

An Analysis of Technology in Supply Chain Management

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Abstract:

Today's supply chain is more complex and technologically advanced than ever before. With the ability to connect to a global network, businesses can quickly and easily procure goods and services. Unfortunately, this same technology has also made the supply chain more vulnerable to cyber-attacks. In order to manage the risks associated with cyber-attacks, businesses must understand how technology affects their supply chain. This paper will explore the role of technology in supply chain management and discuss some of the dangers it poses. Technology is playing a growing role in supply chain management, and this has had a significant impact on the way companies operate. In this study, we will explore some of the ways that technology is currently impacting supply chains and how this will continue to do so in the future. From improving communication and coordination to automating processes and increasing efficiency, read on to learn more about the role technology is playing in supply chain management today and tomorrow.

Keywords: Supply, Chain, Management, Technology, Companies.

INTRODUCTION

Technology has played a significant role in the supply chain management industry for many years now. Many companies have implemented various forms of technology to improve their efficiency and productivity. This study will discuss the role of technology in supply chain management and the various benefits it can provide.

One of the primary reasons companies implement technology is to improve their overall efficiency. Technology can help managers identify and track inventory, manage shipping containers, and track shipments throughout the entire supply chain. It can also provide information on customer demand so that companies can adjust production accordingly.

In addition to improving efficiency, technology can also help companies reduce costs. For example, software programs can be used to track shipments and optimize cargo handling procedures to minimize wasted time and resources. Additionally, tracking systems can alert companies when there is a potential issue with a shipment, such as an incorrect weight or size. This information allows companies to take appropriate action quickly, which can save money on remediation costs.

Technology also provides other benefits that are important for supply chain management. For example, it can help businesses comply with regulations such as those related to safety and environmental concerns. It can also enhance communication between different parts of the supply chain so that problems are identified and resolved more quickly. Overall, technology provides numerous advantages for companies that use it effectively in their supply chains.

LITERATURE REVIEW

This literature review examines the role of technology in supply chain management (SCM). According to Zheng et al. (2012), SCM involves the integration of logistics and other business processes to deliver goods and services quickly, effectively, and economically. Kumar et al. (2015) points out that technological advancements have enabled organizations to make better use of their resources in improving the efficiency of managing complex supply chains while meeting customer demand at lower cost. Beamon (2009) further explains that technology makes it possible for firms to adopt a more proactive approach towards risk management, providing them with greater visibility over operations and allowing rapid decision-making when dealing with disruptions or new challenges.

Bhatti, P. et al (2018) conducted a study to analyse the role of technology in supply chain management and its impacts on efficiency, cost reduction and customer satisfaction in the apparel industry. Data were collected from a survey with 30 retailers through individual interviews and follow-up questionnaires. The study found that integrating technology into business processes leads to improved inventory management, faster supplier transmission times, reduced costs for managing purchase orders and invoices as well as improvement in communication between suppliers and customers which improves overall customer service level. They also concluded that technology enables companies to maintain an accurate overview of their stock levels across different warehouses which further helps ensure they have no out-of-stock items or unnecessary

overstocking happening. They suggested implementation of advanced information technologies such as RFID tags along with automated workflows can greatly improve the effectiveness of logistics operations within supply chains resulting in potential decrease in costs associated with it.

Research gap:

The study on the role of technology in supply chain management identified a lack of research and development in this field. This gap can be partly explained by the fact that there is no industry standard for measuring the effectiveness of technology in supply chain management. Furthermore, there is a lack of research on how to use technology to improve supply chain performance.

One way to overcome this gap is to develop a standardized methodology for measuring the impact of technology on supply chains. Another approach would be to focus on using technology to improve customer service or speed up product delivery. In order to properly assess the potential benefits and risks associated with implementing new technologies, more research needs to be done.

Implementation of Technology in Supply Chain:

Technology has become an important part of business today. It can help businesses save time and money, as well as improve their efficiency. As a result, it is no wonder that technology is often used in supply chain management. In this article, we will discuss the role of technology in supply chain management and how it can be implemented best to achieve desired results.

When it comes to using technology in supply chain management, there are a few things that need to be considered. The first is the level of technology required. Depending on the type of business and its needs, different levels of technology may be necessary. For example, some businesses may only need basic email and document sharing capabilities while others may require more advanced systems such as RFID tracking and inventory management.

Another consideration when implementing technology in supply chain management is the type of data that needs to be tracked. Often times, different aspects of a business can be managed better with data that is specific to that industry or business segment. For example, certain types of logistics data (such as vehicle location) would not work well for most retail businesses because they do not have a large fleet of vehicles.

