(IJTBM) 2018, Vol. No.8, Issue No. III, Jul-Sep **e-ISSN: 2231-6868, p-ISSN: 2454-468X**

EVOLUTION AND INTERACTION OF SUPPLY CHAIN MANAGEMENT AND LOGISTICS IN MODERN BUSINESS OPERATIONS

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ABSTRACT

The development, definitions, and interactions between supply chain management (SCM) and logistics—two closely related but separate ideas that are essential to contemporary corporate operations—are examined in this essay. It starts by considering how goods are made and transported in our daily lives, highlighting the significance of supply chain management (SCM) and logistics in bringing raw materials to final customers. From Material Requirements Planning (MRP) to Enterprise Resource Planning (ERP) and contemporary SCM systems, the study charts the evolution of supply chain management (SCM) over time, showcasing the contributions of Forrester, Porter, and others. It also emphasises the pivotal role of information technology in this process. Originating in military operations, logistics is defined as the strategic management of information, storage, and material movement to guarantee economical customer satisfaction. In order to illustrate the increasing complexity of logistics, the paper examines several phases of its development, from farm-to-market distribution to integrated global supply chains. Additionally, it examines the complex interaction between supply chain management (SCM) and logistics, demonstrating how SCM enhances logistics to integrate upstream and downstream partners for a competitive edge. The study concludes by highlighting the need of effective logistics and supply chain management (SCM) in cutting expenses, raising service standards, and generating long-term client value in cutthroat international marketplaces.

Key Words: *Supply Chain Management; Logistics Management; Customer Loyalty; Long-Term Profitability; Enterprise Resource Planning; Manufacturing Resource Planning.*

INTRODUCTION

As old as commerce itself is the idea of collaborating with manufacturers, suppliers, transporters, and customers. The present concept of a "Supply Chain" is very new, likely having originated in the 1950s thanks to groundbreaking research conducted by Jay Forrester and his colleagues at the Massachusetts Institute of Technology (MIT). Beginning in the early 1980s, the conventional ideas of logistics, transportation, distribution, and materials management started to combine into a single, comprehensive phrase known as supply chain (SC).

Even though the idea of supply chain management (SCM) has been around for more than 30 to 40 years, only a relatively small percentage of businesses have adopted it to some degree up to this point. Even though many of the world's top multinational corporations are praised for their SCs, very few could even try to implement full-scale SC projects, and those that did face enough

obstacles and difficulties to make them wonder if the final product was worth the crucial work required.

It is clear from a thorough review of the literature on the development, presence, and scope of IT in SC areas that there is a disconnect between the supply and demand for IT solutions in the logistics sector at the moment. According to a thorough investigation, the sectors with the most gaps in IT availability are Web-based tools, integration tools, warehouse management systems, and transportation management systems, among others.

It is surprising that studies have shown inadequacies in IT solutions for the logistics industry, given how quickly technology has advanced and developed over the past 20 years. Analysis of the factors and related connections between management, technology, and geography affecting global supply chain logistics networks has piqued attention. Over the past several decades, there has been a growing significance and emphasis on supply chain management (SCM) as a means for businesses to get a competitive edge in today's cutthroat marketplaces (Collin, 2003). In order to improve their goods, services, and customer happiness, as well as to boost internal productivity and external competitiveness, companies made significant investments to streamline their SCs, as demonstrated by a number of examples from the 1990s. According to Christopher (1998), rivalry these days is between rival SCs rather than between individual organisations. Each organization's winning network is made up of SCs that maximise value for clients at the lowest cost in the chain.

