

Khagani Ayyub oğlu MAMMADLI

Azerbaijan State University of Oil and Industry, Doctoral student of the Department of Management

E-mail: khaganimammadli1999@gmail.com

CURRENT SUPPLY CHAIN MANAGEMENT TECHNOLOGIES AND THEIR LIMITATIONS

Abstract

Proactive intervention in production, sales, and pre-sale operations, as well as implementation of transportation and storage issues, are key processes of supply chain management.

Objective of the study: To study the current supply chain management technologies and their limitations and to overcome the causes of these limitations.

Research method: A combination of quantitative and qualitative methods was used in the research. Using the methods of analysis and synthesis on the topic, the theoretical bases were analyzed and practical comparisons were made. As a result of chronological and static analysis, the induction method was applied while describing the current situation.

Findings of the Study: The study found that the rapid integration of supply chain management technologies into the rapidly growing globalization trends is one of the key factors. The importance of the role of each service in each company has been highlighted, as companies have proven to depend on accelerating the adoption of advanced technologies and innovations in the supply chain to expand business innovation amid the complexity of product and service ranges and ever-changing customer demands. In order to improve the performance of supply chain technologies in a positive direction, the role of each link in the supply chain and the share of participation in the chain are defined.

Key words: blockchain technology in industry, supply chain, supply chain management, perspectives of supply chain management

JEL: G21

UOT: 336.

DOI: <https://doi.org/10.54414/PAVR3231>

Introduction

The terms "Supply chain" and "Supply chain management" have become one of the most used concepts in all areas of industry and economy. Of course, these concepts are not just terms, they are also widely used in practical work. One of the most important research subjects in industry today is supply chain management. Thus, since the 80s of the 20th century, the rapid development of globalization trends and technologies, at the same time, the higher level of consumer demands and expectations, the sharpening of business relations at the international level, etc. are the main factors that lead to the emergence of the supply chain concept. It should be noted that the main essence of the supply chain concept is that companies that compete with each other in the international

trade arena have already become a link of a supply chain that cooperates with each other. It is an indisputable fact that the volume of revenue of the largest companies today, as well as the scale of their business achievements, depends on the supply chain in which they participate. As a result, competition across supply chains is at an all-time high. Supply chain - which provides raw materials, as well as labor and natural and economic resources that have not undergone an industrial process, passes them through the processing process and transforms them into a finished product or service by adding value, creates a demand for that product (service) in the market and finally presents it to the consumer. is a group of companies. We must note that this group of companies participates in all these

listed processes in a coordinated way, and also has complete independence [2, 1].

Raw materials, labor, and material in the form of natural and economic resources belong to suppliers, which are one of the key elements of the supply chain process. In general, for the processing of any raw material (service), first of all, supply issues should be resolved. All components, including their parts, must be collected at the manufacturer in a timely, correct and high-quality manner. In the supply chain, suppliers are understood not only as suppliers of raw materials and materials to enterprises, but as a whole, parties that facilitate the realization of the next stage of the chain [3,2]. Thus, individuals who invest in a manufacturing enterprise or commercial banks that provide loans to it are also considered suppliers because they provide one of the most important components of the supply chain of this enterprise - financial resources. Therefore, the role of suppliers in the supply chain is very important [1,3]. One of the most important links in the implementation of the supply chain is the department that creates a finished product (service) by passing the raw material (service) through the processing process and adding value to it. Here we are talking about enterprises that include the production process. In the production process, all the components provided by the suppliers are combined in a uniform manner and go through the processing process to become a finished product. In doing so, manufacturers become one of the key links in the supply chain.

Current supply chain management technologies. One of the important links of the supply chain are the suppliers who form the demand for the product (service) and mediate between the producer and the consumer. As a result of the professionalism of these persons (firms), ready-made products created by manufacturers based on the components provided by suppliers are presented to the consumer. We must note that if the finished products are not introduced to the consumer, regardless of the quality of the final product or service, the supply chain will be broken at this point. In such a case, all supply chain processes, both upstream and downstream, will be rendered

