

SUPPLY CHAIN MANAGEMENT IN MODERN CONDITIONS

Mamatkulova Shoira Djalolovna

candidate of economic sciences, PhD

Associate Professor of the Marketing department,

Samarkand institute of economics and service

Abstract: In this article, we examine modern approaches to supply chain management (SCM) in the context of globalization, economic digitalization, and increasing competitiveness. Particular attention is paid to the transformation of traditional logistics models under the influence of innovative technologies such as digital platforms, big data, artificial intelligence, and process automation.

Key words: supply chain management, logistics, digitalization, big data, artificial intelligence, globalization, business performance, risk management.

Аннотация: В статье мы рассматриваем современные подходы к управлению цепями поставок (Supply Chain Management, SCM) в условиях глобализации, цифровизации экономики и усиления конкурентной среды. Особое внимание уделено трансформации традиционных логистических моделей под воздействием инновационных технологий, таких как цифровые платформы, большие данные (Big Data), искусственный интеллект и автоматизация процессов.

Ключевые слова: управление цепями поставок, Supply Chain Management, логистика, цифровизация, Big Data, искусственный интеллект, глобализация, эффективность бизнеса, риск-менеджмент.

Introduction. In today's global economic environment, supply chain management (SCM) is becoming strategically important for ensuring the sustainable operation and competitiveness of enterprises. Intensifying globalization, the growth of international trade, and the high degree of interdependence of economic entities are creating new demands on the organization and coordination of material, information, and financial flows. Under these conditions, traditional approaches to logistics and procurement are becoming ineffective, necessitating the implementation of modern supply chain management methods and tools. The relevance of this research topic stems from the fact that in recent years, supply chains have faced a number of serious challenges, including global market instability, disrupted logistics links, rising transportation costs, and the impact of global crises. Characteristics such as flexibility, resilience, and adaptability of supply chains are becoming particularly important, allowing enterprises to quickly respond to changes in the external environment. In this regard, digital technologies such as enterprise resource planning (ERP), blockchain, the Internet of Things (IoT), and big data analytics play a crucial role, contributing to increased transparency and process efficiency.

Main part. Supply Chain Management (SCM) today is a comprehensive system for coordinating material, information, and financial flows, covering all stages of product movement—from raw material suppliers to the end consumer. Unlike traditional logistics, which focuses primarily on transportation and warehousing, SCM involves integrating all supply chain participants into a single, managed system aimed at achieving maximum efficiency and minimizing total costs. Modern supply chains operate in a highly uncertain environment caused by market globalization, digital transformation, and increased competition, requiring the implementation of innovative management approaches. One of the key areas of SCM development is digitalization, which significantly increases process transparency, accelerates information exchange, and reduces operational risks. The use of Big Data technologies enables

demand forecasting and inventory optimization, which is especially important in volatile markets¹.

The implementation of automation and intelligent data analysis systems, including artificial intelligence and machine learning, plays a key role in supply chain transformation. These systems enable more accurate management decisions and adapt to environmental changes in real time. Furthermore, enterprise resource planning (ERP) and warehouse management systems (WMS) have become widespread, integrating internal business processes and improving their efficiency. In today's environment, the concept of sustainable supply chains, focused on reducing environmental impact, rational use of resources, and adherence to social responsibility principles, is particularly important. This is due to increasing demands from governments, society, and international organizations for the environmental and social sustainability of businesses².

One of the key factors in supply chain efficiency is flexibility, which is determined by the ability to quickly adapt to changes in demand, supply disruptions, and other external influences. Flexibility is achieved through supplier diversification, the creation of redundant capacity, and the implementation of modern inventory management technologies such as Just-in-Time and Lean logistics. Ensuring supply chain transparency is also crucial, achieved through digital platforms and blockchain technologies that enable tracking of goods throughout their lifecycle. Transparency helps reduce the risk of fraud, increase trust among participants, and improve management quality³.

Modern supply chains are also characterized by a high level of integration, which implies close interaction between suppliers, manufacturers, distributors, and retailers. Integration can occur both at the information systems level and through strategic partnerships, reducing transaction costs and increasing responsiveness to market changes. In the digital economy, platform solutions that unite various supply chain participants into a single digital ecosystem are becoming increasingly important. Such platforms enable real-time data exchange and facilitate more efficient resource flow management⁴.

In today's global economic environment, the effectiveness of supply chain management is largely determined by the use of digital technologies, the level of resilience, and the ability of companies to adapt to external shocks. Statistics indicate significant growth in the supply chain management market and the increasing role of technology in this area. In particular, there has been increased investment in digitalization, automation, and analytical tools aimed at improving the transparency and efficiency of logistics processes. At the same time, factors such as global crises, geopolitical instability, and resource supply disruptions significantly impact supply chain performance. To better understand current SCM development trends, it is useful to examine key quantitative indicators reflecting the current state and dynamics of global supply chains.