Fact-based SCM becomes increasingly important as organisations look for ways to integrate choices across partners, geographically scattered facilities, diverse SCM roles, technological advancements, and time. Three elements determine the core of fact-based supply chain management: geography, technology, and management. Choosing SC strategies, organisational communication, relationships, trust, and knowledge management activities both inside the company and between the company and its suppliers, customers, and partners are all part of the first dimension of management. The availability, sharing, and integration of data and information, technological obsolescence, technological evolution, technological expenses, and dashboard tools, platforms, and portals comprise the second dimension. Geographical factors, including the effects and impacts of worldwide natural and man-made disasters, as well as global currency fluctuations and exchange rates, comprise the third dimension. These factors include functions across physical facilities situated on one or multiple continents (Shapiro, 2001).

In a global company setting, managing SCs requires a high level of commitment from all chain participants in terms of time, money, effort, strategy, trust, and relationships. A thorough examination of the managerial, technological, and geographic facets of SC principles in the global SC network is crucial to enhancing the SC of any global organisation in the modern era because of its criticality.

In today's globalised world, effective production, distribution, and service delivery systems are essential to the operation of enterprises and society. Nearly everything in our environment, from basic home items to cutting-edge technology, goes through a convoluted process before it

reaches the final customer. This process include locating raw resources, turning them into completed commodities, shipping them across borders, and then delivering them to clients at the appropriate time, location, amount, and condition. Two key ideas at the core of this process are supply chain management (SCM) and logistics, which work together to keep companies competitive while meeting client demands.

The idea of logistics is not new; it dates back to the early days of warfare, when the successful transportation of soldiers, supplies, and equipment made the difference between victory and defeat. As logistics developed into a strategic corporate activity involving procurement, storage, transportation, and customer satisfaction, it eventually spread into the commercial and industrial domains. In a similar vein, the necessity for inter-organizational collaboration, growing global rivalry, and technology improvements led to the development of supply chain management, a more comprehensive and integrative concept. SCM places a strong emphasis on coordinating all operations, from suppliers to final customers, to guarantee effectiveness, economy, and value generation throughout the chain.
Waters (2009) defines supply chain management (SCM) as the movement of materials between different entities, while Larson and Halldorsson (2004) define it as the integration of important business operations that provide value for consumers and stakeholders. From the first Bill of Materials processors in the 1960s to sophisticated Enterprise Resource Planning (ERP) systems in the 1990s and, ultimately, to the digitalised SCM packages of the 21st century, the development of supply chain management (SCM) has been intimately associated with technical advancements (Li, 2014). These advancements demonstrate how supply chain management (SCM) has evolved from simple material management to a strategic instrument that generates long-term competitive advantage.

As a subset of SCM, logistics is more specifically concerned with the effective movement and storage of information and items. Martin (2011) asserts that logistics involves more than just movement; it also involves strategically managing these flows to guarantee both organisational profitability and consumer delight. Logistics have been further reinforced by initiatives like Just-in-Time (JIT) and Electronic Data Interchange (EDI), which lower inventory costs and improve network coordination. By examining the definitions, development, and connections between SCM and logistics concepts, this study seeks to provide a greater understanding of these ideas. It shows how efficient logistics management within the larger framework of supply chain management (SCM) has become essential for businesses looking for long-term profitability, customer loyalty, and competitiveness by examining their historical evolution and real-world applications.

Supply chain management, according to Waters (2009), is the "set of organisations and activities that materials move through on their journey from initial suppliers to final customers." According to him, each product has a distinct supply chain, which might be short or long, straightforward or intricate. It might be a collection of related businesses working together to provide the final consumer with the good or service he has been waiting for and claiming. A map that depicts the entire path of materials as they travel from one location to another can also be used to illustrate the supply chain. Materials may pass via manufacturers, suppliers of raw materials,

logistics hubs, warehouses, third-party operators, transportation firms, wholesalers, retailers, and a variety of other businesses during this process (Waters, 2009).

Maia and Cerra (2009) provide another definition of supply chain management as "the integration of the main processes that manage materials and information flows" in both directions, between businesses involved in the supply chain and within the enterprise itself, all the way to the end users. They contend that generating value for clients and stakeholders along these processes is the primary objective of supply chain management.