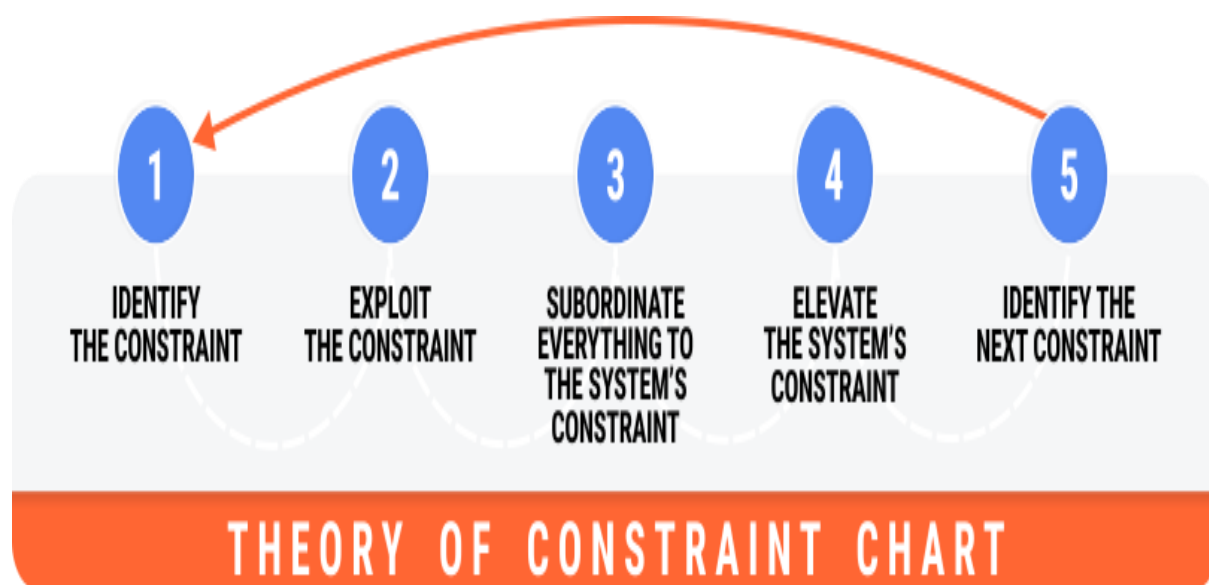
irrelevant. Thus, intermediaries, which are one of the main links of the supply chain, can be indicated various advertising companies, firms engaged in independent marketing activities, subjects carrying out wholesale activities and others. The fourth link in the supply chain is the retailers. Retailers, as an economic entity, are the parties that are in close contact with consumers, and at the same time, directly communicate with wholesalers, and in some cases, with the consumer himself. Thus, since retailers buy finished products in bulk and in large volumes, wholesalers give them significant discounts. Thus, since it is the retailers who fulfill the customers' demands, they are considered to be the most important links in the supply chain [5,3].

Analyzing the existing supply chain management technologies and their limitations, it was determined that the operations in the supply chain are carried out hand-in-hand with each other, and the system is indeed implemented as an interconnected chain. If one link in the supply chain is broken, the entire process within the system stops and, of course, no result can be achieved. The independent companies participating in these groups, which are formed by companies with complete independence, are united to achieve a common goal. In conclusion, we can state that the main and ultimate goal of supply chain activity is to serve the consumer and satisfy his demand. It should be noted that in the modern era of rapid scientific and technical progress, the demands of consumers are changing and expanding very rapidly. This in itself complicates the work of the supply chain and creates certain difficulties in meeting the demands of the consumer in a timely and qualitative manner [4,2]. For this reason, the competitive environment among supply chains is spreading. One of the important nuances is that existing business relationships and processes have a very complex conjuncture. Here as the main reason, we can observe that companies are competing with more than one supplier, supplier as well as consumers. It should be noted that a company can participate in several supply chains at the same time. Supply chain management consists of three important conceptual components:

1. Supply chain configuration;
2. Supply chain coordination;
3. Coordination of the supply chain.

The configuration of the supply chain determines how its structure, architecture and design should be constructed. Here, the size of the companies included in the supply chain, the mechanisms of operation, the number of employees, etc. implies such parameters. Determining the configuration of the supply chain is of strategic importance.

Limitations of supply chain management technologies. The coordination of the supply chain is directed to the operations that take place within the companies involved in it. Production forecasting, production scheduling, production capacity, and customer service activities are components of supply chain coordination. Ensuring continuity of day-to-day operations ensures supply chain continuity through coordination.



Source: <https://www.hollingsworthllc.com/the-different-types-of-supply-chain-management-methods-and-theories/>

Supply chain coordination refers to factors such as the intensity and quality of existing relationships between the links of the chain. In modern times, the following nuances must be taken into account during the management of newly established or already established supply chains:

1. Open border - One of the main principles for ensuring the continuous operation of supply chains in modern times is to ensure that the physical borders between states do not hinder the operation of supply chains. For this purpose, bilateral trade agreements have been signed between different states and mutual obligations have been defined. International financial organizations such as the World Bank, OPEC,

WTO have an important role in this direction [5,3].

2. Cyber connectivity - Firms involved in the supply chain are constantly connected through technological means to ensure the continuity of operations. Therefore, the protection of internal issues of the enterprise, including the protection of commercial secrets, ensuring information security has become the most important issue.

