

Study of Artificial Intelligence Development in Uzbekistan

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Abstract. *Spreading new digital technologies have an increasing impact on modern civilization, in particular artificial intelligence. AI technologies are changing processes in industry, energy, education, health care and banking, as well as affecting the mobility of the population. It is predicted that AI technologies will lead in the future to significant economic shifts caused by the growth of labor productivity due to the use of machines that are able to perform new functions, and this in turn will accelerate the transition of the world economy to the path of sustainable development.*

Keywords: *Uzbekistan, era, AI, strategy, development, digitalization, expert. NTP, technology, sustainable development.*

Introduction. The global community has entered a period of digital transformations that are radically changing all spheres of human life and activity. The high rate of scientific and technological progress (STP) in various areas of production and commercial activity has led to the emergence and development of such a phenomenon of the global economy and international economic relations as the emergence of a new economic phenomenon called "artificial intelligence", which is one of the key areas of digitalization.

The introduction of these technologies allows us to reduce the gap in information provision and the receipt of various social services, and in some cases, to surpass human capabilities in various areas of activity. [1]

It should be noted that after the coronavirus pandemic, AI solutions deployed in the cloud infrastructure will become widespread, as companies believe that the deployment of smart technologies in the cloud will be a more efficient and flexible process. Every day, more and more companies are betting on artificial intelligence (AI), from small startups to large companies, among which stand out not only IT giants Google, Microsoft, Facebook, IBM, but also those that seem to be far from this topic: for example, General Motors and Boeing created a joint laboratory for AI research. It is becoming obvious that AI technologies are the real mainstream of our time.

Research results. According to the McKinsey Global Institute, AI technologies can provide additional global GDP growth of about \$ 13 trillion by 2030, which is 1.2% of additional average annual GDP growth. If these forecasts come true, the impact of AI will be comparable to the impact of other universal technologies in the history of the world community. For example, the introduction of steam engines in the 1800s increased labor productivity by about 0.3% per year, robots in the 1990s by about 0.4%, and new information and communications technologies (ICT) in the early 2000s by 0.6% [2].

At the present stage, experts have developed five of the most common AI technologies: computer vision, natural language, virtual assistants, robotic process automation, and advanced machine learning. Calculations have shown that by 2030, about 70% of companies will be able to implement at least one type of AI technology, and 50% of them will fully master all five. The initial data included the results of surveys of about 3,000 firms in 14 different industries, as well as economic indicators of a number of international organizations. [2]

Five forecasts for the development of the AI market are proposed. In particular, analysts noted how the artificial intelligence market will develop up to 2025, and described serious and far-reaching ethical and social problems associated with AI. Five Gartner analysts presented their assumptions, paying special attention to the unintended consequences of the development of new technologies. The forecast examines five different predictions for the AI market and makes recommendations on how companies can address emerging issues and adapt to the future:

- By 2025, pre-trained AI models will be mostly concentrated in the hands of 1% of vendors
- In 2023, 20% of successful account takeover attacks use deepfakes
- In 2024, 60% of AI vendors include measures in their software to prevent its potential malicious/misuse.

Analysis. Other researchers used the S-curve pattern to calculate the impact of AI on economic growth. It assumes a slow start due to significant costs and investments associated with the study and deployment of new technologies, followed by acceleration due to the combined effect of improving innovation capabilities and success in competition. This "slow burn" pattern can be interpreted as evidence that the effect of AI implementation is limited in the long term.

The share of private investment aimed at the development of artificial intelligence technologies demonstrated an increase of 9.3%, exceeding \$40 billion. Among the leaders in terms of funds raised:

- technology companies in the field of developing new medical drugs using AI solutions, including for the fight against cancer;
- companies that specialize in research in the field of molecular medicine.

Also among the leaders are companies that develop unmanned vehicles (\$4.5 billion) and companies developing educational products based on AI (\$4.1 billion).

Many developed countries are already forced to step up the implementation of AI technologies in order to increase labor productivity growth, since their GDP growth rates tend to fall, which is largely due to the problem of an aging population and a decline in the birth rate. Moreover, the high level of wages in these countries increases incentives to replace labor with machines.

Countries that are leaders in the implementation of AI technologies are converting their achievements in this area into material advantages. In particular, economically developed countries expect to receive an additional 20 to 25% of net economic benefits by 2030 due to the development and implementation of AI technologies. [4]

Uzbekistan has also entered a new era - the era of digitalization, the technical and technological capabilities of which are radically changing the existing socio-economic model of the world. And artificial intelligence technologies play a crucial role in these processes. Our country has also begun to seriously look at artificial intelligence technologies.

In the next two years, it is planned to attract about \$ 2.5 billion for the development of digital infrastructure. Three new large data centers have been launched in the cities of Tashkent (expanding by 5 PB and bringing it to 10 PB), Bukhara and Kokand (each with 50 PB), as well as further expansion of the fixed telecommunications network and modernization of the mobile network. As a result, each settlement will provide households with access.

- By 2025, 10% of governments will avoid privacy and security issues by using selected populations to train AI.
- By 2025, 75% of workplace conversations will be recorded and analyzed to improve organizational value and assess risk.

The justification for the above measures is the Resolution of the President of the Republic of Uzbekistan "On measures to create conditions for the accelerated implementation of artificial intelligence technologies" dated February 17, 2021. This document laid the legal foundation for the further development of AI technologies and defined its main directions. In this context, the development of AI technology today is a requirement of the times.

