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## The Main Role of Digital Technologies in the Efficiency of the Supply Chain

### Abstract

With the continuous expansion and advancement of the fabricating industry an expanding number of undertakings start to give themselves to supply chain proficiency. It depends on a smooth arrange chain structure shaped by the upstream and downstream associations within the handle of generation and transportation through organizational control of capital stream data stream and coordination. Particularly, it is aimed at optimizing the method progressing generation quality and decreasing superfluous costs to fulfill traditions and accomplishing the most extreme financial advantage. Advanced supply chain DSC is an brilliantly data driven innovation arrange that's based on gigantic real time information handling amazing collaboration and communication capabilities to realize data straightforwardness progressed arranging request designs expectation as well as maximizing the accessibility of resource. Numerous ponders have recognized the positive impacts of advanced innovations on the proficiency of supply chains. Chase pointed out that DSC has gotten to be an unavoidable choice for undertakings to make strides the capacity to expect request and hazard through the application of computerized innovation which moves forward not as it were the showcase reaction speed and operational productivity but moreover the benefit level and financial benefits of ventures. This investigates too investigated DSC challenges and issues that take into consideration to grow the approaches to DSC victory variables determined from existing writing. Numerous papers have examined DSC innovation from the viewpoint of the application. They illustrate the positive effect of those computerized innovations to effectively accomplish advanced and intelligent supply chains on firm execution by progressing the proficiency of SCM.

**Key Words:** *supply chain, digital technologies, financial management, efficiency*

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## Təchizat zəncirinin səmərəliliyində rəqəmsal texnologiyaların əsas rolu

### Xülasə

İstehsalat sənayesinin fasiləsiz genişlənməsi və inkişafı ilə artan sayda müəssisələr tədarük zəncirində bacarıqlar əldə etməyə başlayırlar. Bu, kapital axını məlumat axınına təşkilati nəzarət və koordinasiya vasitəsilə nəsil və daşınma idarəsi daxilində yuxarı və aşağı axın birlikləri tərəfindən formalaşan hamar tənzimləmə zənciri strukturundan asılıdır. Xüsusilə, nəsil keyfiyyətinin yüksəldilməsi metodunun optimallaşdırılmasına və ənənələrin yerinə yetirilməsi üçün artıq xərclərin azaldılmasına və ən ifrat maliyyə üstünlüyünə nail olunmasına yönəlmişdir. Qabaqcıl təchizat zənciri rəqəmsal təchizat zənciri, məlumatların sadəliyini həyata keçirmək üçün heyrətamiz əməkdaşlıq və kommunikasiya imkanlarına əsaslanan nəhəng real vaxt məlumatlarına əsaslanan parlaq məlumatlara əsaslanan innovasiya quruluşudur. Çoxsaylı düşünənlər qabaqcıl innovasiyaların tədarük zəncirlərinin peşəkarlığına müsbət təsirlərini qəbul etmişlər. Chase, rəqəmsal təchizat zəncirinin vitrin reaksiya sürəti və əməliyyat məhsuldarlığı kimi deyil, daha çox fayda səviyyəsi və müəssisələrin maliyyə faydaları kimi irəliləyən kompüterləşdirilmiş innovasiyanın tətbiqi vasitəsilə tələb və təhlükə gözləmək qabiliyyətinə nail olmaq üçün müəssisələr üçün qaçılmaz bir seçim olduğuna diqqət çəkmişdir.

Bu, çox araşdırılmış rəqəmsal təchizat zənciri problemlərini və mövcud yazıdan müəyyən edilmiş rəqəmsal təchizat zənciri qələbə dəyişənlərinə yanaşmaları artırmaq üçün nəzərə alınan məsələləri araşdırır. Çoxsaylı məqalələr rəqəmsal təchizat zənciri innovasiyasını tətbiq baxımından araşdırdı. Onlar təchizat zənciri idarəetməsinin səriştəsini yüksəltməklə, qabaqcıl və ağıllı təchizat zəncirlərini səmərəli şəkildə yerinə yetirmək üçün həmin kompüterləşdirilmiş yeniliklərin müsbət təsirini göstərir.

*Açar sözlər: təchizat zənciri, rəqəmsal texnologiyalar, maliyyə idarəetməsi, səmərəlilik*

## Introduction

In the last three decades, the terms "supply chain" and "supply chain management" have become one of the most used and applied generalized concepts in all spheres of economic activity. Of course, people are not satisfied with using these expressions just as terms, they continue to use them extensively in practice. The history of supply chain management as a science, which is currently one of the most prominent issues in both management and finance, is quite young. So, unlike the fields of management and finance, people have coined the term supply chain since the end of the last century and conducting research on this topic, laid the foundation of the concept of supply chain and included it among the youngest fields of science. However, one can ask why exactly since the end of the last century, a new supply chain concept has started to appear in the world.

