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Advanced Foreign Practices in the Use of Transport Services for Regional Economic Development

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Abstract

General background: Transport systems serve as fundamental components in regional economic development, directly influencing interregional relations, production growth, and investment climate improvement. **Specific background:** Advanced countries employ digital logistics platforms, public-private partnerships, and green transport strategies to enhance economic efficiency, yet developing nations struggle to adapt these innovations systematically. **Knowledge gap:** Limited empirical analysis exists on how integrated transport service models—combining digitalization, PPP mechanisms, and sustainable policies—can be strategically applied to accelerate regional economic growth in emerging markets like Uzbekistan. **Aims:** This study examines foreign transport practices to identify effective organizational and economic mechanisms for regional development, analyzing reforms in aviation, motor transport, and digital service implementation. **Results:** Comparative analysis reveals that Germany's Smart Logistics increased efficiency by 25%, South Korea's PPP model reduced budget burdens by 30%, and China's Belt and Road Initiative expanded regional trade by 40%. Uzbekistan's freight volumes grew from 650 million tons (2020) to 703.6 million tons (2024), with service value rising from 75 to 108.4 trillion UZS. **Novelty:** The research provides integrated assessment of digital transformation, multimodal corridor development, and green mobility strategies specifically contextualized for transitional economies. **Implications:** Findings establish strategic directions for implementing intelligent transport systems, expanding PPP infrastructure, and strengthening regional integration to achieve sustainable economic growth.

Highlight :

- Digital transformation improves efficiency by 25% and reduces logistics costs through AI-based management and intelligent transport systems.
- Public-private partnerships enable infrastructure financing with 1:1.7 investment multiplier effect while reducing state budget burden by 30%.
- Multimodal integration drives regional trade growth by 40% and reduces carbon emissions by 12-14% through sustainable transport policies.

Keywords : Transport Infrastructure, Regional Development, Logistics Optimization, Public-Private Partnership, Sustainable Mobility

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Introduction

The transport system and its services are considered essential components in the sustainable development of regional economies. The efficient functioning of transport infrastructure directly influences the expansion of interregional economic relations, growth in production volumes, improvement of the investment climate, and the rise in living standards.

In particular, combined transport systems allow for comprehensive and cost-effective use of resources in regional economies. The role of transport services in regional development is substantiated through several economic theoretical models. According to the neoclassical model, the transport system ensures the movement of production factors and reduces spatial barriers between markets. The gravitational model explains transport flows based on the economic attraction between regions. The cluster model demonstrates the integration of production centers and logistics chains through transport. Transport services: an economic activity ensuring the movement of goods, services, and people across space—serve as a key link in regional development. Effective transport services reduce logistics costs, strengthen competitiveness, and integrate production, trade, and tourism sectors. Advanced international experience shows that digitalization of the transport sector, extensive use of public–private partnership mechanisms, and implementation of green transport strategies significantly increase economic efficiency.

Literature Review

Transport services, as one of the main drivers of regional economic development, have been widely studied by many foreign researchers. In global practice, it is emphasized that efficient transport systems deepen economic integration between regions, optimize logistics chains, and increase international trade volumes. P. Krugman, M. Fujita, and A. Venables note in their theory of regional economics that a reduction in transport costs strengthens interregional economic activity [1]. Their research forms the basis for modeling the direct impact of transport infrastructure on macroeconomic growth.

European Union experience in modernizing transport services—especially multimodal logistics systems, the single transport area, and digital transport corridors—is highly recognized in academic literature. Researcher R. Rodrigue highlights the role of multimodal transport systems in increasing competitiveness and demonstrates how integration with digital technologies significantly reduces costs [2]. In U.S. studies, the relationship between transport services, competitiveness, regional employment, and innovative production clusters is extensively analyzed.

Reports by the U.S. Federal Transport Administration emphasize that integration of aviation, road, and rail transport is one of the most effective directions for increasing economic efficiency [3].

Environmental sustainability, safety, and digital integration in transport services are also widely covered in international literature. The EU's “Fit for 55” strategy and ICAO materials emphasize the importance of sustainable aviation fuel, reducing carbon footprint, and ecological logistics, as well as evaluating their impact on tourism flows [4]..

