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APPLICATIONS OF INFORMATION SYSTEM WITHIN SUPPLY CHAIN MANAGEMENT

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A B S T R A C T

Information system (IS) is the advent of technology which has helped many sectors of business in earning greater revenue and becoming sustainable in the long-term approach. Information systems are also strengthening the supply chain management (SCM) and the global context for better delivery in meeting consumer demands and generating profits. The study mainly highlights the internet applications which are applicable within the supply chain and the information sharing as well as communicational improvement which has been implemented to the SCM. Additionally, the information system has also enhanced the consumer service, reduction of cost during procurement, and accessibility to worldwide market in the supply chain.

1. Introduction

Information systems mainly have the vital potential in changing organizations as well as promoting the relevant emergence of businesses. The goal for this is to enhance the information flow and facilitating critical decision-making scenarios. Information system is also putting forward the management of the supply chain with offering improved performance as well as lower cost (Esfahbodi, Zhang, Liu, & Geng 2023). In addition to this logistic activity within the supply chain that is inclusive of planning and implementing the strategy is mainly accompanied with an information system for supporting the basic activities of procurement, transportation, and distribution of goods. Information system also helps in inventory management as well as manufacturing which serves as a vital resource for the company putting up a competitive advantage and penetrating vital markets. In addition, this information system also helps supply chain with the advanced technologies in putting forward the positive impact upon efficiency as well as profitability of the organization (Gökalp, Gökalp M.O. & Çoban 2022). It also helps in achieving the tools and strategies required in order to satisfy sustainability approaches within the supply chain and the organization as a whole. This study mainly highlights the role of Internet applications within modern supply chain management and the information sharing as well as communication improvements which have been done due to the latest technologies incorporated. It also highlights consumer service which has been enhanced with the profitable information system within the managerial capability in the supply chain. Figure 1 below, shows the worldwide market revenue of SCM software (including procurement) from the time period of 2008 to 2019 (Statista, 2020).

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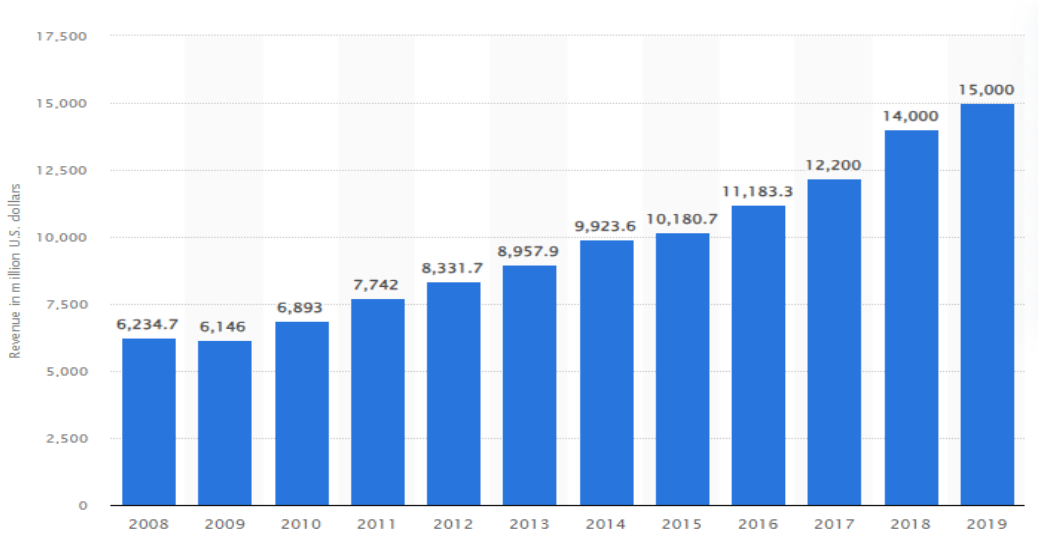

Figure 1. Supply chain management (SCM) software (including procurement) market revenue worldwide, from 2008 to 2019
Source: Statista.com, 2020

