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ASSESSMENT AND IMPROVEMENT OF LOGISTICS POTENTIAL IN NAMANGAN REGION OF UZBEKISTAN

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Abstract. *The development of regional logistics systems plays a significant role in increasing economic competitiveness, improving transportation efficiency, and supporting export-oriented growth. This study evaluates the logistics potential of Namangan region, one of the most industrially active territories in the Fergana Valley of Uzbekistan. The research analyzes the current state of transport infrastructure, freight and passenger transportation systems, and logistics facilities in the region. SWOT analysis and integrated assessment methods were applied to identify strengths, weaknesses, opportunities, and threats affecting logistics development. The results indicate that Namangan region possesses considerable logistics advantages due to its strategic geographical location, developed road network, proximity to international transport corridors, and access to the Angren–Pap railway line. However, insufficient multimodal logistics centers, limited digitalization of logistics services, and underdeveloped warehouse infrastructure remain major challenges. Based on the findings, recommendations are proposed for establishing multimodal logistics hubs, implementing intelligent transport systems, and introducing digital logistics technologies. The study demonstrates that the proposed measures can reduce logistics costs by 10–15%, shorten delivery times by 20–25%, and improve overall logistics efficiency. The results can be used for regional transport planning and logistics policy development.*

Annotatsiya. *Hududiy logistika tizimlarini rivojlantirish iqtisodiy raqobatbardoshlikni oshirish, transport samaradorligini yaxshilash va eksportga yo‘naltirilgan iqtisodiy o‘sishni ta'minlashda muhim ahamiyat kasb etadi. Mazkur tadqiqotda O‘zbekistonning Farg‘ona vodiysidagi eng faol sanoat hududlaridan biri bo‘lgan Namangan viloyatining logistik salohiyati baholandi. Tadqiqot doirasida viloyatning transport infratuzilmasi, yuk va yo‘lovchi tashish tizimlari hamda logistika obyektlarining hozirgi holati tahlil qilindi. Logistika rivojlanishiga ta'sir etuvchi kuchli va zaif tomonlar, imkoniyatlar hamda tahdidlarni aniqlash maqsadida SWOT tahlili va kompleks baholash usullaridan foydalanildi. Tadqiqot natijalari Namangan viloyati qulay geografik joylashuvi, rivojlangan avtomobil yo‘llari tarmog‘i, xalqaro transport koridorlariga yaqinligi va Angren–Pop temir yo‘l liniyasiga ulanishi sababli yuqori logistik salohiyatga ega ekanligini ko‘rsatdi. Shu bilan birga, multimodal logistika markazlarining yetishmasligi, logistika xizmatlarining raqamlashtirilish darajasi pastligi hamda ombor infratuzilmasining yetarli darajada rivojlanmaganligi asosiy muammolar sifatida aniqlandi. Tadqiqot yakunida multimodal logistika markazlarini tashkil etish, aqlli transport tizimlarini joriy etish va raqamli logistika texnologiyalarini keng qo‘llash bo‘yicha tavsiyalar ishlab chiqildi. Hisob-kitoblarga ko‘ra, taklif etilgan chora-tadbirlar logistika xarajatlarini 10–15 foizga kamaytirish, yuklarni yetkazib berish muddatlarini 20–25 foizga qisqartirish va logistika tizimining umumiy samaradorligini oshirish imkonini beradi. Olingan natijalardan hududiy transport-logistika tizimlarini rejalashtirish va logistika siyosatini takomillashtirishda foydalanish mumkin.*

Аннотация. *Развитие региональных логистических систем играет важную роль в повышении экономической конкурентоспособности, эффективности транспортных перевозок и обеспечении экспортно-ориентированного роста. В данной работе проведена оценка логистического потенциала Наманганской области — одного из наиболее индустриально развитых регионов Ферганской долины Узбекистана. Исследование включает анализ современного состояния транспортной инфраструктуры, систем грузовых и пассажирских перевозок, а также объектов логистической инфраструктуры*