3. Loyalization or complete removal of prohibitions - in modern times, many trade barriers and obstacles are being removed or significantly reduced in order to expand trade relations between states. The creation of Free Economic Zones, Customs Unions, and Economic Unions serves exactly these purposes.

4. Responsibility for the protection of the ecological balance – the issue of protection of the ecological balance implies the implementation of obligations for the protection of the environment. It should be noted that as a result of the activities of many industrial enterprises, tons of waste are exported to the environment, which in itself fundamentally damages the ecological balance of the planet.

5. Protection of social welfare - the most important goal of every supply chain is to gain customer satisfaction, so although organizing and marketing a product or service according to the tastes, needs, and requirements of customers is the most important link of the supply chain, on the other hand, the enterprises included in the system thousands of people work in it and earn financial income. As such, supply chains are the largest employers on the planet, keeping millions of people alive and functioning demographically.

The rapid development of digital technologies is significantly changing almost all sectors of industry and economy. Thus, the

biggest impact created by the concept is in the logistics and manufacturing sectors of the industry. Against the background of rapidly increasing globalization trends, complexity of product and service ranges, and ever-changing customer demands, companies are using advanced technology sets in the supply chain to expand business innovation. Supply and demand for goods and services have been imbalanced for many reasons (recent pandemics and war situations), thus negatively impacting supply chain technologies globally [6,4]. But these undesirable situations have also increased the need for companies to adopt technology-based supply chain management solutions to overcome the challenges, as the possibility of blockages or any issues that may arise cannot be overlooked. With companies wary of an unpredictable and unpredictable future, it's no surprise to see them investing heavily in supply chain optimization technologies.



Source: <https://www.hollingsworthllc.com/the-different-types-of-supply-chain-management-methods-and-theories/>

The following are the main directions of the road map to overcome the emerging constraints in supply chain management:

- ✓ Fast integration
- ✓ Proper risk management
- ✓ Added value
- ✓ Metrics and forecasts

According to the analysis, by 2025, 50% of global e-commerce companies are expected to invest in artificial intelligence, real-time supply chain and advanced analytics solutions. International companies are increasing investment to address concerns about global supply chain disruption, as well as to overcome barriers to supply chain expansion. Challenges in current supply chain technology [7,2].

Although the current economic situation has accelerated the implementation of digitalization in the supply chain, it has also revealed a number of shortcomings.

1. Lack of material and manpower

In 2020-21, many employees were laid off while the quarantine paralyzed the global market. Not only do leaders now face delegation challenges, but they also struggle to execute key tasks in procurement and supply chain operations roles. Critical commodities such as human resources and materials are scarce or expensive, according to a report by the Institute for Supply Chain Management. This limitation creates complexity and inefficiencies in the industry, which in itself requires the application of the latest generation of technology in supply chain management.

2. Increase in freight costs

Intermodal transport and spot prices doubled in 2021. In addition, air and sea freight rates have also risen, making it difficult for companies to transport cargo at high volumes. This process leads companies to invest in advanced logistics and supply chain technology to find the most cost-effective solutions.

3. Congestion in ports

In recent years, there has been a long period of loss of time for ships to arrive at any ports in the world. Thus, it causes delays and creates congestion in ports when ships are loaded. Such bottlenecks lead to additional time in import-export operations, which disrupt domestic supply chains. While the problem of port congestion is not a new issue, the National Customer Brokers and Forwarders Association of America (NCBFAA) predicts that 2026 could witness long wait times and supply chain congestion. And in response, we will see greater use of technology in supply chain management.

4. Limitations in demand forecasting

Currently, consumer demand is growing at an unprecedented rate in the world and the

problems of its forecasting remain relevant. To overcome this limitation, leaders rely on today's data to forecast the next year and set benchmarks from inventory to pricing and budgeting. Thus, limitations in demand forecasting are among the main challenges that the supply chain industry continues to face even after digitization. The solution to the mentioned problem requires the use of a number of new technologies in the supply chain.

REFERANCE

1. Almutairi, K., Hosseini Dehshiri, S. J., Hosseini Dehshiri, S. S., Hoa, A. X., Arockia Dhanraj, J., Mostafaeipour, A., ... & Techato, K. (2023). Blockchain technology application challenges in renewable energy supply chain management. *Environmental Science and Pollution Research*, 30(28), 72041-72058.
2. Altekar, R. V. (2023). *Supply chain management: Concepts and cases*. PHI Learning Pvt. Ltd.
3. Daghighi, A., & Shoushtari, F. (2023). Toward Sustainability of Supply Chain by Applying Blockchain Technology. *International journal of industrial engineering and operational research*, 5(2), 60-72.
4. Hugos, M. H. (2024). *Essentials of supply chain management*. John Wiley & Sons.
5. Liu, J., Zhang, H., & Zhen, L. (2023). Blockchain technology in maritime supply chains: applications, architecture and challenges. *International Journal of Production Research*, 61(11), 3547-3563.
6. Fernie, J. (2023). Relationships in the supply chain. In *Logistics and retail management insights into current practice and trends from leading experts* (pp. 23-46). CRC Press.
7. <https://www.hollingsworthllc.com/the-different-types-of-supply-chain-management-methods-and-theories/>

