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INTEGRATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES INTO THE REGIONAL ECONOMY IS THE CORE FOUNDATION OF DIGITAL TRANSFORMATION

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Introduction

Today, the global economy has stepped into the era of the Fourth Industrial Revolution (Industry 4.0). The primary driving force of this era is Artificial Intelligence (AI) technologies. AI is no longer merely a branch of the IT sector; rather, it has become a universal tool that drastically increases the efficiency of traditional economic sectors, optimizes resources, and automates management decisions.

Implementing AI technologies at the regional economic level is the sole logical solution for enhancing territorial competitiveness, narrowing the digital divide, and ensuring the rational utilization of local resources.

Within the regional economic system, artificial intelligence technologies elevate productive forces to a qualitatively new level . By fundamentally transforming the spatial distribution of production factors, AI delivers the following economic benefits:

1. Intellectual management of regional resources: Through Big Data and AI algorithms, the consumption of territorial land, water, and energy resources is precisely forecasted, thereby minimizing losses.
2. Smart manufacturing and clusters: Predictive maintenance and modeling of production processes are established in industrial zones and regional clusters using AI . This effectively prevents equipment downtime.
3. Optimization of regional logistics: AI directs supply chains and freight transportation routes toward the most optimal pathways. This reduces interregional transportation costs.
4. Transformation of the regional labor market: Mechanical labor is automated, consequently increasing the demand for intellectual labor and expanding the share of high-value-added services within the structure of the regional gross product.

The application of AI technologies in the regional economy is logically aligned on a global scale with the United Nations Sustainable Development Goals (SDGs) . AI technologies serve to address the following global tasks at the regional level:

- Industry, innovation, and infrastructure: Establishing AI-based digital infrastructure in regions eliminates the technological backwardness of local industries.
- Reduced inequalities: The penetration of digital technologies into remote areas narrows the economic and social disparity (the Digital Divide) between central and peripheral regions.
- Sustainable cities: In "Smart City" projects, AI enhances the quality of urbanization by managing traffic flows, ensuring public safety, and optimizing municipal utility services.

The UN calls for sustainable development and digitalization have become a top priority of the state policy of Uzbekistan. Within the framework of the "Digital Uzbekistan – 2030" strategy and the

Presidential Resolutions "On measures to create conditions for the introduction of artificial intelligence technologies," large-scale reforms are being implemented in the country. This national policy manifests itself at the regional level through the following concrete logical chain:

- "Smart Agriculture" in agrarian regions: In Fergana, Namangan, and Tashkent regions, systems are being introduced to monitor crop conditions via drones using AI, and to analyze soil moisture as well as mineral fertilizer requirements through artificial intelligence. Through these measures, food security objectives are being fulfilled.
- Transformation of industrialized zones: In major regional economic drivers, such as the Navoi and Almalyk Mining and Metallurgical Combinats, AI technologies are being applied to manage technological processes, allowing for a reduction in production costs by up to 10-15%.
- Regional public services and "Smart City": AI algorithms are widely utilized in public transport management and safe city systems in Tashkent and other major regional centers.

Regrettably, there are certain contradictions that hinder the effective penetration of AI into the regional economy. These include:

1. Digital infrastructure disparity: Internet and server capacities are high in central cities, but communication quality remains low in remote districts. Solution: Developing 5G networks and regional data processing centers (Data Centers).

2. Shortage of human resources and intellectual capital: There is a lack of local specialists capable of managing complex AI models. Solution: Opening departments of "Data Science" and "Artificial Intelligence Engineering" in regional universities and expanding branches of IT Parks.

3. Cybersecurity and data protection: The processing of large volumes of regional economic data by AI increases the risk of cyberattacks. Solution: Strengthening the national cybersecurity system at the regional level, among other measures.

In conclusion, artificial intelligence technologies stand as the most powerful catalyst for regional economic development today. Global technological trends impose sustainability requirements through UN programs. In response to these challenges, the Government of Uzbekistan is formulating national legislation and strategic programs, directing them straight into the regional economies. The systemic implementation of AI in the regions will elevate the long-term stability, competitiveness, and public welfare of the republic's economy to a brand new level.

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