The Resolution also provides for the development of an Artificial Intelligence Development Strategy, first of all, defining the basic directions and principles of application of artificial intelligence, conditions for the comprehensive formation of this area in the near and long term, secondly, the development of a regulatory framework defining uniform requirements, responsibility, security and transparency in the use of artificial intelligence technologies in the economic sectors and the social sphere, the public administration system, improving the quality of public services in the interests of the population. In accordance with the directions of the Strategy "Digital Uzbekistan-2030", as well as with the aim of creating favorable conditions for the accelerated implementation of artificial intelligence technologies and their widespread use in the country, work is underway to ensure the availability and high quality of digital data, the training of qualified personnel in this area, the Resolution of the President of the Republic of Uzbekistan approved the Program of measures for the study and implementation of artificial intelligence technologies in 2021-2022 [5].

This program included the following main priority areas:

- development of the Strategy for the Development of Artificial Intelligence, which will define the basic directions and principles of the application of artificial intelligence,
- development of a regulatory framework with uniform regulatory requirements;
- widespread use of AI technologies to improve the quality of public services in the interests of the population, as well as increase the efficiency of government agencies in data processing;
- creation of a domestic ecosystem of innovative developments in the field of artificial intelligence;
- formation of investment attractiveness of scientific work and developments in the field of artificial intelligence;
- ensuring access of Uzbek enterprises and specialists to information resources and competencies in the field of AI, as well as the development of the necessary educational environment;
- development of international cooperation in the field of artificial intelligence and technologies for its application to conduct joint international research activities, train personnel and improve their qualifications, improve the republic's position in prestigious ratings and indices [6].

Based on the above documents, Uzbekistan has identified a list of areas and industries where artificial intelligence technologies will be implemented first.

In particular, this concerns the following sectors of the economy: agriculture, banking, finance, taxation, transport, energy, healthcare, pharmaceuticals, and e-government.

It is very important to note that Uzbekistan has a valuable opportunity for broad cooperation with Russia, which is one of the world leaders in the development and use of AI. This is the best option, which has the benefits of a certain closeness of mentality, and there are no problems associated with the language barrier. It is planned to cooperate with the Sber Group, implement SubTech and RegTech artificial intelligence technologies for monitoring commercial banks, as well as for analyzing the quality of banking services, and remote biometric identification Face-ID [5].

Developments in this area are an area of intense international rivalry, large investments, higher and very complex mathematics, and high stakes. It is believed that AI can increase productivity by 40%, and countries that use it will be among the world's economic leaders.

However, several aspects should be noted. Firstly, AI is not cheap, and Uzbek companies do not yet have the economic capacity to allocate the necessary funds for the development and implementation of their own intelligent system. This means that these works will be carried out with active government participation and funding from the state budget, which may lead to certain problems for production structures.

Secondly, if the state participates, then those intelligent systems will be selected that solve the most important problems for the entire republic and will provide the greatest economic challenge, i.e. are necessary for large-scale production. This circumstance will significantly limit the choice of some manufacturers.

Nevertheless, AI technologies can bring enormous benefits to business in Uzbekistan. A study by the French company Capgemini Consulting notes that three out of four organizations using AI technologies were able to increase sales of new products and services by more than 10% [8]. And they showed the following average annual results of their activities using AI technologies:

- growth in the number of buyers - from 10 to 30%;
- growth in network promoters - by 30-50%;
- growth in the total number of the company's clients - 2.5 million people (new clients);
- growth in the rate of renewal of the company's clientele - from 500 to 800.

According to some expert estimates, the economic effect of investments in companies developing AI technologies could amount to from 296.5 to 657.7 billion dollars in high-income countries in the period 2016-2036. With venture investments in AI during the same period, the GDP in the above countries increases from \$63.1 to \$115.5 billion. The economic effect of these forms of investment (excluding capital investments in AI) will amount to \$359.6 to \$773.2 billion over ten years. [9]

It should be noted that artificial intelligence (AI) technologies are already being widely implemented and are widely used in industry. For example, the so-called M2M (machine to machine) technologies, which imply the interaction of machines (including programs), are increasingly used in various industries. AI technologies make it possible to achieve a high economic effect by optimizing work processes, ensuring high production volumes and, at the same time, a high level of product quality. Or take such aspects of human activity where AI technologies are of an applied nature:

- mobile taxi and delivery service,
- smart home system,
- smart watches, and so on.

All these innovations are designed to make a person's daily life easier and create additional conveniences for him.

Conclusion. In conclusion, we can emphasize that the use of AI technologies largely determines the competitiveness of countries and the level of security of society in the near future. It is quite possible that the economic impact of AI will be stronger compared to other general-purpose technologies. However, the positive effect of the use of AI is likely to appear not immediately, the benefits of initial investments in AI may not be noticeable in the short term. At the same time, as studies show, the impact of AI on economic development will increase over time. At the same time, there is a risk of increasing the technological gap between those who quickly switch to these technologies and those who do not, as well as between workers with the relevant skills and those who do not. Therefore, the benefits of AI are likely to be distributed unevenly. Moreover, if the development and implementation of these technologies is carried out irrationally, inequality will deepen, fueling various socio-economic conflicts within society. The Government of Uzbekistan, which has defined the policy of implementing AI, needs to use long-term strategic planning methods to overcome the negative effects of automation and digitalization of production processes.

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