

# The Role of Artificial Intelligence in Cross-Border Trade and Supply Chain Management

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**Abstract:** This article presents a study on the impact of artificial intelligence (AI) on supply chain management as well as logistics, with a focus on modern trends, the advantages and prospects of artificial intelligence. Basic applications of artificial intelligence (AI) are considered in logistics such as supply zone optimization, warehouse stock management, and cost reduction.

**Keywords:** Artificial intelligence, supply chain management, inventory, automation, express delivery, optimization.

**Introduction:** In recent years, with the growth of consumer demand, increasing efficiency and reducing costs in the supply chain have become the top priorities of supply chain management. It would not be wrong to say that one of the main tools to overcome these problems is artificial intelligence (AI). Artificial intelligence (AI) is being successfully used in various industries today, and logistics is no exception.

Now new technologies, and in particular artificial intelligence, play an important role in solving huge problems. According to the authoritative research company Gartner, by the end of 2024, about 50% of logistics companies will invest in technologies that support artificial intelligence.

In particular, the Decree of the President of the Republic of Uzbekistan No. PF-6097 dated October 29, 2020 "On Approval of the Concept of the Development of Science until 2030" [1], Resolution No. PQ-4996 dated February 17, 2021 "On Measures to Create Conditions for the Rapid Introduction of Artificial Intelligence Technologies" [2], and in accordance with this resolution, in order to rapidly introduce artificial intelligence technologies and establish a system for training highly qualified personnel in this field, Resolution No. 475 of the Cabinet of Ministers dated July 31, 2021 "On the Organization of the Activities of the Research Institute for the Development of Digital

Technologies and Artificial Intelligence" [3] was adopted, according to which it is necessary to increase the share of services provided based on artificial intelligence to 10 percent or to increase the number of software products created based on artificial intelligence to 10 percent. and a number of tasks have also been set, such as increasing the volume of services provided to 1.5 billion US dollars.

## LITERATURE ANALYSIS

Artificial intelligence (AI) has the potential to revolutionize supply chain operations by improving decision-making and efficiency. According to a 2022 survey by the well-known American consulting firm McKinsey, the highest cost savings from artificial intelligence are reported in supply chain management.[4]

In particular, artificial intelligence (AI) can add value to supply chain planning, including production, goods management, and product distribution.

Companies can also use artificial intelligence (AI)-powered tools to process large amounts of real-time data and increase the accuracy of demand forecasting.

According to O. Grekhova, today most large companies use artificial intelligence to manage supply chains. With these technologies, they have been able to reduce logistics costs, improve customer experience, and

increase their profits. Thus, the artificial intelligence revolution in supply chain management is one of the key factors in the development of the global economy in the 21st century.[5]

## METHODOLOGY

For the purpose of this study, data were collected from secondary sources to support the analysis and discussion. The literature was analyzed through keyword searches to find relevant articles that highlight the concepts and relationships between Artificial Intelligence (AI) and Supply Chain Management (SCM). To gain more information about the use of AI in supply chain management, academic journals, conference proceedings, industry reports, and related publications, as well as new literature on the topic and prospective project data were studied, and methods such as analysis and synthesis were used.

## RESULTS

Among all the fields where Artificial Intelligence (AI) has begun to be applied, supply chain management has also achieved its own unique transformation. Supply chain professionals can overcome complex obstacles, simplify processes, and increase efficiency thanks to AI technologies.

According to estimates by UNIVDATOS magazine, the volume of the Artificial Intelligence (AI) in the Supply Chain market was \$7.1 billion in 2023 and is expected to grow by 44.5% during the forecast period (2024-2032).[6]

IBM. IBM Corporation uses its IBM Talent & Transformation services. This is a new business line designed to help companies and their employees thrive in the era of AI and automation. IBM Talent & Transformation services include comprehensive training in AI skills, as well as advice on using AI tools to empower employees, eliminate bias in employee evaluations, and shape a modern corporate culture.

Microsoft. Since the 2000s, Microsoft has been using artificial intelligence. The company's IT department is now using AI to track meetings and calls across its Microsoft Teams meeting rooms, networks, IoT devices, and Microsoft 365 devices, and they say they believe AI can improve and protect user experience.

Intel. Intel is embedding AI into all of its products. Intel is working with partners to bring a growing list of more than 300 features to PC customers and help them take full advantage of AI on their PCs. Their goal is to create processors that can perform machine learning, neural networks, and AI-related tasks directly on the device, without an internet connection.

