



IMPROVING THE LOGISTICS INFRASTRUCTURE TO SUPPORT ENTREPRENEURSHIP DEVELOPMENT IN UZBEKISTAN

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Abstract: *The development of small and medium-sized enterprises is closely connected to the efficiency of transport and logistics systems in modern economic conditions. Effective logistics infrastructure and information systems play a key role in optimizing supply chains, reducing operational costs, and improving the speed and reliability of cargo and passenger transportation. This study explores the role of transport and logistics systems in supporting business activities across production, trade, and service sectors, with special attention to freight movement, passenger transport, and logistics center operations. It also examines the importance of digital and organizational logistics information systems in enhancing coordination within the transport sector. The research identifies key challenges limiting the development of logistics services and highlights the need for integrated information-based logistics centers to improve service quality and system efficiency. The proposed approaches focus on increasing transport capacity, ensuring timely delivery of services, and strengthening the overall competitiveness of the national logistics network, thereby contributing to sustainable economic growth.*

Keywords: *transport logistics system, small business activity, freight transport, passenger transport, logistics costs, logistics centers*

Introduction

Uzbekistan's transportation system includes a variety of interconnected modes such as road, rail, air, water, electric transportation, and metro infrastructure. Together, these components create the national logistics network, which facilitates the flow of goods and persons across local and international borders. Transport logistics connects procurement, production, distribution, and warehousing activities,

making it a critical driver of efficiency, particularly for small business operations. Small firms play a crucial role in economic development, generating significant employment and GDP growth. In Uzbekistan, national development goals aim to raise small enterprises' contribution of GDP to roughly 55%, emphasizing the strategic necessity of enhancing supporting services such as logistics. Enhancing transport logistics can reduce costs, improve delivery accuracy, and strengthen the competitiveness of small enterprises in both local and global markets. From a global perspective, logistics is a rapidly growing sector. In developed countries, logistics costs account for a significant share of total expenses—for example, approximately 30% in Germany and around 15% in countries such as France, Italy, and the United Kingdom. On average, global logistics costs have increased by nearly 30% over the past decade, showing the growing importance of efficient supply chain management. These trends have led to the expansion of logistics outsourcing models, including 3PL (third-party logistics) providers, which offer integrated services such as transportation, warehousing, and distribution. Despite global progress, logistics costs in Uzbekistan remain relatively high compared to developed economies. This is mainly due to underdeveloped distribution infrastructure, limited use of modern technologies, and insufficient integration of transportation and storage systems. In addition, the country currently lacks fully operational universal logistics centers that provide end-to-end services such as transportation, processing, storage, packaging, and pre-sale preparation. Another challenge is the limited availability of qualified logistics professionals and the slow adoption of international logistics standards. At the same time, demand from businesses is increasing for advanced services such as intermodal transport, door-to-door delivery, customs clearance, and integrated warehousing solutions. This shift indicates a growing need for institutional development in the logistics sector, along with investment in digital systems, infrastructure modernization, and human capital development.

Literature Review

Logistics is widely defined in academic literature as a system that manages the efficient flow of goods, services, and related information from the point of origin to the point of consumption. According to modern supply chain theories, logistics integrates key activities such as transportation, warehousing, inventory management, packaging, and distribution. Transport logistics, as a core component of this system, ensures the physical movement of goods and plays a critical role in connecting production and consumption processes. Researchers emphasize that logistics is not only a technical function but also a strategic tool for improving economic efficiency. V.I. Sergeev highlights logistics as an integrated system that optimizes material, financial, and information flows, contributing to the overall competitiveness of enterprises. Similarly, studies on supply chain management show that the development of logistics services significantly improves coordination between producers, suppliers, and consumers.

A large number of studies focus on the importance of logistics for small and medium-sized enterprises (SMEs). Scholars such as Karriyeva argue that effective logistics systems reduce operational costs, ensure timely delivery, and strengthen the market position of small businesses. In the same context, Bekmurodov notes that SMEs play a vital role in economic stability and GDP growth, and their efficiency largely depends on access to reliable transport and logistics infrastructure.