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региона. Для выявления сильных и слабых сторон, возможностей и угроз развития логистики были использованы SWOT-анализ и методы комплексной оценки. Результаты исследования показали, что Наманганская область обладает значительным логистическим потенциалом благодаря выгодному географическому положению, развитой сети автомобильных дорог, близости к международным транспортным коридорам и наличию железнодорожной линии Ангрен–Пап. Вместе с тем выявлены такие проблемы, как недостаточное количество мультимодальных логистических центров, ограниченный уровень цифровизации логистических услуг и недостаточное развитие складской инфраструктуры. На основе полученных результатов предложены рекомендации по созданию мультимодальных логистических хабов, внедрению интеллектуальных транспортных систем и современных цифровых логистических технологий. Расчёты показали, что реализация предложенных мероприятий позволит сократить логистические затраты на 10–15 %, уменьшить сроки доставки грузов на 20–25 % и повысить общую эффективность логистической системы региона. Полученные результаты могут быть использованы при разработке региональной транспортно-логистической политики и планировании развития логистической инфраструктуры.

Key words: *logistics potential, regional logistics, multimodal transport, intelligent transport systems, Namangan region, digital logistics.*

Kalit so‘zlar: *logistik salohiyat, hududiy logistika, multimodal transport, aqlli transport tizimlari, Namangan viloyati, raqamli logistika.*

Ключевые слова: *логистический потенциал, региональная логистика, мультимодальный транспорт, интеллектуальные транспортные системы, Наманганская область, цифровая логистика.*

1. Introduction

Efficient logistics systems have become a critical factor in enhancing regional competitiveness, supporting economic growth, and facilitating international trade in the context of globalization. The increasing integration of national economies into global supply chains has intensified the need for modern transport infrastructure, efficient freight distribution networks, and advanced logistics services. As a result, the development of regional logistics potential has emerged as a strategic priority for many countries seeking to improve their economic performance and strengthen their position within international transportation corridors.

In recent years, Uzbekistan has implemented comprehensive reforms aimed at modernizing its transport and logistics sector. The country's strategic location in Central Asia provides significant opportunities for transit transportation and regional trade. National development programs emphasize the expansion of transport infrastructure, digitalization of logistics services, and integration into international transport corridors connecting Asia and Europe. However, despite these efforts, considerable disparities remain among regions regarding logistics infrastructure development, service quality, and operational efficiency.

Namangan region is one of the most economically active territories in the Fergana Valley and plays a significant role in Uzbekistan's industrial and agricultural production. The region possesses several advantages, including a favorable geographical location, a large population, growing industrial capacity, and access to major transport routes. The commissioning of the Angren–Pap railway line and the development of road infrastructure through the Kamchik corridor have significantly improved connectivity between the Fergana Valley and the rest of the country. Furthermore, the region's proximity to the Kyrgyz Republic creates additional opportunities for cross-border trade and logistics cooperation.

Despite these advantages, several challenges continue to limit the effective utilization of the region's logistics potential. These include the insufficient number of logistics centers,

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underdeveloped multimodal transportation facilities, limited warehouse infrastructure, fragmented logistics services, and a relatively low level of digitalization. As freight volumes and export activities continue to increase, these constraints may reduce transport efficiency, increase logistics costs, and limit the competitiveness of regional enterprises.

Previous studies have extensively examined transport infrastructure development, logistics performance, supply chain management, and regional economic growth. However, relatively limited attention has been paid to the comprehensive assessment of logistics potential at the regional level in developing economies, particularly in Central Asian countries. Existing research often focuses on national transport systems or specific logistics operations, while integrated evaluations of regional logistics potential remain insufficient. Therefore, there is a need for empirical studies that assess logistics capabilities, identify development bottlenecks, and formulate practical recommendations for improving regional logistics systems.

The objective of this study is to assess the logistics potential of Namangan region and identify priority directions for its further development. The research evaluates the current state of transport infrastructure, freight and passenger transportation systems, logistics facilities, and digital logistics technologies. In addition, a SWOT-based assessment is conducted to determine the key strengths, weaknesses, opportunities, and threats affecting regional logistics development. Based on the obtained results, practical recommendations are proposed for improving logistics infrastructure, developing multimodal transport systems, and implementing intelligent logistics solutions.