Of course, the main reasons for this are the trends of globalization that have taken place in the world since the 80s of the 20th century, the rapid development of technologies, higher expectations and demands of consumers, significant changes in the political map of the world, the emergence of a number of new states, gaining independence and in general, factors such as the sharpening of the competitiveness of businesses at the international level can be listed. The rationale behind the supply chain concept is that supply chains are no longer competing against each other in the international trade arena.

As a result of this concept, the size of the profits of today's largest companies, as well as the scale of their business success, is directly dependent on the supply chain in which they participate. That is why competitiveness among supply chains has reached its highest level. As a result of this complexity, supply chain management has been recognized as a separate field of scientific research.

## Research

Implementation of financial management tools in the supply chain features. In the current era, it is necessary to establish proper financial management in this area for the successful management of supply chains and their achievement of the ultimate goal. Especially after the global financial crisis that took place in 2007-2008 and took its basis from a developed country like the United States and spread to most other countries of the world, known as the "Great Recession", a new concept of supply chain management emerged in the early 2000s. This approach has re-introduced the importance of alignment between finance and logistics, including the supply chain. The following are listed as the main reasons for the development of this issue (Toorajipour, R., Sohrabpour, V., Nazarpour, A., Oghazi, P., & Fischl, M 2021):

1). Global financial crisis of 2007-2008. As a result of this crisis, after the bankruptcy of several prestigious financial institutions, banks and other credit organizations, one of the most important issues for companies entering the supply chain system was the solution of the problem of self-financing within the chain.

2). A new and different principle in the approach to supply of resources. So, according to the new trend, manufacturers prefer to order large batches from suppliers and keep them in their warehouses for a long time in advance. The main reason for this is that purchasing stocks in advance for a long time and delivering them to warehouses and other storage points leads to the creation of large additional storage costs for the receiving company. However, because of the application of the new approach, most of these storage costs are not borne by the buyer company, but by the seller, i.e., the suppliers of goods and materials.

3). Globalization trend. As a result of this trend, the barriers of supply chains such as import tax, and other customs tariffs have been removed to a certain extent and have created conditions for self-financing.

4). Rapid development of scientific and technical progress. It is for this reason that most of the operations between the links of the supply chain have been automated and processes have been accelerated. As a result, the time interval needed to achieve the final goal has also decreased (Attaran, M. 2012).

**Figure 1. Supply chain financial management “pyramid”**



**Source:** Dawei L., 2011

The essence of financial management. Before explaining the essence of this concept, it is considered appropriate to explain the meaning of “finance” as a scientific concept. So according to the Oxford dictionary, finance is the management of cash and other funds and capital. Accordingly, various scientists in their research have defined financial management in different ways, but in forms that are close to each other in terms of content. For example, S. A. Ross described financial management as a set of activities that ensure the supply and proper use of funds in an enterprise. In another definition, financial management reflects the application of facts arising from general principles of management to financial decision-making (Preindl, R., K. Nikolopoulos, and K. Litsiou. 2020).

**Figure 2. Areas related to supply chain financial management**



**Source:** Baymout M., 2015

An effectively managed financial system has the power to overcome the most pressing challenges of all supply chains. It is known that one of the most important parts of the supply system are enterprises that supply resources as the next link in the chain. But in many cases, the payment of suppliers is delayed by manufacturers or other further links in the chain. There are two important reasons for these types of delay:

- 1). The payment is made within the period from the time of the sale, based on the pre-defined contractual terms between the parties.
- 2). Due to known or unknown reasons, the payment to the seller is delayed by the buyer even after the contract period has passed.

Thus, the delay in the payment to be received from the buyer directly seriously damages the financial position, financial results and cash supply of the seller. As a result, enterprises at the first level of the chain, in order to avoid bankruptcy, turn to credit institutions (banks and non-bank credit institutions) in most cases, and obtain short-term debt obligations of 3-4% (usually, the tendency to overdrafts, which is the widest type of credit, is higher) and find themselves they finance. But as it is known, short-term debts serve to improve the financial situation of the enterprise for a very short period of time. A sufficient accumulation of such debt obligations in the long term will inevitably lead to the bankruptcy of the enterprise (Arora R., Haleem A., Arora P.K. 2020).

That is why, since the 2000s, a new issue-financial management in the supply chain has been included in the supply chain concept, which aims to eliminate the financing problem at all levels of the chain to a certain extent. With the application of the latter, a system known as “Win-Win” (victory) has been established, in which all parties organized in the chain win.

Types and features of supply chain financial management tools. The list of widely used tools in supply chain financial management includes the following Koot, M., Mes, M. R. K., & Iacob, M. E. 2021):

1. Working capital management.
2. Factoring.
3. Reverse factoring.
4. Dynamic discounts.
5. Reserve financing method.
6. Order financing method.