Table 1.

Current indicators of supply chain development

Indicator	Value	Explanation
Global SCM Market Size (2020)	\$15.85	Growing importance of SCM in the

¹ Waller M.A., Fawcett S.E. Data Science, Predictive Analytics, and Big Data: A Revolution That Will Transform Supply Chain Design and Management // *Journal of Business Logistics*, 2013.

² Seuring S., Müller M. From a literature review to a conceptual framework for sustainable supply chain management // *Journal of Cleaner Production*, 2008.

³ Saberi S. et al. Blockchain technology and its relationships to sustainable supply chain management // *International Journal of Production Research*, 2019.

⁴ Lambert D.M., Cooper M.C. Issues in supply chain management // *Industrial Marketing Management*, 2000.

	billion	global economy ⁵
SCM Market Growth Forecast by 2033	\$72.1 billion	Average annual growth rate of approximately 10.8% ⁶
Share of Companies Using Cloud Technologies	about 40%	Active digitalization of SCM
Share of Companies Investing in Blockchain	about 40%	Increasing supply chain transparency
Companies Facing Disruptions (2023)	78%	Influence of geopolitical factors
Companies with Inventory Shortages (2023)	92%	Problems with logistics and ports ⁷
Climate-Related Losses	\$150 billion	Influence of environmental risks
Frequency of Major Disruptions (>2 Months)	every 4.9 years	High level of SCM risks

The data presented confirms that modern supply chains are undergoing a profound transformation, driven by both technological change and external challenges. Significant growth in the SCM market demonstrates the increasing importance of integrated resource flow management, while high levels of disruptions and resource shortages point to the need to strengthen supply chain resilience and flexibility. Particular attention should be paid to the implementation of digital technologies, such as cloud solutions, big data analytics, and blockchain, which enhance process transparency and manageability. Furthermore, the increasing number of risks associated with geopolitical and climatic factors requires the development of effective risk management strategies aimed at supplier diversification and the creation of adaptive logistics systems. In these circumstances, the key focus of SCM development is the creation of resilient and digital supply chains capable of ensuring uninterrupted business operations even in conditions of high uncertainty.

Along with their advantages, modern supply chains face a number of serious challenges and risks, including geopolitical instability, disruptions to logistics routes, rising raw material and energy prices, and the impact of global crises such as pandemics. These factors require companies to develop effective risk management strategies, including supplier diversification, creating safety stocks, and implementing risk monitoring and forecasting systems. In this context, the concept of resilience, which implies the ability of a supply chain not only to withstand external influences but also to quickly recover from crises, is particularly relevant. Thus, supply chain management in today's environment is a dynamically developing field that requires a comprehensive approach and the use of modern technologies. Effective SCM allows companies to reduce costs, improve customer service, and strengthen their market position, which is especially important in an environment of global competition and the digital transformation of the economy⁸.

Conclusions and proposals. The study demonstrated that supply chain management in today's environment is transforming from a support function into a strategically important element of enterprise management. In the context of globalization, economic digitalization, and increasing environmental uncertainty, supply chain efficiency directly impacts business

⁵ Statista. Global Supply Chain Management Statistics

⁶ Precedence Research / Supply Chain Statistics 2025

⁷ Gitnux. Supply Chain Industry Statistics Report 2026

⁸ Tang C.S. Perspectives in supply chain risk management // *International Journal of Production Economics*, 2006.

competitiveness, resilience, and adaptability. An analysis of theoretical approaches and practical data revealed that the key factors for successful SCM include the integration of participants, process transparency, digitalization, and supply chain flexibility and resilience. At the same time, modern supply chains face significant challenges, including logistical disruptions, geopolitical risks, rising costs, and the impact of global crises, necessitating a revision of traditional management models. The implementation of innovative technologies—big data, artificial intelligence, blockchain, and cloud solutions—is particularly important. They improve forecasting accuracy, optimize resources, and reduce operational risks. Thus, effective supply chain management is becoming essential for the sustainable development of enterprises and the economy as a whole.

To improve the efficiency of supply chain management in today's environment, it is advisable to implement the following areas of improvement:

- ✚ proactively implement digital technologies (big data, artificial intelligence, erp systems) to increase the transparency and manageability of logistics processes.
- ✚ develop resilient supply chains through supplier diversification and the creation of backup logistics routes.
- ✚ strengthen integration between supply chain participants through digital platforms and partnerships.
- ✚ implementation of modern inventory management methods (just-in-time, lean logistics) to reduce costs and improve efficiency.

Implementation of the proposed measures will enable the creation of efficient, flexible, and resilient supply chains capable of ensuring the long-term development of enterprises in today's digital economy and highly competitive environment.

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