The scientific contribution of this study lies in the development of an integrated approach for assessing regional logistics potential and identifying strategic measures for enhancing logistics efficiency in Namangan region. The findings may contribute to regional transport planning, logistics policy formulation, and the sustainable development of transport and logistics systems in Uzbekistan and other emerging economies with similar characteristics.

The remainder of the paper is organized as follows. Section 2 presents the materials and methods used in the study. Section 3 discusses the results of the logistics potential assessment and SWOT analysis. Section 4 proposes development strategies and evaluates their economic effectiveness. Finally, Section 5 summarizes the main findings and conclusions of the research.

2. Materials and Methods

This study aims to assess the logistics potential of Namangan region and identify priority directions for its improvement. The research is based on a combination of statistical analysis, SWOT analysis, comparative assessment, and systems approach methods.

Table 1

Indicators Used for Logistics Potential Assessment

Assessment Criteria	Description
Geographical Location	Accessibility to domestic and international markets
Transport Infrastructure	Road, railway, and airport facilities
Logistics Facilities	Warehouses, terminals, and logistics centers
Digitalization Level	Use of GPS, WMS, TMS, RFID technologies
Export Potential	Volume and growth of export activities
Investment Attractiveness	Conditions for attracting logistics investments
Human Resources	Availability of qualified logistics specialists

The study utilizes secondary data obtained from the Statistics Agency of Uzbekistan, the Ministry of Transport, regional development reports, scientific publications, and international logistics performance studies. Information on transport infrastructure, freight transportation, passenger transportation, logistics facilities, and regional economic indicators was collected and analyzed.

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To evaluate the logistics potential of Namangan region, a comprehensive assessment framework was developed. The evaluation was based on several key dimensions, including geographical location, transport infrastructure, logistics facilities, digitalization level, export capacity, investment attractiveness, and human resources. Each indicator was assessed using expert evaluation and comparative analysis methods.