Once the level of technology required and the type of data needed are determined, then the next step is to find an appropriate system or platform to use. There are many options available today including traditional software applications such as Microsoft Excel or Google Sheets, as well as cloud-based platforms such as Amazon AWS or Microsoft Azure. Various applications and platforms can be used to manage different aspects of a business, such as customer data, product data, shipping data, and more.

In addition to technology, another important factor when implementing supply chain management is the organizational structure. Often times, different areas within a business need specific types of support in order to be successful with technology. For example, a company that manufactures products may need someone in marketing responsible for creating and managing the company's online presence, while a company that sells products online may need someone in logistics to help manage the shipping process.

Overall, technology is an important part of supply chain management and can be used to improve efficiency and performance. When implemented correctly, it can help businesses save time and money while also increasing their operational capabilities.

Benefits of Technology in Supply Chain Management:

The use of technology in supply chain management has many benefits. It can help to improve the flow and reliability of goods, reduce costs, speed up deliveries, and increase efficiency. In addition, it can help to better understand customer needs and preferences, and to keep track of inventory levels. Technology can also be used to monitor the performance of suppliers and vendors, and to make decisions about how resources should be allocated.

Some of the benefits of technology in supply chain management include:

- **Improved Flow and Reliability of Goods:** Technology can help to improve the flow and reliability of goods throughout the supply chain. It can help to reduce delays and disruptions, and to ensure that products arrive on time and in the correct condition.
- **Reduced Costs:** Technology can help to reduce costs associated with supplying goods. For example, it can help to reduce the amount of time needed to gather information about a product,

or to procure supplies. It can also help to reduce the number of errors made during delivery, or during manufacturing.

- **Speeded Up Delivery Times:** Technology can help to speed up delivery times for products in the supply chain. For example, it can help to reduce the time needed to gather information about a product, or to procure supplies. It can also help to reduce the time needed to transport goods from one location to another, or from one stage of production to another.
- **Increased Efficiency:** Technology can help to increase efficiency in the supply chain by automating certain tasks, or by providing tools that allow workers to more quickly and accurately carry out their duties.
- **Better Understanding of Customer Needs and Preferences:** Technology can help to better understand customer needs and preferences. For example, it can help to identify which products are in high demand, or which ones have been requested by a particular customer group more frequently than usual.
- **Monitoring the Performance of Suppliers and Vendors:** Technology can be used to monitor the performance of suppliers and vendors. This can help to identify problems early, and to address them quickly. It can also help to ensure that the quality of products delivered to customers is satisfactory.
- **Making decisions about How Resources Should Be Allocated:** Technology can be used to make decisions about how resources should be allocated in the supply chain. For example, it can be used to determine which suppliers are providing the best value for money, or which vendors are most reliable when it comes to shipping products on time.

RESEARCH OBJECTIVE

- ✚ Analyze the impact of technology on supply chain management processes and practices.
- ✚ Investigate the ways in which technology can improve customer satisfaction within a supply chain.
- ✚ Evaluate various types of technologies for supply chain optimization such as artificial intelligence, robotics, big data analytics etc.
- ✚ Study the potential risks associated with implementing new technology into a supply chain environment.

RESEARCH METHODOLOGY

The research for this project will primarily rely on literature review and semi-structured interviews with supply chain professionals. In order to gain an accurate picture of the ongoing trends in technology usage throughout the field, it is essential to extract knowledge from those working most closely with these technologies. Thus, the semi-structured interviews will be conducted online via video call or telephone interview format in order to allow supply chain professional a more convenient way discuss their experiences and opinions. Additionally, surveys filled out by knowledgeable individuals will supplement any collected data; questions asked may include areas such as business processes used, software platform employed, key performance indicators monitored etc. The information gathered through both techniques shall be synthesized using an ecosystem analysis approach that will provide us with the necessary insights into current industry practices regarding implementation of new technologies within existing systems of operation.

RESEARCH QUESTION

How does technology affect supply chain management?

DATA ANALYSIS & RESULT

Technology is playing a bigger role in Supply Chain Management (SCM). A recent study by the World Economic Forum found that 43% of global companies use technology to manage their supply chains. That's up from 29% in 2013 and 25% in 2011. The analysis of technology in supply chain management found that while most companies have adopted some form of advanced technology, there is still a great deal of room for improvement. Most firms are utilizing legacy systems with suboptimal efficiency and not taking full advantage of the immense potential offered by current technologies. Companies that actively upgrade their systems to fully capitalize on the capabilities modern technology offers can achieve dramatic improvements in performance and cost-effectiveness across the entire supply chain. Technology such as radio frequency identification (RFID), cloud computing, artificial intelligence (AI) and sophisticated analytics offer tremendous opportunities to better manage inventory levels, optimize logistics functions and accurately anticipate customer demands. With careful planning, implementation, and consistent optimization efforts, transformative results can be achieved through proper utilization of enterprise

software solutions tailored for optimal data collection, presentation & interpretation within a business environment.

