

# DIGITALIZATION OF LOGISTICS ENTERPRISES' ACTIVITIES

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## Abstract

This article examines the challenges and opportunities for developing digital logistics in Uzbekistan. The primary objective of the study is to identify ways to enhance efficiency and achieve economic benefits through the digitalization of logistics processes. The study explores the impact of digital technologies, including the advantages of IoT and electronic management systems. Based on statistical analysis, international practices, and local case studies, scientific-methodological and practical recommendations are proposed.

**Keywords:** Digital economy, logistics, digital technologies, globalization, digital transformation, efficiency, digital logistics, strategy, competition, transport system, digital platform, concept.

## Introduction

Uzbekistan's economy is rapidly advancing through the integration of digital technologies. Initiatives such as the "Digital Uzbekistan 2030" strategy and other state programs have significantly increased the role of information and communication technologies, paving the way for the country to emerge as an IT hub. The growing volume of communication and digitalization services and the 20% annual increase in the share of the digital economy in GDP further demonstrate this progress.

As a vital part of the economy, digital logistics aims to optimize material and information flows, reduce costs, and accelerate processes. Technologies such as demand forecasting, route optimization, and electronic document circulation play key roles in this transformation. These advancements expedite business transformations and enhance the global competitiveness of companies.

Modern logistics extends beyond transportation, encompassing customer service and innovative systems such as automated document workflows and intelligent management tools. This ensures effective management of transport and information flows, strengthening companies' competitive advantages.

## Literature Review

In recent years, digital transformation has become an integral part of the global economy. This process has been widely studied by various researchers, who have developed different approaches to its impact on efficiency and its positive effects on the economy. While some



researchers have focused on the importance of digitization in the banking sector, others have emphasized the strategic aspects of the digital economy.

International experts have put forward diverse perspectives on the impact of digital transformation on companies. For example, Gartner highlights the potential of implementing digital technologies to optimize business models and create new economic opportunities (1). Similarly, Deloitte, in its studies, underscores that digital transformation is not only about technological innovation but also a factor for improving efficiency through the optimization of business processes (2). According to McKinsey & Company, the adoption of digital technologies enables companies not only to automate internal processes but also to enhance the quality of services offered to customers (3). Other researchers have given special attention to the role of the digital economy in the banking sector and its transformation. For instance, Porter and Heppelmann (4) explored the strategic advantages of digital technologies in banking and their impact on customers. Büyüközkan and Göçer (5) emphasized the role of digital transformation in sustainable economic development, analyzing its influence on business strategies. Research conducted in Russia and CIS countries has delved deeply into the economic and technological changes brought about by digitization. For example, Kotova K.Yu. studied the potential for innovation in Russian banks, while Buykov A.O. focused on the outcomes of digitization in the banking system (6, 7). In Uzbekistan, digital economy and transformation processes in the banking sector have also been analyzed in recent years. For instance, Sodirova and Tursunov (8) studied the benefits and existing barriers to the implementation of digital technologies in the banking sector. Additionally, UNCTAD (9) assessed Uzbekistan's position in international rankings on digital transformation in the banking industry.

Overall, digital transformation is one of the key processes shaping the modern economy and holds strategic importance for the banking sector.

## METHODS

1. Literature Review: Scientific literature on digital transformation and logistics processes was analyzed (Hofmann & Rüsçh, 2017; McKinsey & Company, 2018). The socio-economic impact of digital transformation processes in Uzbekistan was examined.
2. Analytical Approach: A comparative analysis was conducted on the effectiveness of technologies such as IoT, artificial intelligence, and blockchain. Uzbekistan's logistics practices were compared with international experience.
3. Case Study: The logistics networks in Uzbekistan were examined (Sodirova & Tursunov, 2021). The level of digitization in local companies was studied.
4. Statistical Analysis: Statistical changes were evaluated based on the indicators outlined in the "Digital Uzbekistan-2030" strategy. The impact of digital technologies on the efficiency of logistics processes was assessed.