2. Methodology

Twenty-six papers were compared to the references in the article to establish the learning areas of the research. These papers have been chosen from a pool of 170 papers by using the keywords in this work by implementing the PRISMA flowchart, which will support the review and provide the desired results (Mohamed Shaffril, Samsuddin & Abu Samah 2020). The inclusion criteria support the opposition and provide guidance during the data collecting and screening process, facilitating a reliable and impartial debate of the study population. It is useful to be able to determine how a choice affects external validity. One approach for implementing exclusion criteria that help finish the screening process is to employ an efficient workflow and summarize the reasons why the study was excluded (Mohamed Shaffril, Samsuddin & Abu Samah 2020).
The steps of the PRISMA flowchart in which the articles were chosen are shown below in Figure 2.

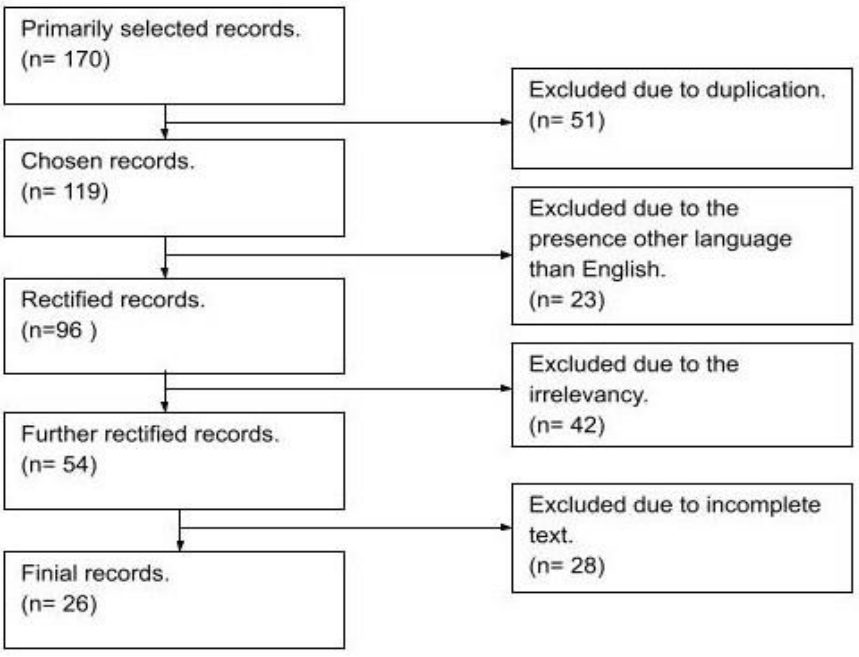

Figure 2: PRISMA flowchart
Source: self-created by the author

3. Discussion

3.1 Role of internet applications in supply chain management

Information technology within the field of supply chain management has been a vital need for the industry and the different organizations for integrating as well as coordinating the workflow in an efficient manner. In addition to this well-coordinated IS, performance is also an important task in bringing the multiple technologies as well as combining them within the real-time scenario for providing optimized yield (Núñez-Merino, Maqueira-Marín, Moyano-Fuentes & Martínez-Jurado 2020). Productivity is also enhanced with the smooth flow of data concerning innovative technologies as well as effective communication that is also helpful in enhancing productivity levels within the differential entities present in the supply chain. The initiation concerning product movement is also associated within the building link which passes through the relevant information that is needed in enhancing the workflow with the information technology and techniques. Information technology also enhances cost reduction with the optimum utilization concerning different assets as well as resources readily available within the organization (Darvazeh, Vanani, & Musolu 2020). Resources are also optimally used with the reduced cost and the vital role of information technology within SCM as a prominent state with motivating differential parties in using the respective resources within the cost-efficient approach. Product improvement and IS also consist of tools as well as applications which are to be used in attaining early awareness within the market scenarios and to look out for new potential customer needs. IS technology is with the involvement of the variables in the market dynamics (Ghadge, Er Kara, Moradlou & Goswami 2020). In addition to this the supply chain visibility is also enhanced with the collaborative effort of information technology and expertise regarding the same. Figure 2 below, shows the evolution of supply chain disruptions throughout the COVID pandemic, with a notable surge in early 2020. Subsequently, as the "new normal" emerged and the reopening process became more permanent, the demand for various goods intensified, leading to a resurgence of supply chain challenges throughout 2021 (Statista, 2021).