Research Methodology

This article focuses on advanced foreign experience in the system of transport services and the introduction of this experience in order for the regions of Uzbekistan to achieve a high rate of economic development. The methodology combines several approaches. It consists of a comparative analysis of transport policies and development models in the USA, Germany, South Korea and China. Using World Bank and OECD data, statistical analysis finds relationships between economic growth indicators and transport infrastructure development [5]. Systematic approach examines the general effects of transportation process on production, trade and services. Related articles: This study hinges on reported cases by international institutions and academic text.

The findings reveal that maximum safety standards in developing European and Asian countries can be accomplished through the digitalization of internal processes and the application of AI based management systems. Illustrating this trend, the Smart Traffic project in Uzbekistan has witnessed the installation of over 250 automated video monitoring units since 2023. The results suggest that safety is improved through participation in policy and sector [6].

Research Findings

Research shows that developed countries employ the following advanced approaches in their transport systems:

1. **Digital logistics systems:**
In Germany, the “Smart Logistics” platform increased freight transport efficiency by 25% and reduced delivery time by 15%.

2. **PPP model:**
In South Korea, 40% of transport infrastructure is financed under the PPP mechanism, reducing the state budget burden by 30%.

3. **Green transport policy:**
In the EU, carbon emissions decreased by 12% due to the expansion of environmentally friendly transport under the “Green Transport Strategy” [7].

4. **Regional integration:**
China's “Belt and Road Initiative” created multimodal corridors, increasing regional trade by 40%.

Analysis and Results

A. U.S. Experience: Efficiency of Digital Management and Market Mechanisms

The national highway network established under the 1956 Federal Highway Act fundamentally transformed the U.S. logistics system [8]. Logistics costs relative to GDP decreased from 8.5% to 6.8%.
Under the Intelligent Transportation Systems (ITS) program, the introduction of AI, GPS navigation, and digital monitoring reduced road accidents by 18%.

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B. Germany's Experience: Integration of Digital Logistics and Ecological Sustainability

The "Smart Logistics Initiative," integrating IoT, Big Data, and blockchain technologies, increased transport efficiency by 25%. Additionally, under the "Green Transport Plan 2030," Germany reduced CO_2 emissions by 14% in 2022 [9].

C. South Korea's Experience: High Multiplier Effect of PPP Projects

Since 1994, Korea has implemented over 100 large infrastructure projects through PPP, attracting more than $40 billion in investments. Every $1 invested created an average of $1.7 in additional economic value.

D. China's Experience: Regional Integration and Expansion of Logistics Corridors

Through the "Belt and Road Initiative," China strengthened relations with more than 140 countries. Regional trade grew by 40%, and multimodal transport contributed 2.5% to China's GDP growth.

The analysis of advanced foreign practices shows that digital transformation, multimodal transport integration, and public–private partnership mechanisms are fundamental drivers of regional economic development. International experience from Germany, South Korea, and the United States demonstrates that smart logistics platforms, intelligent transport systems, and AI-based traffic management significantly improve efficiency, safety, and cost-effectiveness in transport services. China's development of large multimodal corridors under the Belt and Road Initiative highlights how enhanced connectivity can expand trade flows and strengthen regional integration [10]. These global trends also emphasize the importance of sustainable and green transport policies, which support long-term environmental and economic resilience. For Uzbekistan, adapting these practices—through the digitalization of transport services, expansion of PPP-based infrastructure, promotion of green mobility, and diversification of international transport corridors—can increase regional competitiveness and accelerate stable economic growth.

