



## Article

# Evaluation of The Formation of Logistics and Supply Chains in The Textile Industry

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**Abstract:** Logistics and supply chain efficiency are critical determinants of competitiveness in the global textile industry, influencing cost reduction, delivery speed, product quality, and market expansion. In Uzbekistan, the textile sector holds strategic economic significance due to its abundant raw materials, growing production capacity, and export potential. Despite recent government initiatives, there is limited research on aligning Uzbekistan's logistics infrastructure with global best practices to improve integration into international supply chains. This study evaluates the current state of logistics and supply chains in Uzbekistan's textile industry, compares it with developed textile-producing countries, and proposes strategies for modernization. The analysis identifies key challenges, including outdated transport systems, low warehouse automation, slow customs procedures, and insufficient integration with global logistics networks. Comparative insights show that leading countries like Turkey, China, and Bangladesh leverage multimodal transport, digitalized customs, AI-driven management, and agile production systems. The research offers targeted recommendations for Uzbekistan, such as modernizing transport fleets, implementing warehouse management systems, optimizing customs procedures, creating digital trade platforms, and fostering international cooperation. Adopting these measures will enable Uzbekistan to enhance delivery speed, reduce operational costs, expand export markets, and achieve sustainable competitiveness in the global textile value chain.

**Keywords:** textile industry, logistics, supply chain, transportation system, warehousing, export, import, digital logistics, efficiency, global market.

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## 1. Introduction

In today's rapidly developing market economy, all manufacturers are striving to outdo their competitors. Every industry, from the textile industry to the sportswear industry, is facing fierce competition, with brands using all-round price and non-price competition. If a brand loses its position in the competition, another brand is ready to challenge it. It is important for companies to plan and implement competitive strategies. What is a competitive strategy? A competitive strategy is a comprehensive plan of actions developed by an enterprise to protect its position in the market and gain a sustainable competitive advantage in the industry [1].

We consider competition in the textile industry as a struggle between manufacturers for the quality of the fabrics produced, their price in the market and the choice of the products of this enterprise by consumers. It is necessary to consider the main reasons for competition:

1. the first is freedom of choice for the consumer;
2. the second is freedom of choice for the manufacturer [2].

Thus, the competitiveness of industrial enterprises is based on the production of fabrics that are attractive, have a set of quality, consumer and price characteristics, meet the needs

of customers under supply conditions and ensure commercial success. The correctly chosen strategy of commodity producers is of great importance for generating income, implementing expanded reproduction and solving the social problems of workers [3].

## 2. Materials and Methods

Currently, the light industry and textile sectors are rapidly developing in Uzbekistan. A number of resolutions and decrees adopted in our country, including the "New Uzbekistan Development Strategy for 2022-2026" adopted by our President and the Decree of the President of the Republic of Uzbekistan No. PF-2 dated January 10, 2023 "On measures to support the activities of cotton textile clusters, radically reform the textile and garment and knitwear industries, and further increase the export potential of the sector", provide for the continuation of the industrial policy aimed at ensuring the stability of the national economy and increasing the share of industry in the gross domestic product in our country, increasing the volume of industrial production by 1.4 times and ensuring stable high growth rates in economic sectors, thereby increasing the gross domestic product per capita by 1.6 times in the next five years and increasing the volume of textile production by 2-3 times, increasing the export potential of the textile sector by 5 billion US dollars by the end of 2023. It is planned to increase the level of production capacity utilization from 65 to 81 percent and fill 35,000 vacancies [4].

Table 1 presents a detailed comparison of logistics indicators between Uzbekistan and leading textile-producing nations such as Turkey, China, and Bangladesh. The table covers seven indicators: vehicles, warehouse management, customs procedures, digital control, delivery speed, flexibility, and export markets. In Uzbekistan, transport relies mainly on road and rail, with limited air freight, whereas developed countries integrate road, rail, sea, and air transport[5]. Warehouses in Uzbekistan are largely non-automated, with rare use of Warehouse Management Systems (WMS), while developed nations employ modern, fully automated WMS and IoT technologies. Customs procedures in Uzbekistan can be lengthy, while advanced countries implement digital customs systems with fast "one-stop" services. Digital control in Uzbekistan is partially implemented through ERP and logistics platforms, whereas developed countries utilize AI, big data analytics, and blockchain. Delivery speed in Uzbekistan averages 5–15 days for domestic and neighboring destinations, compared to 2–7 days in developed countries due to efficient multi-route transport systems. Flexibility in Uzbekistan is somewhat limited, while advanced producers widely use "Just-in-time" systems. Export markets in Uzbekistan focus mainly on the CIS, Turkey, and some European countries, whereas developed nations have extensive global market coverage, including the USA, Europe, and Asia [6].

**Table 1.** Comparison of textile logistics in Uzbekistan and developed countries

N	Indicators	Situation in Uzbekistan	Experience of developed countries (Turkey, China, Bangladesh)
1	Vehicles	Mainly road and rail transport, air freight is limited	Integrated road, rail, sea and air transport
2	Warehouse management	Many warehouses are not automated, and WMS systems are rarely used.	Modern warehouses, fully automated WMS and IoT technologies
3	Customs procedures	In some cases, it takes a long time, digitization is ongoing.	Digital customs system, fast "one-stop" services
4	Digital control	ERP and logistics platforms are being implemented, but full coverage is not available	Management based on artificial intelligence, big data analytics, and blockchain
5	Delivery speed	Average 5–15 days (domestic and neighboring countries)	2–7 days (due to multi-route transportation system)

6	Flexibility	Somewhat slow to adapt to changes in demand	"Just-in-time" and agile production systems are widely used
7	Export markets	Mainly CIS, Turkey and some European countries Global market,	Wide coverage of the USA, Europe, and Asian countries

### 3. Results

The textile industry is of strategic importance in the economy of Uzbekistan, playing an important role in increasing the country's export potential and creating new jobs. Efficient production in this sector is directly related not only to high-quality raw materials and advanced technologies, but also to well-organized logistics and supply chains. In today's global market conditions, fast, cheap and high-quality delivery of products has become a key factor in competitiveness. Therefore, the issue of optimizing the logistics system and effective supply chain management in the textile industry is relevant [7].