Transaction execution is a main functional role of information technology within SCM with information in an efficient flow between the respective participants and is also helpful in generating frequent exchange of information without any repetitive data being sent or received. The collaboration as well as coordinated effort is vital for the planning phase and demand forecasting which makes it possible for upholding any unpredicted future circumstances (Fatorachian and Kazemi, 2021). Information technology within the supply chain has the main motive of directly or indirectly impacting the improved access to the relevant information in providing quality data which is also implemented by major companies in reducing cost. Furthermore, organizations are also improving operational efficiency by providing better opportunities in collaboration.

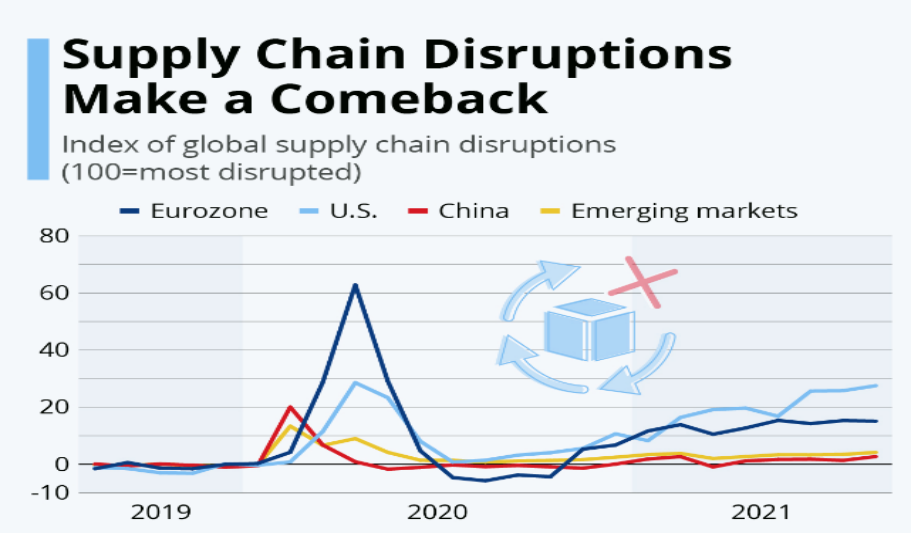

Figure 3: Supply Chain Disruptions Make a Comeback
Source: Statista.com, 2021

Information technology within the field of supply chain management has mainly enhanced the migration of organizations to the benefit of the internet within the online marketplace which would help in the reduction of cost for the management and the daily functionality (Amini and Jahanbakhsh Javid 2023). Additionally, the increase in transparency as well as transactional speed of the company is also quick and reliable. IS within the field of SCM is also helpful in finding the specific data which is needed in order to execute the process concerning goods and services with the receiving of rapid payment.

Procurement - Procurement within the supply chain is aided by the internet in the reduction of the cost of purchase by quick access regarding the information, and the sources with availability as well as pricing options. Furthermore, members within SCM are also to cooperate with the information that is available online and as possible in securing different folders that can be accessible through the account holders (Jahanbakhsh Javid and Amini, 2023). It is also beneficial in making a relevant purchase from the online marketplace considering several sources which makes procurement efficient and an effective process determining the transaction cost.

Supply - On the supply side, a vital role for the internet is enhancing the accessibility to the market with the different goods and services that can be sold or purchased from the global sector regardless of time or distance. The cultivation of preferred accounts considering the higher margins is also allowed with the greater transparency that is available (Olapoju, 2019). The ability in generating higher competitiveness within the market segment and achieve greater volume of sales is also helpful with Internet technology and the reduction of transactional costs while completing the process in a quick and efficient manner.

The bottom line can be stated that it plays an important role within SCM management in increasing revenue and accessibility to the different market segments. Additionally, the greater transparency which is regarded with pricing suppliers has also indicated the strategic tactics which has allowed in generating higher margins of profit.