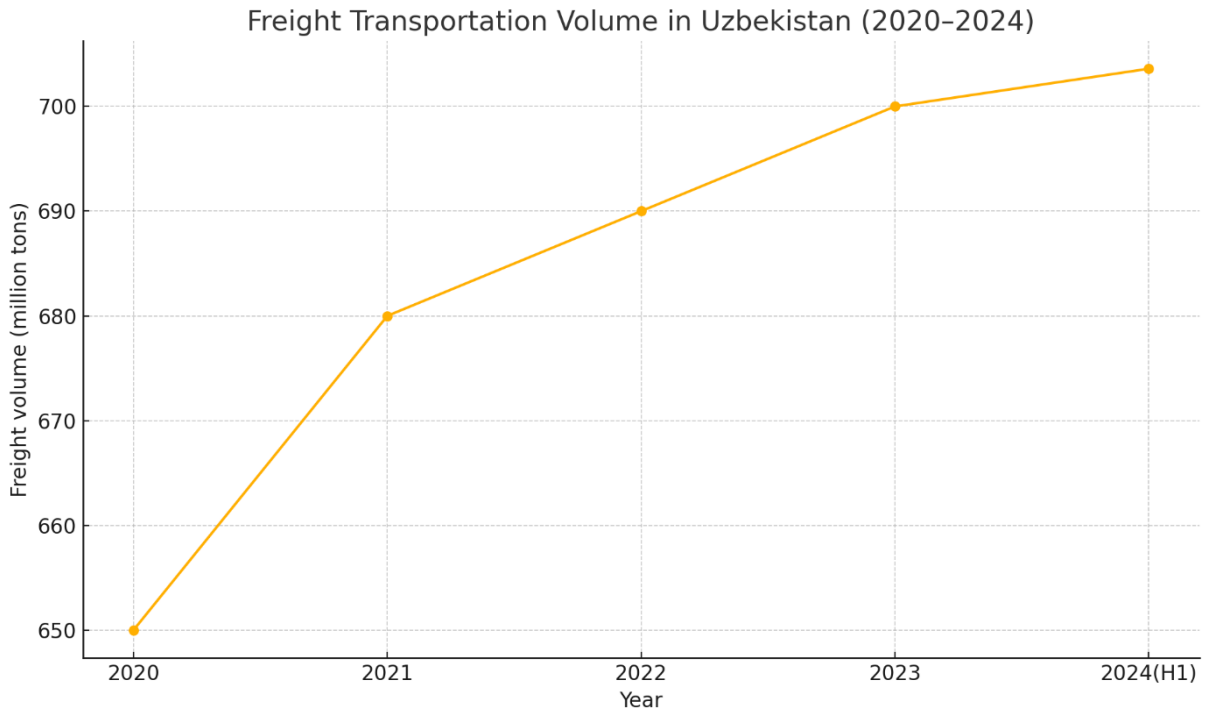

Figure 1. Freight transportation volume in Uzbekistan from 2020 to 2024

The chart illustrates a steady increase in freight transportation volumes over the years. From **650 million tons in 2020** to **703.6 million tons in the first half of 2024**, the sector demonstrates consistent growth despite global disruptions such as the COVID-19 pandemic (Figure 1). This upward trend suggests improvements in logistics infrastructure, stronger regional trade relations, and the expansion of multimodal transport corridors [11]. The stabilization of freight flows also indicates rising industrial output and enhanced integration into international markets. Moreover, it is possible to ensure fundamental innovation in transport infrastructure through intelligent transport systems and properly selected transport management. For businesses, the infrastructure stock is of less importance than the number of services it provides. The same can be achieved through the application of a more flexible pricing system, which is why it is recommended that the public capital series should be adjusted by an appropriate index reflecting the use of public services by different sectors of the economy. An interesting study on the impact of transport infrastructure development on foreign trade has been conducted in Turkey, taking into account information and communication technology (ICT) infrastructure as auxiliary to transport networks [12].