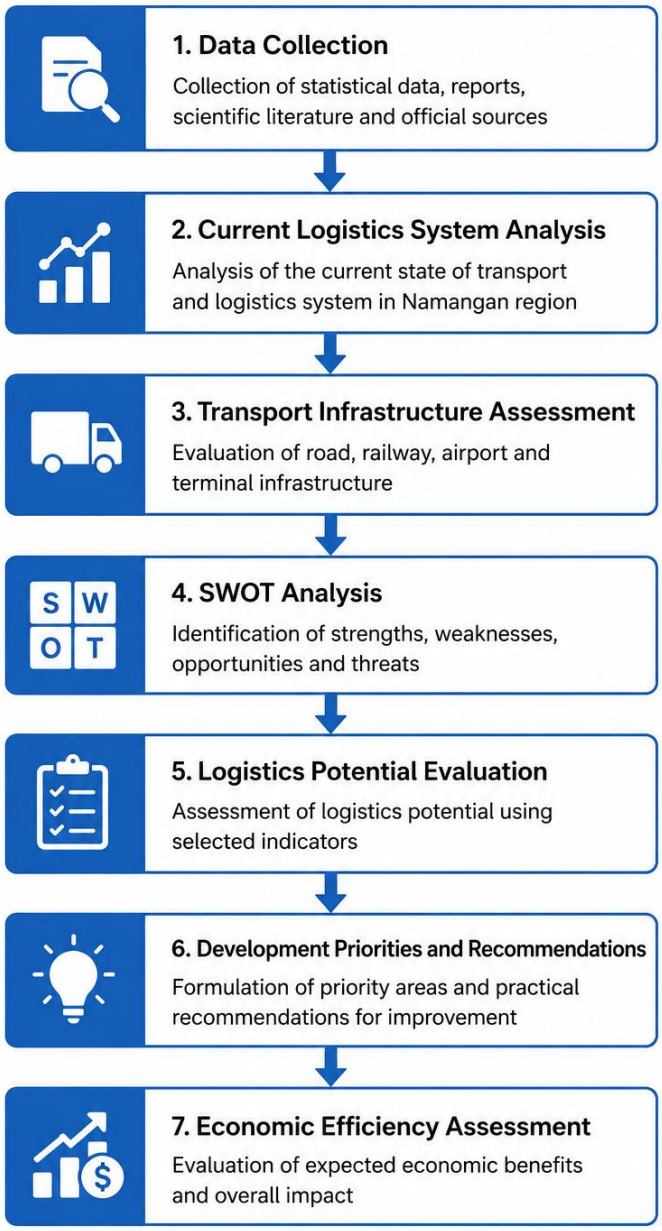


Figure 1. Research Methodology Framework

The research methodology consists of four consecutive stages. First, statistical and analytical data related to the logistics system of Namangan region were collected. Second, the current state of transport infrastructure and logistics services was analyzed. Third, SWOT analysis was conducted to identify strengths, weaknesses, opportunities, and threats affecting regional logistics development. Finally, strategic recommendations and development priorities were formulated based on the obtained results.

The SWOT analysis method was applied to identify the internal and external factors influencing logistics development. Strengths and weaknesses represent internal characteristics of

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the regional logistics system, while opportunities and threats describe external conditions affecting logistics performance.

The obtained data were processed using descriptive statistical techniques and comparative evaluation methods. The results were then used to develop practical recommendations aimed at improving logistics infrastructure, expanding multimodal transportation systems, and introducing digital logistics technologies in Namangan region.

3. Results and Discussion

3.1. Assessment of the Current Logistics Potential of Namangan Region

The analysis indicates that Namangan region possesses significant logistics potential due to its advantageous geographical location, growing industrial base, and access to major transportation routes. Located in the Fergana Valley, the region serves as an important economic center connecting domestic markets with neighboring countries, particularly the Kyrgyz Republic.

The transportation infrastructure of the region consists of an extensive road network, railway connections through the Angren–Pap railway corridor, and Namangan International Airport. These facilities provide favorable conditions for freight movement and regional trade development. In recent years, improvements in transport infrastructure have contributed to increased accessibility and reduced transportation bottlenecks.

However, the assessment revealed several limitations affecting logistics efficiency. The number of modern logistics centers remains insufficient, warehouse facilities are unevenly distributed, and multimodal transportation services are not fully developed. In addition, the implementation of digital logistics technologies is still at an early stage compared with international best practices.

Table 2

Current Logistics Indicators of Namangan Region

Indicator	**Current Status**
Geographical accessibility	High
Road infrastructure	Developed
Railway connectivity	Moderate to High
Airport accessibility	Moderate
Logistics centers	Insufficient
Warehouse facilities	Moderate
Digital logistics technologies	Limited
Export logistics potential	High

The findings suggest that logistics development should focus not only on physical infrastructure expansion but also on digital transformation and service integration.

3.2. SWOT Analysis of Logistics Potential

A SWOT analysis was conducted to identify the major internal and external factors influencing logistics development in Namangan region.

Table 3

SWOT Matrix of Logistics Potential in Namangan Region

Strengths	**Weaknesses**
Strategic location in Fergana Valley	Limited logistics centers
Access to Angren–Pap railway	Insufficient multimodal facilities
Growing industrial production	Low digitalization level
Proximity to international markets	Limited warehouse capacity
Opportunities	**Threats**
Development of international corridors	Increasing transportation costs

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Foreign investment attraction	Regional competition
Digital logistics implementation	Global economic instability
Expansion of export activities	Supply chain disruptions

The SWOT analysis demonstrates that Namangan region possesses substantial opportunities for logistics expansion. Nevertheless, achieving sustainable growth requires targeted investments in logistics infrastructure, technology adoption, and institutional support.