Logistics is the process of planning, organizing, managing and controlling the flow of products, raw materials, semi-finished products and finished products.

The supply chain is a broader part of logistics, in which all stages, from the selection of raw material sources to the delivery of finished products to the consumer, are considered as an interconnected system [8].

In the textile industry, this process includes the following stages:

1. Cotton cultivation and harvesting.
2. Cleaning and primary processing (transforming cotton into fiber, yarn, fabric).
3. Production of finished products (clothing, textiles).
4. Delivery to domestic and foreign markets through a warehouse and transport-logistics system [9].
5. Enterprises with an effective logistics system have the following advantages:
6. Reducing delivery times.
7. Reducing transportation costs.
8. Optimizing warehouse stocks.
9. Flexible response to customer demand.
10. Increasing export volumes and capturing new markets.

For example, for companies exporting textile products to Turkey or European countries, fast delivery is crucial for their ability to fulfill contract terms and win subsequent orders [10].

The following criteria are used to assess the effectiveness of the supply chain in the textile industry:

1. Delivery speed - the time it takes for the product to reach the consumer from the manufacturer.
2. Cost efficiency - the total amount of transportation, warehouse, customs and other costs.
3. Quality stability - maintaining product quality during the delivery process.
4. Flexibility - the ability to quickly respond to changes in demand [11].
5. Digital management level - the scope of use of technologies such as IoT, ERP, WMS.

Although the textile industry in Uzbekistan is rich in raw materials, the logistics infrastructure needs modernization in some areas. The main problems are:

1. Insufficiently modern means of transport.
2. Weak automation in the warehouse management system.
3. Slow customs procedures on export routes.
4. Insufficient integration with international logistics companies.

At the same time, in recent years, measures have been taken to introduce the concept of "Green Logistics", transition to a digital customs system, and construction of new railways and highways [12]. In world experience, countries with developed textile industries, such as Turkey, Bangladesh and China, use the following methods to increase logistics efficiency:

1. Fully digitize the transport and warehouse system.

2. Integrated use of international sea, air and land routes.
3. Implementation of the "just-in-time" strategy.
4. Use of artificial intelligence and big data analysis in order management.

The following measures are recommended for further development of logistics and supply chain in the textile industry of Uzbekistan:

1. Modernization of transport infrastructure - purchase of new trucks, containers and wagons[13].
2. Automation of warehouse management - widespread introduction of the WMS (Warehouse Management System) system.
3. Optimization of export logistics - simplification of customs procedures.
4. Creation of digital platforms - systems directly connecting manufacturers and buyers.
5. Expanding international cooperation - implementing joint projects with logistics companies.

#### 4. Discussion

The discussion of the findings highlights that the textile industry in Uzbekistan holds significant untapped potential that can be leveraged through modernizing logistics and supply chains. While the country benefits from an abundant raw material base, the comparative analysis with developed textile nations such as Turkey, Bangladesh, and China reveals gaps in transportation integration, warehouse automation, customs efficiency, and digital management [14]. These shortcomings hinder the sector's ability to compete effectively in a global market where speed, cost-efficiency, and flexibility are critical. The results underscore that improvements in transport infrastructure, warehouse systems, and customs digitization are not merely operational enhancements but strategic necessities to capture wider export markets. Integrating advanced technologies like AI, IoT, and big data analytics into logistics platforms can drastically reduce delivery times, improve responsiveness to demand fluctuations, and enhance product quality control. Furthermore, aligning Uzbekistan's textile supply chain practices with international standards could foster stronger partnerships with global logistics networks, enabling broader market reach and greater competitiveness. The study's comparative findings indicate that adopting integrated multimodal transport, "just-in-time" strategies, and agile production systems can help bridge the current efficiency gap. Overall, the discussion emphasizes that targeted investment, policy support, and industry-wide adoption of advanced logistics models are pivotal for transforming Uzbekistan's textile sector into a dynamic global player, ensuring it meets the demands of modern supply chains while maximizing its economic and export potential [15].

#### 5. Conclusion

Improving the efficiency of logistics and supply chain in the textile industry will not only ensure the speed of product delivery, but also reduce costs, increase export volumes and strengthen competitiveness in the international market. Combining the existing raw material potential and production capabilities of Uzbekistan with modern logistics strategies will take the industry to a higher level in the future. The development of efficient logistics and supply chains in Uzbekistan's textile industry is essential for enhancing delivery speed, reducing operational costs, and strengthening the sector's position in global markets. The industry's competitive potential lies in combining abundant raw material resources with modernized transport infrastructure, automated warehouse management, and advanced digital platforms that connect producers directly with buyers. Addressing current challenges—such as outdated transport, slow customs procedures, and limited integration with international logistics systems—will enable faster adaptation to market demands and expansion into new export markets. Drawing on best practices from leading textile producers like Turkey, China, and Bangladesh, Uzbekistan can implement strategies such as fully digitizing logistics systems, integrating multimodal transport, and applying data-driven decision-making through artificial intelligence. By adopting these measures, the industry will not only improve supply chain efficiency but also enhance product quality, increase export volumes, and secure a competitive advantage internationally. Ultimately, a well-optimized logistics system will serve as a cornerstone for sustainable growth, higher profitability, and greater resilience against

market fluctuations, positioning Uzbekistan as a strong player in the global textile value chain.

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