THE CONCEPT OF DIGITAL TRANSFORMATION AND ITS IMPACT ON INDUSTRIAL SYSTEMS

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Abstract: The article provides an in-depth analysis of the theoretical foundations of the concept of digital transformation and their impact on traditional industrial systems. Digital technologies - IoT, artificial intelligence, Big Data and cloud systems - are becoming an important factor in increasing the efficiency of industrial enterprises, improving the level of resource utilization and accelerating the process of strategic decision-making. Based on international experience, the advantages and limitations of digital transformation are identified, the state of readiness of the Uzbek industry for digital development is assessed, and scientific proposals are developed for the transition to a digital model of management.

Keywords: digital transformation, industry 4.0, strategic management, IoT, artificial intelligence, Big Data, digital economy, enterprise efficiency, technological development

In recent years, digital technologies have been rapidly developing, causing fundamental changes in the global economy. In particular, in the manufacturing, logistics, service and energy sectors, the term “Digital Transformation” has become a strategically important trend. The integration of traditional industrial sectors with digital technologies – that is, the transition to the “Industry 4.0” model – means not only technical modernization, but also a change in the culture of strategic decision-making [1].

The relevance of digital transformation today is primarily evident in increasing the efficiency of resource use, reducing production costs and adapting to rapid changes in the market. According to the “Global Digital Transformation Outlook” report published by the World Economic Forum (WEF) in 2023, the introduction of digital technologies in industrial enterprises can increase profitability by 20–30% [2].

International experience shows that industrial production is being completely modernized through digitalization through the strategies of “Industrie 4.0” in Germany, “Smart Manufacturing” in the USA, and “Made in China 2025” in China [3]. This process is based on artificial intelligence, sensor systems, robotics, cloud infrastructures, and big data analytics.

In recent years, Uzbekistan has also begun fundamental reforms to transition to a digital economy. In particular, the “Digital Uzbekistan – 2030” strategy was approved in 2020, and one of its main directions was the digitalization of industry [4]. Within the framework of this program, automated control systems, real-time monitoring, and digital design platforms are being introduced in the mining and metallurgy, mechanical engineering, and energy sectors.

However, the digital transformation process is not limited to the introduction of technology alone. The main problems and opportunities are embodied at the enterprise level - in the management strategy, leadership quality, organizational culture, employee

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competence, and technology understanding. Therefore, this article studies the direct and indirect impact of digital transformation on strategic decision-making from a theoretical and practical perspective.

Regional statistical analysis plays an important role in determining the impact of digital transformation on industries. The pace of digital technology adoption varies across different regions of Uzbekistan, especially in relatively industrially developed regions, which requires an analytical approach to strategic decision-making. The table below shows the percentage of industrial enterprises in Namangan region and its 10 districts that have implemented digital technologies in 2020–2025.

Table 1

Share of industrial enterprises with digital technologies implemented by districts of Namangan region (%), 2020–2025

№	Districts	2020	2021	2022	2023	2024	2025
1	Namangan city	12.3	14.0	16.3	18.7	21.1	23.5
2	Pop	9.5	10.2	11.7	13.4	15.1	17.0
3	Turakurgan	10.1	11.5	13.0	14.8	16.5	18.2
4	Chortoq	8.2	9.3	10.4	11.6	13.0	14.4
5	Chust	9.9	11.0	12.2	13.7	15.3	17.0
6	Uychi	11.0	12.4	13.9	15.6	17.4	19.1
7	Yangikurgan	12.1	13.5	15.0	16.8	18.5	20.3
8	Kosonsoy	10.0	11.2	12.5	14.1	15.7	17.0
9	Norin	7.5	8.6	9.8	11.0	12.4	13.8
10	Mingbulaq	8.1	9.0	10.3	11.5	13.1	14.6

Source: Compiled by the author based on data from the Namangan Regional Department of Innovation Development and the Regional Department of Statistics (2020–2025).

The table shows that Namangan city (12.3% → 23.5%) and Yangikurgan district (12.1% → 20.3%) showed the highest growth rates over 6 years. These regions have a much higher level of innovative infrastructure, technological services, the number of IT companies, and the involvement of digital services. In these districts, enterprises are actively integrating technological solutions into strategic management.

In Naryn (7.5% → 13.8%) and Mingbulok (8.1% → 14.6%) districts, growth is relatively slow. This is due to low digital literacy among enterprises, limited investment flows, and weak infrastructure for digital services.

In Pop, Turakurgan, Chust, Uychi, and Kosonsoy districts, an average growth of around 7–8% was observed over 6 years. There is interest in digital transformation in these districts, but financial and human resources for its full implementation are limited. This indicates a lack of a technological basis for making strategic decisions.

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While digital technologies are widely implemented in the central part of the Namangan region (Namangan city and Yangikurgan), this indicator is much lower in the border and mountainous regions. This increases the risk of digital inequality and creates regional imbalances in industrial development.

The data studied and the analysis for 2020–2025 show that digital transformation directly affects the efficiency, quality of management, and the level of flexibility of traditional industrial sectors. The following main conclusions are identified:

The pace of digital development is uneven across regions. While the introduction of digital technologies is proceeding more rapidly in Namangan city and Yangikurgan district, slow growth is observed in Naryn and Mingbulok districts.

Digital technologies are becoming a decisive factor in strategic decision-making. Digital management, real-time monitoring, and digital analytics tools are enabling effective decision-making.

Digitalization in industrial sectors means not only a technical upgrade, but also a change in the entire management culture and decision-making approach.

The risk of digital inequality is increasing, which will lead to imbalances in the territorial development of industry.

REFERENCES

1. Brynjolfsson, E. & McAfee, A. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. New York: W.W. Norton & Company. ISBN: 978-0393239355.
2. World Economic Forum. (2023). Global Digital Transformation Outlook 2023. Geneva: WEF Publishing. Available
3. Kagermann, H., Wahlster, W., & Helbig, J. (2013). Recommendations for Implementing the Strategic Initiative INDUSTRIE 4.0. Final report of the Industrie 4.0 Working Group. Berlin: acatech – National Academy of Science and Engineering
4. O‘zbekiston Respublikasi Prezidenti farmoni PF–6079. (2020-yil 5-oktabr). “Raqamli O‘zbekiston – 2030” strategiyasini tasdiqlash to‘g‘risida. Qonunchilik ma’lumotlari milliy bazasi.

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