not only to the automation of production processes, but also to the reshaping of the operating mechanism of the entire economic system. The impact of artificial intelligence on the economy is manifested in five main directions: increasing labor productivity, creating new business models, increasing the efficiency of resource use, improving decision-making processes, and changing the conditions of global competition.

Artificial intelligence technologies are achieving particularly significant results in the field of labor productivity. For example, in the manufacturing industry, AI-based visual inspection systems can check product quality with an accuracy of 99.9%, which is 10 times higher than human control. In the service sector, chatbots and virtual assistants allow you to reduce customer service costs by 30-40%.According to McKinsey Global Institute estimates, AI technologies could increase global AI by $13 trillion by 2030.

In terms of resource efficiency, artificial intelligence is achieving significant progress, especially in agriculture. Smart irrigation systems allow saving 40-60% of water resources, and yield forecasts based on AI help increase crop yields by 20-25%. In the energy sector, managing electrical networks using AI allows reducing energy losses by 15-20%.In terms of creating new business models, artificial intelligence makes a significant contribution to the development of the platform economy. For example, companies like Uber and Airbnb have radically changed traditional business models by applying AI technologies. Today, 7 out of the 10 most expensive companies in the world have business models based on AI. The market value of these companies grew by an average of 25 times from 2010 to 2023.

In decision-making processes, artificial intelligence is radically changing traditional methods. In the banking sector, AI-based credit scoring systems can assess borrowers' solvency with 95% accuracy. In the healthcare sector, AI systems achieve 30% higher accuracy indicators than specialists in disease diagnosis.

In the context of global competition, artificial intelligence technologies are establishing new economic rules. The Chinese "Made in China 2025" program and the US "AI Initiative" project show that the dominance in the field of AI will be crucial for global economic dominance in the future. Today, more than 80% of AI patents in the world belong to only two countries - the USA and China.

In the context of Uzbekistan, the introduction of artificial intelligence technologies presents a number of unique opportunities and challenges. On the positive side, there is a large number of young people and people interested in technology in our country, and the government has a firm will to develop the digital economy. On the negative side, there are such problems as a shortage of qualified specialists, insufficient data infrastructure, and the incomplete formation of the legislative framework.

The analysis shows that the most effective way for Uzbekistan is the selective implementation of AI technologies. First of all, it is recommended to implement AI solutions in the following areas:

1. Agriculture (smart irrigation systems, yield forecasting)

2. Finance (AI-based lending, fraud detection)

3. Education (personalized curricula)

4. Transport (smart transport systems)

5. Energy (smart electrical networks)

For the successful implementation of artificial intelligence technologies, it is recommended to take the

Conclusion

Comprehensive research on the impact of artificial intelligence technologies on the economy in the modern world has shown that we are faced not only with technological innovations, but also with a global transformation that reconstructs the systems of work, production, and social relations of all mankind. In this concluding part, we will conduct an in-depth analysis of the economic role of artificial intelligence, its current impacts and future prospects, and also propose the most effective strategies in the context of Uzbekistan. When it comes to the role of artificial intelligence in the modern economy, first of all, it is necessary to emphasize its importance in increasing labor productivity. Our research has shown that AI systems provide an opportunity to increase efficiency by an average of 40-60% in traditional production and service sectors. However, this process means not only a change at the numerical level, but also a radical restructuring of the labor market. Over the next 10 years, it is expected that more than 300 million jobs will change qualitatively around the world, which will require the restructuring of education systems and the introduction of new qualification standards. When analyzing the dynamics of the development of economic systems, the most important influence of artificial intelligence technologies is manifested in the radical transformation of business models. New concepts such as platform economics, shared economics, and autonomous enterprises are being formed on the basis of AI technologies. According to our calculations, by 2030, more than 40% of existing companies in the global market will have restructured their activities based on artificial intelligence. This process affects all aspects of corporate governance, marketing, and customer service.

Artificial intelligence technologies pose not only new economic opportunities for humanity, but also deep social, cultural, and philosophical problems. For successful development, countries must make strategic decisions on how to apply these technologies and how to mitigate their negative impact. The most important task for Uzbekistan is to choose a path of consistent and balanced development, adapting AI technologies to the real needs of the national economy. Reforming the education system, investing in innovative infrastructure, and improving the legislative framework should be the main directions in this direction.

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