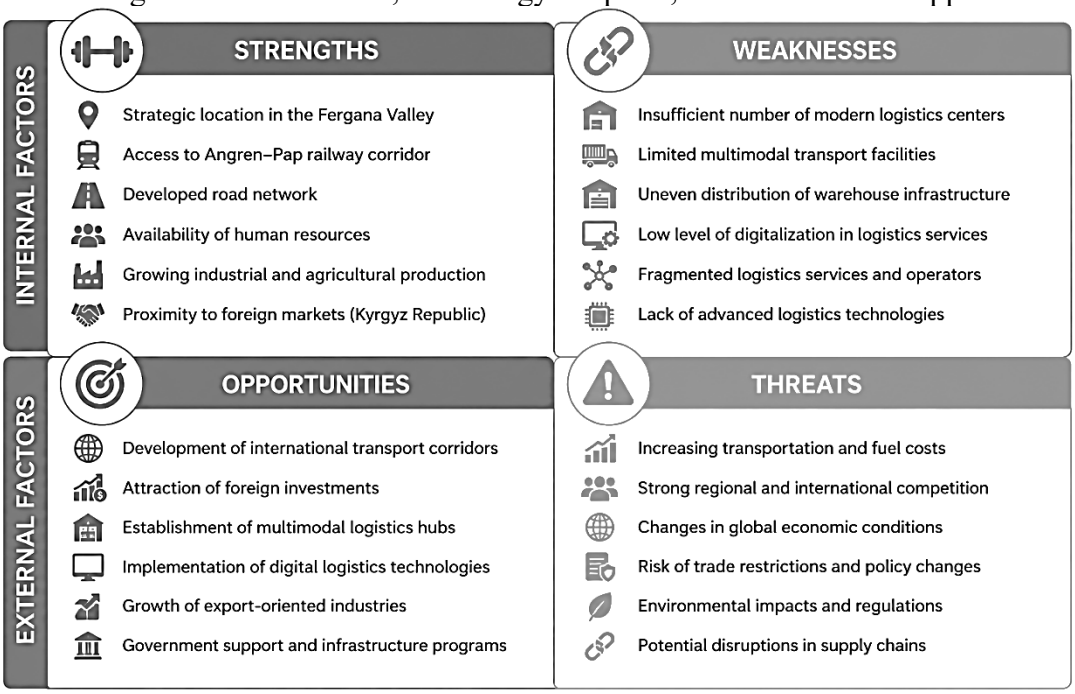


Figure 2. SWOT Matrix of Logistics Potential in Namangan Region

3.3. Proposed Development Model for Regional Logistics Improvement

Based on the assessment results, a comprehensive logistics development model is proposed. The model integrates multimodal transportation systems, logistics centers, digital technologies, and intelligent transport systems into a unified regional logistics framework.

The proposed model emphasizes:

- establishment of multimodal logistics hubs;
- development of agro-logistics centers;
- expansion of warehouse infrastructure;
- implementation of GPS, RFID, WMS, and TMS technologies;
- introduction of intelligent transport systems (ITS);
- integration with international transport corridors.

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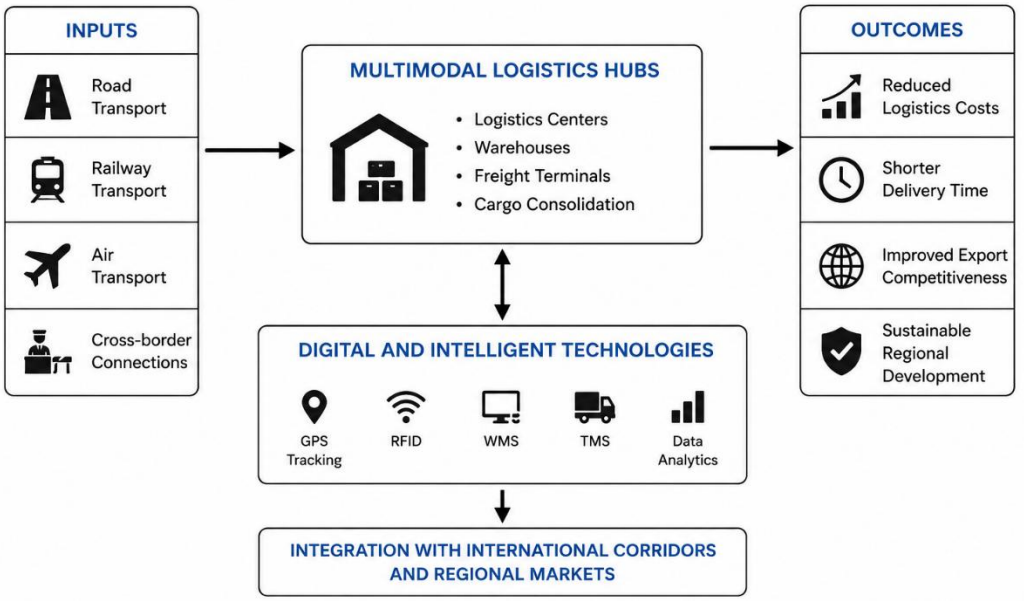