Digital Technologies and Their Impact on the Supply Chain. Digital technologies are transforming supply chain management, offering organizations new opportunities to improve performance, reducing costs and improve customer satisfaction. The following digital technologies are having a significant impact on supply chains:

1. Internet of Things (IoT): IoT refers to a network of interconnected devices and sensors that collect, exchange and analyze data in real time. IoT applications in supply chain management include smart logistics, real-time tracking, and predictive maintenance. IoT enables organizations to more effectively monitor and control their supply chain operations, resulting in increased efficiency, reduced costs, and increased decision-making capabilities.

2. Artificial Intelligence (AI) and Machine Learning (ML): AI and ML technologies involve developing algorithms and models that enable computers to learn from data and make intelligent decisions. In supply chains, AI and ML can be applied in areas such as demand forecasting, inventory management, and transportation optimization. These technologies help organizations better predict and respond to changes in demand, reduce stockouts and excess inventory, and minimize transportation costs Kern, Johannes & Wolff, Pascal. 2019).

3. Blockchain: Blockchain technology enables secure and transparent information exchange between supply chain stakeholders, providing a single source of truth that can be used to streamline processes and increase collaboration. By creating an immutable record of transactions, blockchain can improve trace ability and transparency, allowing organizations to track products from point of origin to point of consumption, ensuring quality and authenticity. In addition, blockchain can

contribute to supply chain resilience by facilitating fast and secure data exchange in the event of a disruption.

4. Cloud Computing: Cloud computing provides a scalable and cost-effective infrastructure for managing supply chain data and applications. By enabling organizations to access and share information in real-time, cloud computing can help improve collaboration, streamline processes, and reduce information silos. In addition, cloud-based supply chain management solutions can increase resilience by providing greater flexibility and adaptability to changes in demand, market conditions and other external factors.

5. Advanced Analytics: Advanced analytics tools such as data visualization and predictive modeling can help organizations make better informed decisions and optimize supply chain performance. By analyzing large data sets and identifying patterns and trends, advanced analytics can provide insights into potential areas for improvement, such as reducing lead times, optimizing inventory levels, and improving supplier performance. In addition, these tools can support supply chain resilience by predicting potential disruptions and suggesting appropriate mitigation strategies.

The impact of digital technologies on supply chains can be summarized as follows:

**Increased Efficiency:** Digital technologies enable organizations to optimize their operations, streamline processes and reduce waste, leading to significant cost savings and increased productivity.

**Increased Transparency:** With real-time visibility into supply chain activities, digital technologies can improve traceability, ensure product authenticity, and enable more informed decision-making.

**Improved Resilience:** Digital technologies can help organizations better manage risk and ensure the continuity of supply chain operations and minimize potential impacts to customers and stakeholders.

**Greater collaboration:** Digital technologies facilitate information sharing and collaboration between supply chain partners, leading to better alignment of goals, more effective problem solving and increased innovation (Cui, L., Gao, M., Dai, J., & Mou, J. 2020).

**Sustainability:** Digital technologies can support the implementation of sustainable practices in supply chains, such as reducing waste, conserving resources, and promoting ethical sourcing and fair labor practices.

## **Conclusion**

In conclusion, the integration of digital technologies into supply chain management offers organizations significant opportunities to improve their performance and create value for their customers, while addressing the growing demands for sustainability and resilience in an increasingly complex and dynamic business environment.

Based on these inquiries about impediments the taking after recommendations are proposed for future ponder. Firstly, plan and calibrate advanced supply chain change techniques and courses concurring to diverse situations distinctive businesses and distinctive ventures particular advanced stages. In expansion to inquiring about the creation and advancement of systems of models strategies arrangements etc. consideration ought to moreover be paid to investigating and testing their ease-of-use application or generalization and conceivable dangers as well as comparing arrangements and optimizations.

Besides, any advance might not be accomplished by a single innovation but by their participation to progress the level of data framework integration.

Then again, it is the inaccessibility of a single innovation. In this way a quantitative assessment system is required which empowers us to screen control and reflect the execution of computerized supply chain execution within the distinctive applications by combining technologies together in profitable better approaches.

Thirdly Reinforce the inquiry about how to unravel the supply chain data security. At show the integration of numerous advances has been created to a certain degree such as the commitment of blockchain innovation to data security compared with AI IoT Fourthly it is fundamental to expect future advancements.

For example, the straight forwardness of data between supply chain accomplices isn't as it were for commercial interface but too gives supervision for the social obligation of endeavors which reflects the social duty of endeavors. This straight forwardness energizes supply chain accomplices to create and share the best hones for green operations and coordination. Supply chain accomplices can illustrate compliance with industry's best benchmarks for laborer security, natural security and commerce morals. In expansion expect potential dangers and dangers in progress is basic. Those issues for example how to fortify the enhancement of approaches and important laws within the setting of continuously straightforward data to avoid offenders from hypothesizing in violations and how to ensure people groups essential business specialized authorization and other delicate issues with respect to human rights are anticipated to be taken note.

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