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EFFECTIVE USE OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN THE DEVELOPMENT OF INNOVATIVE INFRASTRUCTURE IN REGIONS

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Abstract: This article presents the issues of the necessity, importance, specific features and effective use of artificial intelligence technologies in the formation of innovative infrastructures in regions. It also substantiates the possibility of applying proposals and recommendations on the effective use of artificial intelligence technologies in the formation of innovative infrastructures in regions.
Key words: Region, infrastructure, innovative infrastructure, artificial intelligence, artificial intelligence technologies, innovation.

Today, artificial intelligence technologies are becoming one of the most important priorities of the global economy and social development. In this regard, in order to create favorable conditions for the introduction of artificial intelligence technologies in the social sphere and sectors of the economy of our country, to ensure Uzbekistan's entry into the ranks of the world's leading countries using artificial intelligence technologies, as well as to implement the goals and objectives set in the "Digital Uzbekistan – 2030" strategy, the Resolution of the President of the Republic of Uzbekistan No. PQ-358 of October 14, 2024, "On Approval of the Strategy for the Development of Artificial Intelligence Technologies until 2030" [1] was adopted.

Various studies have been conducted on the effective use of artificial intelligence technologies in the development of innovative infrastructure in the regions. In particular, despite the widespread penetration of artificial intelligence technologies into the daily lives of households, national statistical services do not provide official figures on the number of users of these technologies [2]. Another line of research examines the concept of artificial intelligence as a set of search operations carried out by machines designed to enhance human brain capabilities through combinations of algorithms [3].

According to studies, artificial intelligence technologies improve the efficiency of data-driven decision-making in regional planning, transport, public utilities, education, and healthcare. For example, the implementation of "smart city" concepts create new opportunities in traffic management, energy consumption optimization, and the provision of electronic services to citizens.

Research also emphasizes the significant role of artificial intelligence technologies in fostering local innovation ecosystems, supporting the activities of startups and research centers. This is because artificial intelligence is increasingly becoming a key factor influencing the development of various spheres of our lives. These technologies have the potential to deliver enormous benefits, ranging from boosting productivity and efficiency to achieving advancements in science and innovation [4].

Moreover, these technologies directly contribute to the creation of new jobs in the regions, the establishment of a competitive economic environment, and the improvement of population welfare. However, in related studies, artificial intelligence technologies for the regional public sector are often viewed as "abstract, poorly understood, and distant" opportunities. Accordingly,

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they are considered to have little practical significance in addressing pressing issues of socio-economic management [5].

At present, the effective use of artificial intelligence technologies in the formation of innovative infrastructure in the regions directly depends on their implementation. Each direction, the field of application of artificial intelligence technologies, and the expected outcomes are presented in the following way (Table1).

Table 1.

Implementation of Artificial Intelligence Technologies

№	Directions	Application of Artificial Intelligence	Expected Outcomes
1	**Smart Cities**	Intelligent traffic lights, video surveillance, and traffic management	Improved traffic flow and enhanced safety
2	**Energy and Utilities**	Smart grids and energy consumption analysis	Energy efficiency and cost reduction
3	**Healthcare**	Telemedicine and AI-based diagnostics	Increased efficiency of services and faster diagnosis
4	**Education**	Personalized learning and knowledge assessment	Improved quality of education and individualized learning process
5	**Agriculture**	Drones, soil fertility analysis, and management of irrigation and fertilization	Increased production volume and resource savings
6	**Ecology and Environment**	Pollution monitoring and weather analysis	Environmental sustainability and early risk detection
7	**E-Government and Services**	Automated information systems and use of chatbots	Reduced bureaucracy and faster services
8	**Economic Planning**	Big data analysis and economic modeling	Digital strategic planning and effective management
9	**Innovative Business and Startups**	Development of AI-based products and services	Creation of new jobs and competitive products
10	**Human Resource Development**	AI training courses and online education platforms	Skills improvement and increased human capital capacity

Indeed, the main ways of effectively using artificial intelligence technologies in the development of innovative infrastructure in the regions are as follows:

a) Implementation of “Smart City” concepts:

- Automating urban infrastructure through artificial intelligence technologies: intelligent traffic management, “smart” traffic lights, air quality monitoring, and waste management;
- Improving energy efficiency by saving heat and electricity through intelligent energy networks (smart grids).

b) Data analysis and automation of decision-making:

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- Conducting analyses based on regional data (economic, demographic, environmental) using artificial intelligence to develop effective strategic plans;
- Accelerating decision-making processes and reducing the probability of errors.

c) Introduction of artificial intelligence in healthcare and education:
- Developing telemedicine, diagnostic, and patient monitoring systems;
- Creating personalized learning systems and digital educational materials in education.

d) Agriculture and water resource management:
- Monitoring land conditions with drones and artificial intelligence, as well as ensuring efficient distribution of water and fertilizers;
- Developing climate adaptation models.

e) Development of e-government and digital services:
- Improving information systems based on artificial intelligence and reducing bureaucracy;
- Ensuring full coverage of the population with digital services.

f) Development of the innovation ecosystem:
- Supporting startups and IT companies in the field of artificial intelligence;
- Creating cooperation platforms between research institutes, universities, and businesses.

g) Training and professional development:
- Preparing specialists in the field of artificial intelligence and launching retraining programs;
- Opening artificial intelligence-related programs in regional educational institutions.

In conclusion**,** the effective use of artificial intelligence technologies in the regions is a crucial condition for the development of innovative infrastructure. High results can be achieved by organizing this process through effective cooperation among state policy, private sector participants, and the scientific community.

Therefore, in the modern era, artificial intelligence technologies are causing profound transformations in many fields, such as industry, healthcare, education, agriculture, and governance. Effective use of these technologies reduces human-related errors, automates processes, and ensures rational use of resources. In particular, artificial intelligence enables the rapid and accurate analysis of large volumes of data, which is of great importance in research, strategic planning, and innovative decision-making. Thus, the implementation of artificial intelligence in practice is a key factor in technological development and the formation of a competitive economy.

References:

1. Decree of the President of the Republic of Uzbekistan No. PQ-358 of October 14, 2024, “On Approval of the Strategy for the Development of Artificial Intelligence Technologies until 2030.” Source: https://lex.uz/docs/7158604
2. Varlamova, Yu.A., & Korneichenko, E.N. (2024). Artificial Intelligence in Russian Regions. Russian Journal of Economics and Law, 18(3), 643.
3. Khikmatova, D.I. (2024). Global Trends and Applications of Artificial Intelligence in the Economy. In Application of Artificial Intelligence Technologies in the Public Civil Service: International Scientific and Practical Conference (p. 290). November 21, 2024.
4. Akhmadjonova, Yo.T. (2025). Artificial Intelligence in Uzbekistan: Development and Practice. Economics and Society, 4(131), 681.
5. Prospects and Problems of Using Artificial Intelligence Technologies in the Regions of the Russian Federation. (2022). Association for the Promotion of AI in the Public Sector, April, p. 5. Retrieved from: https://www.csr.ru/upload/iblock/82f/tse64fmdsetwhhpd6e57a3wjtsud6mdx.pdf