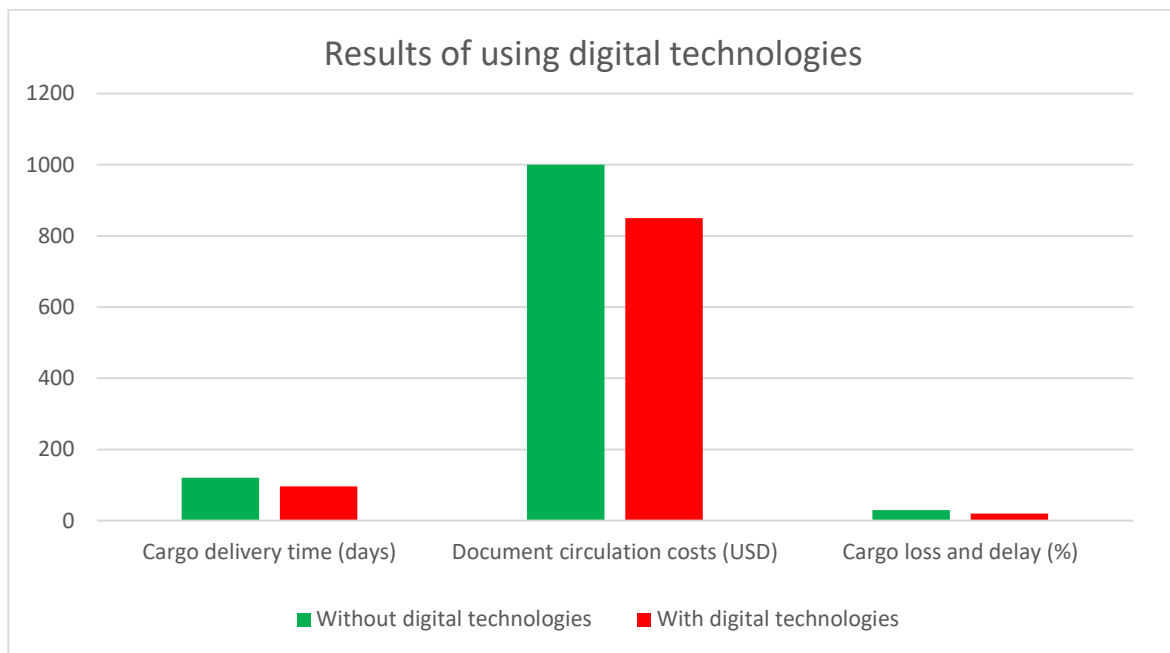
## RESULTS

The introduction of digital technologies has resulted in the following improvements in logistics processes (Table 1):

| Indicators                       | Without digital technologies | With digital technologies | Change (%) |
|----------------------------------|------------------------------|---------------------------|------------|
| Cargo delivery time (days)       | 5                            | 4                         | -20%       |
| Document circulation costs (USD) | 1000                         | 850                       | -15%       |
| Cargo loss and delay (%)         | 30                           | 20                        | -33%       |

The shipping time has shortened. As a result of the implementation of IoT and other automated systems, the shipping time has decreased from 5 days to 4 days. Document turnover costs have decreased. The introduction of the electronic document management system significantly reduced operational costs. These costs decreased from 1000 USD to 850 USD. Cases of cargo loss and delays have decreased. Through real-time monitoring, cases of cargo loss and delays have decreased from 30% to 20%.

The graph below demonstrates the dynamic changes before and after adopting digital technologies (Figure 1).



The implementation of digital technologies has reduced transportation time by 20%. Document turnover costs have decreased by 15% and cases of cargo loss and delays have dropped by 33%. System efficiency and reliability have significantly increased.

## DISCUSSION

The results of the study show that the implementation of digital technologies in the logistics system plays an important role in increasing efficiency and reducing operational costs. During the analysis, statistical data, dynamic indicators, and graphical analyses were used. The results were discussed in the following key areas:



Firstly, it was identified that the application of digital technologies in the logistics system improves the efficiency of transportation processes. According to the research findings, automated management systems and IoT (Internet of Things) technologies help reduce delivery times. Graphical analyses showed a significant increase in the volume of digitized logistics operations in recent years.

Secondly, a decrease in operational costs was observed. The implementation of digital technologies has reduced fuel consumption, vehicle maintenance costs, and errors associated with human factors. These outcomes indicate improved economic efficiency for transportation companies.

Thirdly, analyses demonstrated the effectiveness of real-time monitoring systems in logistics processes. The use of GPS and artificial intelligence technologies enables tracking vehicle movements, optimizing routes, and forecasting transit times in advance. As a result, delivery times are shortened, and the quality of customer service improves.

Fourthly, issues of safety and stability were addressed. Measures aimed at enhancing security in digital logistics systems contribute to reducing fraud and losses. The use of sensor technologies and blockchain systems allows real-time tracking of goods, leading to a decrease in losses and damages.

Fifthly, the environmental impact of digitization was analyzed. The research findings show that automated logistics systems help improve environmental sustainability by optimizing fuel consumption and reducing carbon dioxide emissions.

At the same time, the digitization process presents several challenges:

- Insufficient development of technological infrastructure.
- Lack of skilled personnel and underqualified staff.
- Limited financial resources required for digitization.

Based on international experience, it is necessary to address these issues by encouraging logistics companies to digitize through financial subsidies and tax incentives. Developing a unified electronic platform to manage local transport and logistics processes is essential. Strengthening collaboration between the government, the private sector, and international organizations is crucial to accelerating digitization processes.

## CONCLUSION

This study highlights the relevance of developing the digitization process in Uzbekistan's logistics sector, as well as the opportunities and challenges within it. The results demonstrate that by implementing digital technologies, logistics companies can reduce costs, increase efficiency, and optimize operational processes. However, to implement digitization on a large scale, it is necessary to improve technological infrastructure, introduce financial support programs, and enhance the digital literacy of personnel.

While developed countries around the world are widely utilizing advanced technologies in the logistics sector, Uzbekistan can also enhance its economic competitiveness by transitioning to digital transformation. International experience shows that advanced solutions like IoT, artificial intelligence, and big data technologies provide opportunities to accelerate, monitor, and control logistics processes. At the same time, addressing the identified barriers requires

strengthening cooperation between the public and private sectors, as well as developing subsidy and financial support programs.

In conclusion, the digitization process holds strategic importance for Uzbekistan's logistics sector. The reforms and changes implemented in this area will have a positive impact on the overall economic development. Logistics companies focusing on digitization and effectively utilizing digital technologies can strengthen their position in the global competitive landscape.

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