3.2 Information sharing and communication improvements

The manufacturing sector has an essential role in planning and enhancing the necessary economic development of the organization in order to survive with the global economy and the current market dynamics. Concerning the same, the approach within cooperation is also to be provided with updated information concerning the enterprises in providing software as well as hardware for sufficient usage and distributing useful information (Mathu, 2019). Impact regarding information sharing within the supply chain is also significant concerning the recent advances in information technology with the main focus on product quality as well as clarification of supply chain management and coordination. Different information software which are being used in the supply chain is inclusive of logistic business as well as strategy and tactical information (Sundram, Chhetri & Bahrin 2020). This is also helpful in generating the market forecast regarding stock reputation or information for new products. In addition to this, it is also helpful in enhancing quality concerning customer services with the relevant flow of products in the assisting of acceleration concerning product shortages or avoiding any potential issues that can be faced. Sharing information and the supply chain members also bring major benefits to the relevant industries which demonstrate the necessary potential advantage for the manufacturer in expected reduction of cost as well as inventory reduction (Haddouch, Beidouri & Oumami 2019). The study also derives information that is helpful in facing any uncertainties due to lack of information concerning the members, or the elimination of negative impact and. Sharing of information is also helpful in determining the relevant advantages concerning the manufacturing framework for measuring organizations in generating greater efficiency within inventory management with improved communication channels and the improved utilization of resources through specific managerial techniques considering work allocation. Sharing information is also helpful in encountering the certain challenges which are faced and the barriers regarding confidentiality of the data that is shared and reliability for the same (Zheng, Zheng, Gauthier, Zhou, Xu, Behl & Zhang 2022). The staff is also to be adequately trained in learning the modified IS systems with a supply chain that would take both time as well as energy but being user friendly the relevant IS applications are also helpful in improving the

sharing of information regardless of time and distance. The manufacturing sector is also required to make the best use considering advanced information technologies for sharing data for increasing their competitive advantage as well as surviving within the unpredicted global economy (Zheng, Zheng, Gauthier, Zhou, Xu, Behl & Zhang 2022).

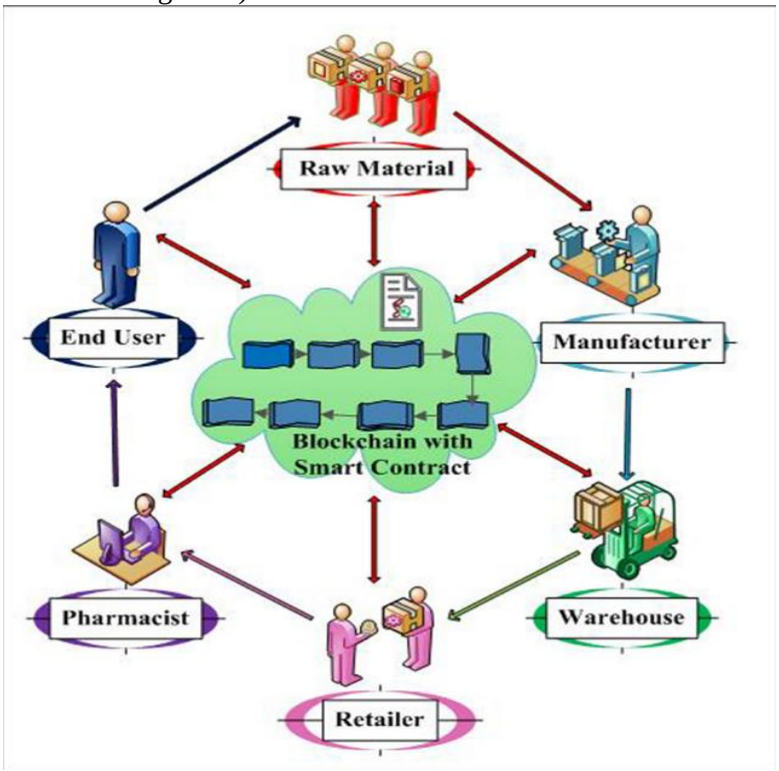

Figure 3: Overview of supply chain management system with blockchain
(Source: Dwivedi, Amin & Vollala 2020)