International literature also highlights the role of advanced logistics systems in economic development. In developed countries, logistics has become a highly specialized industry supported by digital technologies, outsourcing models, and integrated service providers. The use of 3PL and 4PL operators is widespread, allowing companies to outsource complex logistics functions and focus on their core business activities. In recent years, 5PL providers have emerged as digital system integrators that manage supply chains through unified information platforms. Empirical studies show that logistics costs remain a significant part of total business

expenses worldwide. For example, in some European countries such as Germany, logistics costs account for around 30% of total operational expenses, while in France, Italy, and the United Kingdom the figure is approximately 15%. Globally, logistics costs have increased by nearly 30% over the past decade, reflecting the growing complexity of supply chains and transportation systems.

In the context of Uzbekistan, research indicates that the logistics sector is developing but still faces several structural challenges. According to the World Bank Logistics Performance Index (LPI), Uzbekistan ranked 99th out of 160 countries in 2018–2019. Although the sector has shown rapid growth in recent years, infrastructure limitations, insufficient digitalization and a lack of integrated logistics centers continue to affect efficiency. Additionally, the absence of a comprehensive national logistics strategy and shortage of qualified specialists further slow sector development. Studies also reveal that Uzbekistan's transport and logistics system is becoming increasingly important due to the growth of foreign trade. The country's trade turnover reached approximately USD 42.2 billion in 2019, with key partners including China, Russia, Kazakhstan, South Korea, and Turkey. However, a significant portion of transport routes relies on transit through neighboring countries, which increases logistics costs and delivery time. Another important issue identified in the literature is the limited integration of modern technologies in logistics operations. While developed economies widely use GPS tracking, artificial intelligence, and automated warehouse systems, their adoption in Uzbekistan remains relatively low. This gap reduces efficiency and limits the competitiveness of local logistics services.

Overall, the literature consistently shows that efficient transport logistics plays a crucial role in improving small business performance by reducing costs, increasing delivery speed, and enhancing service quality. However, existing studies also highlight persistent challenges such as weak infrastructure, high logistics costs, limited digital transformation, and insufficient logistics integration in Uzbekistan.

These gaps indicate the need for further research focused on improving logistics systems specifically for small business development in emerging economies.

Analysis and Discussion

Small businesses depend strongly on transport and logistics systems to ensure the efficient and timely delivery of goods and services to customers. Logistics centers play an important role in improving storage, distribution, and inventory management processes, which directly enhances operational efficiency. Reliable delivery is a key factor influencing customer satisfaction and loyalty, making logistics performance a major source of competitive advantage for small enterprises. An effective transport logistics system contributes significantly to cost optimization by improving route planning, reducing fuel consumption, and enhancing warehouse operations. These improvements allow small businesses to better control operational expenses and allocate limited financial resources more efficiently. In addition, modern information systems enable real-time tracking, monitoring, and coordination of shipments, which helps reduce risks and improve service reliability.

Table 1. Factors Affecting Freight Transport Efficiency and Competitiveness

Factors	Key Elements
Technological innovation	Intelligent transport systems (ITS), automated freight management platforms, GPS-based route optimization, artificial intelligence in logistics operations, and energy-efficient technologies
Economic factors	Fuel and energy price fluctuations, labor costs, market demand and supply conditions, tariff policies, exchange rate variations, and inflation levels

Factors	Key Elements
Legal and government support	State subsidies, tax incentives, regulatory and licensing reforms, national transport policies, and public–private partnership (PPP) initiatives
Logistics infrastructure	Transport terminals and warehouses, quality of road networks, logistics hubs, storage facilities, and development of 3PL and 4PL service providers
Market demand	Requirements for fast and safe delivery, customized logistics solutions, and customer-oriented service strategies
Organizational factors	Digital logistics management systems, coordination within supply chains, clustering of logistics activities, and transport planning strategies
Environmental factors	Eco-friendly transportation systems, reduction of carbon emissions, and use of renewable energy sources in logistics
Competitive environment	Market competition strategies, ease of market entry, and integration of multimodal transport systems
External trade development	Degree of trade integration, development of international transport corridors, and dynamics of import–export flows
Social factors	Level of workforce qualification, labor conditions, and overall logistics culture development

The adoption of advanced technologies such as GPS tracking, artificial intelligence, automated logistics platforms, and data-driven management systems has further improved logistics performance. These technologies increase transport efficiency by optimizing load capacity and reducing unnecessary resource consumption. As a result, transportation costs decrease, leading to lower overall production and service costs, which strengthens the market position of small businesses.