Figure 3. Proposed Multimodal Logistics Development Model

The proposed model is expected to improve freight distribution efficiency, reduce transportation costs, and strengthen the region's role within national and international logistics networks.

3.4. Economic Impact Assessment

The implementation of modern logistics infrastructure and digital logistics technologies can generate substantial economic benefits.

Table 4

Expected Economic Benefits of Logistics Development

Indicator	**Expected Improvement**
Transportation costs	Decrease by 10–15%
Delivery time	Reduce by 20–25%
Warehouse efficiency	Increase by 25–30%
Empty vehicle trips	Reduce by 15–20%
Export logistics capacity	Increase by 15–20%
Investment attractiveness	Improve significantly

The results indicate that logistics modernization can substantially increase operational efficiency. Reduced transportation costs and shorter delivery times contribute directly to improved competitiveness of regional enterprises. Furthermore, enhanced logistics services support export-oriented industries and facilitate greater participation in international supply chains.

The adoption of digital logistics technologies such as GPS monitoring, RFID systems, and intelligent transport management solutions further increases transparency and operational effectiveness. These technologies enable real-time monitoring of freight movements, optimize routing decisions, and improve overall resource utilization.

Overall, the findings confirm that Namangan region possesses considerable logistics development potential. Strategic investments in logistics infrastructure, multimodal transportation systems, and digital technologies can significantly improve regional economic performance and strengthen the region's position within Uzbekistan's transport and logistics network.

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4. Conclusion

This study assessed the logistics potential of Namangan region and identified strategic directions for its further development. The results demonstrate that the region possesses significant logistics advantages due to its favorable geographical location, developed road infrastructure, railway connectivity through the Angren–Pap corridor, growing industrial production, and proximity to international markets. These factors create substantial opportunities for strengthening the region's role within national and international logistics networks.

The assessment revealed that despite the existing advantages, several constraints continue to limit logistics efficiency. The insufficient number of modern logistics centers, underdeveloped multimodal transportation facilities, uneven distribution of warehouse infrastructure, and relatively low level of logistics digitalization reduce the effectiveness of freight transportation and supply chain operations. Therefore, improving logistics infrastructure and service integration remains a key priority for regional development.

The SWOT analysis confirmed that Namangan region has considerable opportunities for attracting investment, expanding export-oriented industries, and integrating into international transport corridors. At the same time, challenges such as increasing transportation costs, regional competition, and global supply chain disruptions require strategic planning and modernization efforts.

Based on the obtained results, a multimodal logistics development model was proposed, integrating logistics centers, warehouse facilities, digital logistics technologies, and intelligent transport systems. The model emphasizes the implementation of GPS monitoring, RFID technologies, Warehouse Management Systems (WMS), Transport Management Systems (TMS), and other digital solutions aimed at improving logistics performance and operational transparency.

The economic assessment indicates that the proposed measures can generate substantial benefits. Transportation costs may be reduced by 10–15%, delivery times can be shortened by 20–25%, warehouse efficiency may increase by 25–30%, and export logistics capacity can improve significantly. These improvements are expected to enhance regional competitiveness, attract new investments, and support sustainable economic growth.

In conclusion, the logistics potential of Namangan region can be significantly strengthened through the development of modern logistics infrastructure, multimodal transport systems, and digital logistics technologies. The findings of this study provide practical recommendations for policymakers, regional authorities, and logistics stakeholders seeking to improve transport efficiency and promote sustainable regional development. Furthermore, the proposed approach may serve as a useful framework for assessing and improving logistics potential in other regions of Uzbekistan and similar emerging economies.

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