Xaqani Əyyub oğlu MƏMMƏDLİ

Azərbaycan Dövlət Neft və Sənaye Universiteti, Menecment kafedrasının doktorantı

E-mail: khaganimammadli1999@gmail.com

**MÖVCUD TƏCHİZAT ZƏNCİRİNİN İDARƏ EDİLMƏSİ TEXNOLOGİYALARI VƏ
ONLARIN MƏHDUDİYYƏTLƏRİ**

Xülasə

İstehsal, satış və satışdan əvvəl hazırlıq proseslərinə fəal müdaxilə, həmçinin daşınma və saxlama məsələlərinin həlli təchizat zəncirinin idarə edilməsində əsas proseslərdir.

Tədqiqatın məqsədi: müasir təchizat zəncirinin idarə edilməsi texnologiyalarını və onların məhdudiyətlərini öyrənmək, həmçinin bu məhdudiyətlərin səbəblərini aradan qaldırmaq.

Tədqiqat metodu: Tədqiqatda kəmiyyət və keyfiyyət metodlarının birləşməsindən istifadə edilmişdir. Mövzu üzrə təhlil və sintez metodlarından istifadə etməklə nəzəri əsaslar təhlil edilmiş, praktiki müqayisələr aparılmışdır. Xronoloji və statik təhlil nəticəsində mövcud vəziyyəti təsvir etmək üçün induksiya üsulundan istifadə edilmişdir.

Tədqiqatın nəticələri: Tədqiqat nəticəsində məlum olub ki, qloballaşmanın sürətlə artan tendensiyalarına təchizat zəncirinin idarə edilməsi texnologiyalarının sürətli inteqrasiyası əsas amillərdən biridir. Şirkətlər mürəkkəb məhsul və xidmət təklifləri və daim dəyişən mühitlər şəraitində biznes innovasiyalarını artırmaq üçün qabaqcıl texnologiyaların və təchizat zənciri innovasiyalarının qəbulunu sürətləndirməkdən asılı olduqlarını sübut etdikləri üçün hər bir şirkətdə hər bir xidmətin rolunun vacibliyi vurğulandı. Müştəri tələbləri. Təchizat zənciri texnologiyalarının fəaliyyətini müsbət istiqamətdə təkmilləşdirmək üçün tədarük zəncirində hər bir halqanın rolu və zəncirdə iştirak payı müəyyən edilir.

Açar sözlər: sənayedə blokçeyn texnologiyası, təchizat zənciri, təchizat zəncirinin idarə edilməsi, təchizat zəncirinin idarə edilməsi perspektivləri

Хагани Айюб оглы МАМЕДЛИ

*Докторант Азербайджанского государственного университета нефти и промышленности,
кафедра менеджмента*

E-mail: khaganimammadli1999@gmail.com

**СОВРЕМЕННЫЕ ТЕХНОЛОГИИ УПРАВЛЕНИЯ ЦЕПОЧКАМИ ПОСТАВОК И ИХ
ОГРАНИЧЕНИЯ**

Резюме

Проактивное вмешательство в производство, сбыт и предпродажную подготовку, а также решение вопросов транспортировки и хранения являются ключевыми процессами управления цепочками поставок.

Цель исследования: изучить современные технологии управления цепочками поставок и их ограничения, а также преодолеть причины этих ограничений.

Метод исследования: В исследовании использовалось сочетание количественных и качественных методов. С помощью методов анализа и синтеза по теме были проанализированы теоретические основы и проведены практические сравнения. В результате хронологического и статического анализа при описании текущей ситуации был применен метод индукции.

Результаты исследования: Исследование показало, что быстрая интеграция технологий управления цепочками поставок в быстро растущие тенденции глобализации является одним из ключевых факторов. Была подчеркнута важность роли каждой услуги в каждой компании, поскольку компании доказали, что они зависят от ускорения внедрения передовых технологий и инноваций в цепочке поставок для расширения бизнес-инноваций в условиях сложности ассортимента продуктов и услуг и постоянно меняющихся условий. требования клиентов. В целях улучшения работы технологий цепочки поставок в положительном направлении определяется роль каждого звена цепочки поставок и доля участия в цепочке.

Ключевые слова: технология блокчейн в промышленности, цепочка поставок, управление цепочками поставок, перспективы управления цепочками поставок