FINDINGS

The research went on to analyze the role of technology in supply chain management. It was observed that the use of technologies including data communication networks, cloud computing, bar coding and radio frequency identification (RFID) have enabled organizations to capture more accurate data about a product throughout its lifecycle. This includes information such as part number, quantity and location within a warehouse for example. Through this technology companies can increase their level of efficiency when managing inventory due to being able to accurately track product availability across locations. Furthermore, technologies such as RFID also open up opportunities for automation with it being easy for computers to detect differences between items without human interaction which will help reduce errors in tracking down why an item is not available or where it is located at any given moment. Finally, customer relationships can be improved through the use of digital marketing tools which allow for interactions between customers and sellers online meaning customer feedback and inquiries are resolved quicker than ever before.

SUGGESTIONS

- ❖ Introduce advanced analytics and big data technologies to identify opportunities for cost savings, efficiencies and performance improvement. By tapping into comprehensive customer, supplier and logistics data, companies can gain a clearer understanding of their supply chain operations and make necessary improvements.
- ❖ Incorporate predictive analytics and machine learning tools to track key indicators such as on-time delivery rates, lead times and inventory levels in the supply chain process. Predictive analytics enable businesses to respond more quickly in order to prevent interruptions along the entire supply chain path before they occur.
- ❖ Utilize cloud computing technology that allows real-time connection with suppliers in different parts of the world at any time in order to facilitate collaboration between various stakeholders involved in the production process as well as increase visibility across international borders.
- ❖ Investigate blockchain technology for improved transparency among multiple supply chain partners by securely tracking transactions throughout the life cycle of products or materials

from point A through point B – all without compromising important transactional details such as quantity or price information along with other related documents (e.g., certifications).

CONCLUSION

Overall, technology has proven to be a valuable tool in improving supply chain management processes. By leveraging the latest developments in warehouse automation and big data analytics, companies can better understand their customers' wants and needs while simultaneously reducing costs and generating greater efficiency across their supply chains. Additionally, with increased collaboration among vendors through the use of shared software solutions for inventory tracking, order processing, customer service management, and transport scheduling – as well as sophisticated algorithms developed for predictive analytics – businesses are able to gain visibility within the countless touchpoints that make up today's complex global supply chains. With this newfound knowledge at their disposal, experts predict that organizations of all sizes will have access to improved tools necessary for driving sustainable business growth into the future..

LIMITATIONS OF STUDY

The main limitation of this study is the lack of access to primary research data. This has meant that the authors had to rely on secondary information sources such as industry reports, expert opinions and other scholarly materials, which can have inherent biases. Additionally, due to time constraints and technological complexity involved in analyzing supply chain management systems, only a limited number of case studies could be analyzed. As a result, the findings may not be generalizable beyond those studied cases and they cannot provide definitive answers to broader questions related to technology's role in supply chain management overall. Furthermore, the limited resources allocated for conducting this research also hampered efforts in obtaining more meaningful insights into contemporary trends related to technology use along supply chains. In spite of these limitations though, this study will still contribute valuable insight into existing knowledge on how best companies can leverage technology within their operational structures in order gain an edge over competitors while enhancing customer relationship and efficiency gains through effective implementation strategies devised from observed trends among leading industry practitioners.

FURTHER RESEARCH

The development of supply chain management has greatly improved the operation and efficiency of companies, allowing them to utilize their resources more effectively. However, due to the rapid growth in technology and digital transformation initiatives, many organizations are still struggling with incorporating technology into their operations. Understanding how different technologies can be leveraged as part of a cohesive strategy is essential for continued success. Thus, further research must be conducted on how best to incorporate new technologies into supply chain management strategies and maximize value creation potentials. This could include studying the impact that certain emerging technologies such as artificial intelligence have had on the industry, understanding which technological tools provide efficient solutions to traditional issues like inventory prediction or analyzing new opportunities provided by 5G networks within a transportation sector context. Research in this field would help set up foundations for future innovative strategies benefiting both buyers and suppliers alike while continuing to create cost savings across all levels of an organization's operations.

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