Differential technologies such as Blockchain within the internet are also fundamental in the development as well as improvement of inter-organization for SCM by improving the customer and supply relationship with effective optimization of information flow and communication channels (Guggenberger, Schweizer, & Urbach 2020), as shown in figure 3. This also plays a major role in the bullwhip effect which enables flexibility that is increased and reduction of risk. Organizations also have the greater desire in determining the distributor and the tactics that are developed within the communication system that also demonstrates the long standing relationship which is diminishing. Information is also helpful for generating sales data as well as sales forecasting for the relevant inventory information in avoiding any circumstances of going out of stock (Zhao and Tu, 2021). Additionally, sales data sharing also helps in eliminating the circumstances of blowups which represents the tactical consumer demand and decrease the loss which can be caused by any unprecedented shortage or excess regarding the innovative products. Information technology within the SCM chain is also helpful for generating greater and more valuable insights with information sharing that formulates the basic foundation in critical decision-making scenarios (De Vass, Shee & Miah 2021). Additionally supply chain technology is also inclusive of decision support and the futures which help the employees in making critical decisions on an efficient time frame by churning up the data and performing real time simulations. Technology also helps in improving and enhancing agility which makes it easier for the employees in addressing different problems as well as generating profitable company prospects with better insights (Fatorachian and Kazemi, 2021). Supply chain is also recommended within the actions considering the fast-paced climate of business scenarios that is critical in sharing the information and overtaking the preexisting rivals.

It can be stated that the supply chain management when integrated with IS technology has been significantly profitable with the introduction of the cost regarding the movement of relevant materials. In addition to this streamlining of the supply chain, it has also been able to boost the sales by delivering

proper products in the correct amounts and the manufacturer's anticipation regarding the reduction in inventories.

3.3 Enhancing customer service with Supply chain management

Customer service within the supply chain management with the help of IS can be enhanced with a better shift towards online Commerce which would help the stimulus and generate greater profit and also meet the predetermined company expectation. Additionally, the organization can also maintain the necessary inventory management within the unstable market scenario and ever changing consumer dynamics by the flexibility as well as agile support provided by information technology (Dehgani and Navimipour, 2019). IS technology has been helpful in creating a consistent experience for the business partners as well as the consumers with differential locations and meeting the deadlines for the customers. In addition to this, achieving the same is also helpful in creating the necessary state of standard protocol that is to be followed from internal as well as external prospects. Interrogation within customer service and the auto system is also able to access the order and delivery system which would be helpful for the consumer in the fulfillment of any queries (Ahmed, Thapit, Talib, Alghazali, AL-khayyat, Hafedh & Sabit, 2022). IS technology has also been helpful for the consumer in calling the supply chain executives or the associate related to the delivery and the initiative is undertaken for resolution of the same in real time scenario. IS technology has also been able to deliver the best effort to the consumer experience by providing necessary opportunities for the organization in the upscaling market segment. Additionally, the consumer would also be able to comfortably chat through call or email with the best contact method and a fixed time for solving the issue. Integration of IS within the logistic system is remaining competitive within the current scenario but has provided a positive outlook for the business system (Tabim, Ayala & Frank 2021). Companies have also been able to meet the daily challenges in SCM with adaptability and forming profitable relationships with suppliers as well as shippers. Consumers are also profited from the complete transparency regarding the tracking system that is provided throughout the process. Leveraging automation solutions is also helpful in providing a better and more engaging consumer experience that undertakes seamless reduction of errors and paces up the procedure making it more transparent (Rathore, 2023).