In recent years, there has been significant investment in new technologies that have the potential to

revolutionize supply chain management.

Research has shown that Artificial Intelligence (AI) is becoming increasingly popular in Supply Chain Management. As of today, 50 percent of large companies are already using AI in their supply chain management processes, and another 30 percent plan to do so soon.

It is no surprise that the benefits of AI are a major factor driving this trend. According to research, companies that use AI in their supply chain management processes have achieved significant improvements in efficiency (46 percent), accuracy (39 percent), and cost savings (34 percent).[7]

The use of AI in supply chain and logistics can improve almost every aspect of the process. It has the potential to increase operational efficiency, reduce costs, and even improve worker safety.

Increases warehouse efficiency. Research shows that warehouses using AI can achieve 99.9% accuracy, reduce employee time by 20% or more, and increase order fulfillment by at least 15%.

Reduce operational costs. One of the main reasons why businesses are adopting AI is to reduce operational costs.

According to a 2021 Statista survey, more than 50% of respondents said their business's supply chain costs had decreased by 10-20%.[8]

Reduce errors and waste. AI and supply chain management make a powerful duo when it comes to reducing waste and human error. Automation, data analytics, demand forecasting, and anomaly detection can be used to help companies achieve the lowest levels of defects and waste. Enhanced inventory management. The application of AI in supply chain management has enabled organizations to improve inventory levels by 35%.

In fact, intelligent systems equipped with advanced analytics can collect, process, and analyze historical data to generate forecasts for product ordering and distribution.

Operational optimization. AI can help develop computer models that simulate different scenarios in manufacturing processes, logistics procedures, or supply chain operations.

Safer working environments. IoT devices that combine AI and computer vision can significantly improve safety conditions in manufacturing environments, warehouses, or during transportation. Additionally, employees can rely on robots to perform hazardous tasks involving chemicals or heavy machinery, reducing the risk of injury and increasing operational efficiency.

Improved customer service. Nearly 17% of U.S.-based customers in the study reported having a great user experience with AI. At the same time, nearly 18% of respondents claimed to be completely satisfied with robotic automation.

Supply chain sustainability. Using AI to manage the supply chain can help a company move toward environmentally conscious practices. This is good for both the planet and the company's brand image, as consumers embrace eco-friendliness as a way of life.

Accurate demand forecasting. A study by Gartner magazine shows that companies are predicting what customers want to buy: 45% of organizations use artificial intelligence to forecast demand, and 43% plan to use it in the coming years. This shows how AI is quickly becoming an indispensable tool for supply chain planning.[9]

### CONCLUSION AND RECOMMENDATIONS

In conclusion, Artificial Intelligence (AI) is revolutionizing supply chain management, offering new ways to solve long-standing problems and optimize operations. By forecasting demand, managing goods, manufacturing processes, and enhancing logistics and generative capabilities, AI provides a comprehensive set of tools for organizations that want to be competitive in a rapidly changing world.

In particular, in recent years, a number of works have been carried out in our country on the development of artificial intelligence. However, there are also several problems in the development of the field of artificial intelligence.

In particular: Lack of specialists who have mastered artificial intelligence technologies, lack of sufficient programs and resources in this area in the education system;

Lack of the necessary infrastructure for the introduction of new technologies, including high-speed Internet, data centers and servers;

Lack of databases necessary for the effective operation of artificial intelligence systems or poor quality of data; Difficulties in attracting investment in artificial intelligence projects, lack of cooperation between the private sector and the state, etc.

To eliminate the problems mentioned above, it is advisable to implement the following measures:

In the education and training system

One of the important areas of artificial intelligence development in Uzbekistan is education.

It is necessary to introduce programs related to artificial intelligence in higher education institutions and familiarize students with modern technologies. It is

also possible to prepare students to solve real-life problems by creating practical opportunities.

b) Innovative projects and Startups system  
In Uzbekistan, attention to innovative projects and the use of startups are important in the development of artificial intelligence. Establishing cooperation between the public and private sectors, attracting grants and investments will help develop new ideas and technologies in the field of artificial intelligence.

c) In the data analysis and big data system

It is necessary to develop the capabilities of data analysis and working with big data in Uzbekistan. By creating databases for the state and business sector and analyzing them using artificial intelligence, it is possible to improve the process of making strategic decisions.

Timely elimination of the above problems and implementation of these proposed measures will strengthen the ways for further development of Artificial Intelligence in our country.

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