At the global level, logistics systems are becoming increasingly complex and specialized. Logistics operators now range from basic service providers such as carriers and freight forwarders to advanced integrated providers like 3PL and 4PL companies, which manage end-to-end logistics processes. Recently, a new generation of logistics service providers—known as 5PL or virtual logistics operators—has emerged. These providers coordinate fully integrated supply chain systems using digital platforms and unified information environments. However, regulatory frameworks for such operators are still underdeveloped in many countries.

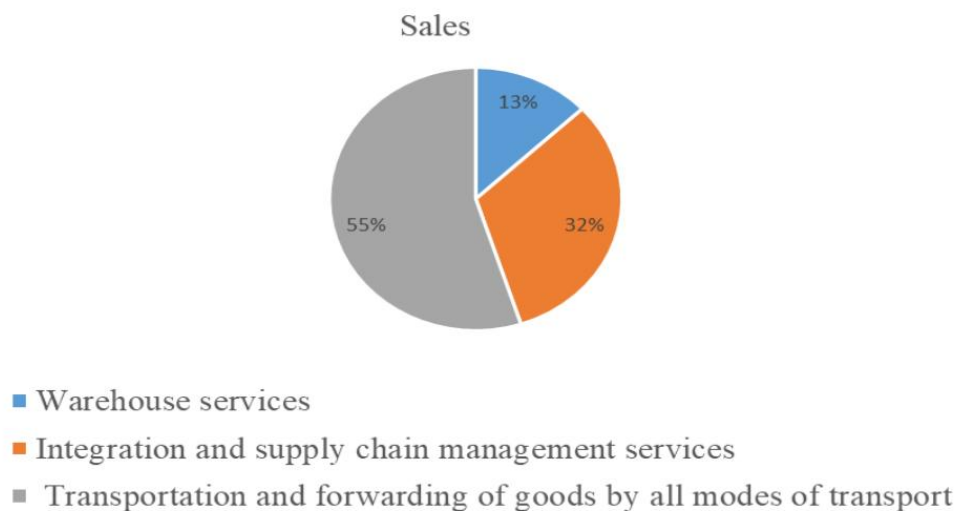


Fig. 1. The structure of the logistics services market.

Uzbekistan's logistics sector, while growing rapidly, still lags behind leading economies. According to the World Bank Logistics Performance Index (LPI), the country ranked 99th out of 160 countries in 2018–2019. Nevertheless, the sector has shown strong development momentum in recent years, with growth rates exceeding European averages by approximately 1.5–2 times. The expansion of international trade has further increased the importance of logistics infrastructure. In 2019, Uzbekistan's foreign trade turnover reached around USD 42.2 billion, which is 1.9 times higher than in 2010. Export volumes amounted to USD 17.9 billion, while

imports reached USD 24.3 billion. The main trade partners include China (18.1%), Russia (15.7%), Kazakhstan (8.0%), South Korea (6.5%), and Turkey (6.0%).

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
GDP, billion soums	62388.3	78764.2	97929.3	120862	144868	171808	199325	249136	407514	511838
Investments in the transport sector, billion soums	3529.0	2851.0	3385.1	4351.8	4196.4	3739.5	5785.0	6369.0	8487.5	11337
% of GDP	5.66	3.67	6.53	3.53	2.9	2.18	2.9	2.56	2.08	2.21
Export, million dollars	13023.4	15021.3	13599.6	14322.7	14109	14507.6	12178.7	13953.8	14253.9	17901.7
Import, million dollars	9178.8	11344.6	12816.5	13946.9	13984.3	12416.6	12130.7	13008.3	19555.2	24276.1
Freight shipped, million tons	763.1	827.5	858.7	930	1000.4	1070.5	1132.5	1146.2	1243	1318.9
Cargo turnover, billion t-km	60.4	62.6	66.4	65.8	66.2	65.8	65.3	66.9	71.3	72.9
Passengers carried, mln.	4072	4507.8	4763	4909.9	5469.9	5380	5560.4	5679	5951.5	6109.4
Passenger turnover, billion passenger-km	83.8	92.4	100.2	106.9	113.2	120.1	126	130	135.3	140.9

Trade with European countries is mainly conducted through transit routes via Kazakhstan and Russia, particularly through Baltic ports such as Riga, Liepaja, and Ventspils. Despite this positive trade growth, investment in the transport sector as a share of GDP has been decreasing, which affects infrastructure development. In 2019, transport, storage, information, and communication services accounted for approximately 7% of Uzbekistan's GDP. Within this structure, rail transport contributed 0.83%, road transport 3.7%, air transport 0.46%, and pipeline transport 1.2%.