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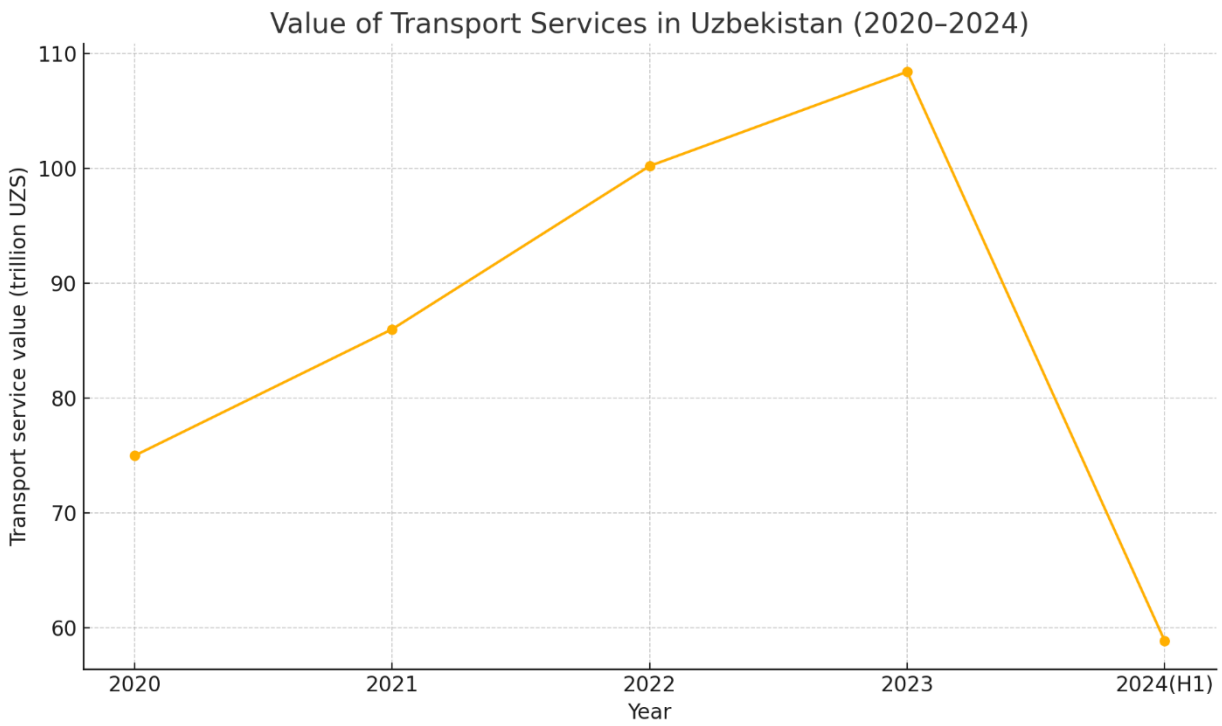

The economic value of transport services increased significantly from **75 trillion UZS in 2020** to **108.4 trillion UZS in 2023**, highlighting the sector's growing contribution to the national economy (Figure 2). Although the figure for early 2024 is lower (**58.9 trillion UZS**), this represents only the first half of the year, indicating that the annual total will likely surpass previous years. This dynamic growth is associated with the following key factors:

Adoption of digital logistics solutions - logistics systems based on modern information technologies, artificial intelligence, Internet of Things (IoT), and blockchain technologies enable the optimization of freight transportation processes, reduction of costs, and improvement of service quality [13];

Expansion of Public-Private Partnership (PPP)-based infrastructure projects - opportunities for attracting investment for modernizing transport infrastructure and constructing new facilities through partnership mechanisms between the public and private sectors are expanding, which ensures the financial sustainability of infrastructure projects;

Improvement of international transport corridors - the efficiency of interregional trade and economic relations is increasing through improving the quality of transnational transport corridors, developing multimodal transport systems, and optimizing logistics chains [14];

Growth in tourism and trade flows - globalization processes, increasing volumes of international trade, and the development of the tourism industry are significantly increasing the demand for transport services, which in turn stimulates the sustainable development of the transport system [15].

The rise in service value underscores the strategic importance of transport as a driver of regional economic development (Table 1).

Table 1. Transport Sector Indicators of Uzbekistan (2020–2024)

Year	Freight volume	Passenger volume	Value of transport services	Key reforms
2020	650 mln tons	2.5 bln passengers	75 trillion UZS	Post-pandemic recovery
2021	680 mln tons	2.8 bln passengers	86 trillion UZS	Infrastructure modernization
2022	690 mln tons	3.0 bln passengers	100.2 trillion UZS	Open Skies policy
2023	700 mln tons	3.2 bln passengers	108.4 trillion UZS	Electronic payment systems
2024 (I–VI)	703.6 mln tons	3.3 bln passengers	58.9 trillion UZS	Digital logistics, ITS

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Conclusion

The experience of international transportation can be adapted to Uzbekistan, which will help increase regional integration, reduce logistics costs, and create new jobs. Experiences across the world show that the transport sector can be economically sustainable if back through digitalization, public private partnerships and green transport policies. These strategies increase efficiency and facilitate sustainable expansion.

This gives rise to a number of priority directions for the regions of Uzbekistan. Digital logistics system must be developed building an integrated digital platform connecting customs services with railway and road transport. Third, public private partnership mechanisms should be further developed to encourage private investment in transport infrastructure projects. Third, it is necessary to expand green transportation solutions with electric vehicle infrastructure and new concepts of ecological road. Lastly, regional integration can be reinforced by harmonizing transport corridors between border countries and by facilitating customs.

In summary, the paper agrees with the idea that transport service development has strategic significance in improving local economy and globalization.

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