Additionally, according to Li (2014), information technology became the primary motivator for the shift from material management to supply chain management over time. He also provides a straightforward explanation of the phases of the business model evolution shown in Figure 1 above, starting with the introduction of the Bill of Materials (BOM) processor in the early 1960s, followed by the introduction of Material Requirement Planning (MRP) in the 1970s, Manufacturing Resource Planning (MRPII) in the 1980s, Enterprise Resource Planning (ERP) in the 1990s, and the introduction of Supply Chain Management (SCM) packages in the early 21st century. Thus, as we've seen, supply chain management and material management were significantly impacted by advanced technology.

The planning and management of all sourcing and procurement, conversion, and logistics management activities are all included in supply chain management, according to experts from the Council of Supply Chain Management Professionals (CSCMP). Crucially, it also entails cooperation and coordination with channel partners, which may include clients, suppliers, middlemen, and third-party service providers. Essentially, supply chain management combines demand and supply management both inside and between businesses. The main duty of supply chain management, an integrating role, is to connect key business operations both inside and between organisations to create a unified and successful business model. In addition to manufacturing operations and all of the previously mentioned logistics management tasks, it also promotes process and activity coordination with and across marketing, sales, product design, finance, and information technology. From the aforementioned viewpoints as well as others, I will include Li's (2014), which comes to the straightforward and precise conclusion that:

1) Supply Chain Management's goal is to be economical and efficient by working together throughout the system;

2) Supply Chain Management's function is to manufacture goods that meet client specifications;

3) Because it considers the effective integration of suppliers, manufacturers, wholesalers, logistics providers, retailers, and end users, supply chain management covers the firm's activities from the strategic level through the tactical and operational levels.

It is now stated that the idea of logistics has been around for centuries. Initially, the idea was used in military settings. The attractiveness of logistics spread into the mainstream business sector over time as a result of several eras of change. The majority of the definitions of logistics that we have seen particularly address the actual transportation and storage of items. "The process

of strategically managing the procurement, movement, and storage of materials, parts, and finished inventory (and the related information flows) through the organisation and its marketing channels" in a profitable manner with reference to present and future actions is what another author, Martin (2011), defines as logistics. This is achieved through cost-effective order fulfilment. From the perspective of comprehensive systems, logistics.

"Through the coordination of the materials and information flows that extend from the marketplace, through the firm and its operations, and beyond that to suppliers," management refers to meeting the needs of customers. It is evident that a very different approach, which was generally seen in conventional firms, is needed to accomplish this level of organisational integration. Additionally, all divisions must work together as a synergistic process to accomplish this firm integration.

"The function responsible for the flow of materials from suppliers into an organisation, through operations within the organisation, and then out to customers" is how Waters (2009) defines logistics.

Since logistics may be defined as the process of tracking the flow of commodities into and out of an organisation, ensuring customer satisfaction can be identified as logistics' primary goal.

Due to intense worldwide rivalry, businesses were compelled to offer more affordable, high-quality, durable, and flexible products, particularly in the 1980s. A number of programs, strategies, and technologies that were either directly or indirectly related to logistics, including JIT (Just In Time), ECR (Efficient Customer Response), and EDI (Electronic Data Interchange), among others, assisted in "inventory reductions and better coordination of the material flow along productive chains" in this dynamic environment and as a result of shifting markets (Maia and Cerra, 2009). Companies began to look "outside the boundaries" after seeing the value and potential advantages of these cooperative partnerships with suppliers, clients, and people up and down the flow. As a result, strategic alliances began to emerge, supporting the development of supply chain management. According to Maia and Cerra (2009), this "historical evolution can be considered the first relationship" between supply chain management and logistics.

Information regarding the connection between supply chain management (SCM) and logistics management (LM) is also provided by the Council of Supply Chain Management Professionals (CSCMP). According to the CSCMP, logistics management is the branch of supply chain management that organises, carries out, and regulates the effective movement and storage of products, services, and associated data between the point of origin and the site of consumption in order to satisfy consumer demands.