Overall, Uzbekistan's logistics services market has been expanding rapidly, supported by active development of transport corridors and diversification of international trade routes. However, challenges remain, including underdeveloped logistics integration, limited digitalization, and insufficient infrastructure investment. Addressing these issues is essential for improving efficiency, reducing logistics costs, and strengthening the competitiveness of small businesses in both domestic and international markets.

Table 2. Key Economic and Transport Indicators of Uzbekistan (2010–2019)

Source: State Committee of the Republic of Uzbekistan on Statistics

Table 3. Dynamics of Railway Cargo Shipments by Type (2015–2019)

Shipping Name	2015	2016	2017	2018	2019
Coal	4.0	3.7	4.4	5.6	5.2
Oil cargo	10.8	10.7	11.0	6.8	6.2
metal ores	4.9	4.9	5.0	5.3	5.5
Ferrous metals, incl. scrap	1.7	1.6	1.6	1.9	2.1
Chemical and mineral fertilizers	4.3	4.4	4.0	3.5	3.6
Mineral construction cargo	11.3	10.1	9.2	5.5	5.7
Cement	5.3	5.5	4.8	4.9	5.1
Timber cargo	0.05	0.01	0.02	0.03	0.03
Grain and milling products	1.3	1.2	1.7	1.7	1.6
Cotton (raw and fiber)	0.6	0.5	0.4	0.2	0.2

Source: State Committee of the Republic of Uzbekistan on Statistics

Despite the positive dynamics in freight transportation, passenger flows, and foreign trade indicators, the analysis reveals that the development of Uzbekistan's logistics system is not fully balanced with the pace of economic growth. In particular, the increase in transport demand has not been matched by proportional improvements in logistics efficiency, infrastructure modernization, and digital integration. The empirical data presented in Tables 2 and 3 indicate that although freight volumes and cargo turnover have grown steadily, structural limitations still exist in the logistics system. These include insufficient coordination between transport modes, limited use of advanced digital technologies, and dependence on transit routes through neighboring countries, which increases logistics time and costs. Furthermore, the relatively low share of investment in the transport sector compared to GDP suggests constraints in long-term infrastructure development.

In addition, global trends show that efficient logistics systems rely on integrated supply chain management, multimodal transport networks, and advanced digital platforms such as AI-based logistics planning and real-time tracking systems. However, the current level of logistics integration in Uzbekistan remains partial,

which reduces overall system efficiency and competitiveness. Therefore, improving the transport and logistics system requires a systematic approach aimed at addressing existing structural, technological, and institutional challenges. Identifying these key problems and their corresponding strategic solutions is essential for enhancing logistics performance and supporting small business development. Based on this analysis, the main problems and proposed solutions for improving the transport and logistics system are summarized in **Table 4 below**

No	Problem	Solution
1	High logistics costs	Route optimization and digital logistics systems
2	Weak infrastructure	Modernization of transport and warehouse infrastructure
3	Limited transport corridors	Expansion of international transit routes
4	Low integration of transport modes	Development of multimodal transport systems
5	Low digitalization	Use of AI, GPS tracking, and automation
6	Financial constraints	PPP projects and government subsidies
7	Inefficient tariffs	Transparent and market-based tariff system
8	Limited logistics hubs	Expansion of logistics centers and hubs

Analysis Summary

The analysis shows that high logistics costs, weak infrastructure, and poor integration of logistics systems remain the main barriers to improving efficiency and competitiveness. These issues reduce the effectiveness of supply chains and limit the performance of small businesses. Improvements in infrastructure, multimodal transport development, digital transformation, and route optimization are essential for solving these challenges. In addition, the logistics system in Uzbekistan still faces

structural problems, including limited coordination between transport and warehouse operations and insufficient use of modern technologies. Human factors also affect operational efficiency, showing the need for better training and system integration. Digital solutions such as Application Programming Interfaces (APIs) can improve coordination between logistics platforms, transport operators, and warehouses. This enables real-time data exchange, better tracking, and more efficient resource use, especially for small businesses.

Conclusion

Transport logistics development in Uzbekistan requires both infrastructure modernization and digital transformation. Strengthening logistics integration and adopting modern technologies will improve efficiency and reduce costs.

The development of logistics information systems and centers will enhance service quality by ensuring timely deliveries, better coordination between transport modes, and lower operational expenses. Overall, these improvements will strengthen the competitiveness of small businesses and support sustainable economic growth.

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