Consumer satisfaction is the necessary tool which is helpful in dictating the profit of the organization by keeping close monitoring over price and delivery variables. An efficient supply chain and the measures can help in exceeding the competitors retail price as well as improving the profitability of the company. The supply chain management also allows the organization in choosing the correct system as well as approaches with partnering up with different organizations in generating greater service for the consumer (Modgil, Singh & Hannibal 2022). IS technology can offer a simple website which the consumers can use with easy navigation and provide them with the simple design for selecting the best product that is suitable. IS technology is also helpful in keeping unnecessary checks upon the inventory of the product that is to be ordered and the stock which is less so that orders can be updated and a seamless consumer experience can be ensured. Quality service is also monitored by IS technology considering the highest propriety in consumer centric organization with offering long term benefits (Min, Zacharia & Smith 2019). The exceptional services are provided by optimizing the entire supply chain to work efficiently as well as being responsive. IS technologies have also helped with generating greater communication channels between consumer management as well as supply chain management aimed at streamlining the business processes and having positive effect on business relationships. Beneficial organizations such as Starbucks as well as Amazon are also using the relative consumer data in understanding the preferences as well as tracking buying patterns for identification of specific variables in product purchase (Campbell, Sands, Ferraro, Tsao and Mavrommatis 2020). Technologies have helped organizations in the digital transformation and agility is a key need in this transition with the changing and enhancing business landscape. Crucial delivery in exceeding the organization's expectations with a robust digital mindset is back with the innovation from IS technologies that enable businesses in sensing and learning. Customers' demands are reported and sent to the relevant departments, utilizing cross-functional resources as needed, in order to meet perceived expectations. Customized goods and service offerings are the means by which personalized solutions can be supplied. whereas perceived quality is provided through making necessary modifications to the goods or services, raising the standard of support services like handling complaints, and guaranteeing prompt delivery of goods and post-purchase care. Figure 4 shows the main SCM practices that lead to customer satisfaction and loyalty (Kumar & Misra 2020).

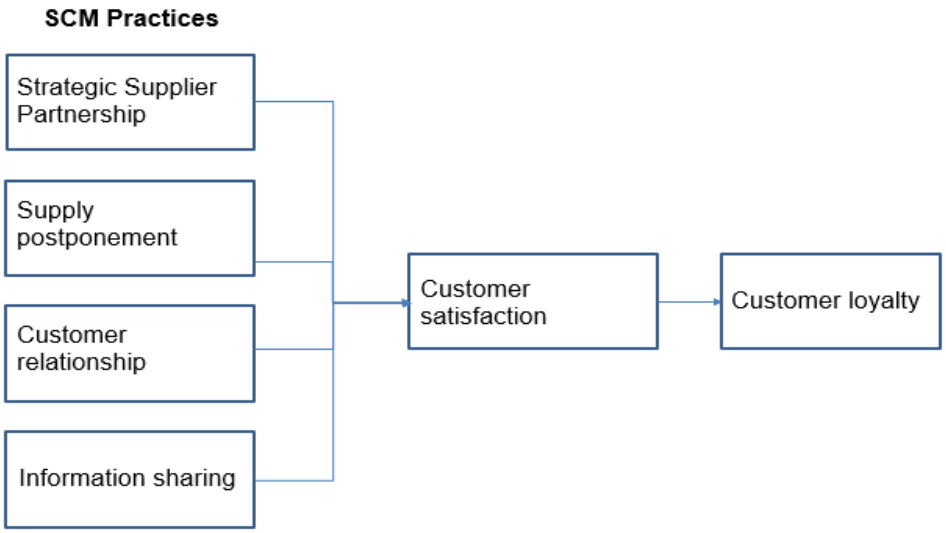

Figure 4: SCM practices in customer satisfaction and management
Source: self-created by the author

It can be stated that in building up a collaborative supply chain the ecosystem needs to facilitate consumer growth as well as provide real value in improving consumer satisfaction levels. Profitable supply chains should consult before boosting up the business processes in order to generate profitable outcomes and streamline the operations for attracting and retailing consumer segments.

4 Conclusion

This paper has analyzed the development of information systems in supply chain management and their beneficiaries. Additionally, it also puts emphasis upon the role of Internet applications within supply chain management and information sharing as well as communication improvement. The paper also emphasizes enhancing consumer service within supply chain management with the help of modern technology and advancements within the information system.

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