The increasing interdependence among interacting firms and the expectation that "systems to exhibit increasingly complex dynamics when changes occur that intensify interactions among elements" make it difficult to control and coordinate logistics activities both within and between firms, according to Nilsson (2006). According to Nilsson (2006), "managing logistics in supply networks will create new demands on logistics management."

Speaking of logistics management as a component of supply chain management, this was not always the case because, as Globerson and Wolbrum (2014) have shown and presented above, supply chain management was only later added to the logistics life cycle. Farm-to-market economics served as the foundation for logistics theory, which was initially recorded in the early 1900s. In their paper, Globerson and Wolbrum (2014) outline the development of logistics theory, which they categorise into the following seven periods:1: Farm to Market: This phase began in the early 1900s and was primarily concerned with distribution and transportation. 2: Military and Business: This era began during World War II, which prompted the creation of operations including transportation, storage, inventory, and physical distribution due to the demands the conflict created.3: Integration of Functions: This phase began in 1960 and was primarily concerned with the whole system's performance as opposed to the execution of its component parts. At this point, the corporation began to show interest in teaching logistics. 4: client emphasis: beginning around 1970, this era saw the company's primary focus shift to client happiness and service. 5: Logistics Strategy: This era began in the 1980s and was characterised by the importance of logistics strategy in a business's overall plan. "Emerging concepts include reverse logistics, environmental logistics, supply chain management, and a greater awareness of globalisation." Concepts like information technology and strategy have been quite influential throughout this time. 6: Integrated Supply Chain Management: This era began in the 1990s and was notable for its consideration of extending logistics procedures to businesses participating in supply networks. "It necessitates increased engagement with numerous functional areas within the participating organisations." 7: International Supply Chain Management: This era began in 2000 or so due to the development of highly efficient information technology, which allowed the chain to operate beyond national borders.

According to Maia and Cerra (2009), logistics is "to be a constituting part of Supply Chain Management," which is in charge of the information and material flows between businesses that are a part of the same chain. It is important to remember that "supply chain management includes activities such as product co-design, outsourcing, partnership relations, sourcing and procurement, etc." There are significant differences between supply chain management and logistics, though, and "in practice, the relationship between both areas is made rather complex given the mutual impacts that decisions made in one area may have on the other," as can be observed.

Another distinction between the two ideas is that, whereas supply chain management focusses more on macro-level logistics concepts like "logistics flow" and "managing the logistics organisation," logistics management focusses more on micro-level logistics concepts like "storage and warehouse.", Wolbrum and Globerson (2014).

Supply chain management encompasses all of a company's operations related to the sourcing, procurement, conversion, and logistics management of the raw materials used in the finished product. With the aid of logistics management, supply chain management involves working together with all parties involved in the chain, including distributors, suppliers, intermediaries, and customers, to deliver the right product at the right time, location, and cost. The last customer is connected to the first supplier through supply chain management. In other. In

other words, logistics management is a subset of supply chain management that focusses on effectively managing commodities.

CONTRASTS BETWEEN LOGISTICS MANAGEMENT AND SUPPLY CHAIN MANAGEMENT

The construction of logistics links among enterprises into a systematic overall form represents the substantive role of supply chain management, where the functions of enterprises are evenly distributed. For example, the tasks of procurement, production, and sales are divided among enterprises to form an orderly model of operation and development within a unified supply chain. Through the ideological principle of integration and connection, supply chain management focuses on logistics warehouse operations to adjust production capacity and environmental adaptability, while strengthening the role of inventory management (Christopher, 1998; Shapiro, 2001).

Logistics management aims to reduce economic costs and improve operational efficiency through the integration and coordination of logistics activities such as planning, organization, coordination, and supervision (Lambert, Cooper, & Pagh, 1998). Strategic supply chain management, however, uses modern information technology to support and adjust various logistics functions and to make inter-organizational decisions from a holistic perspective (Mentzer et al., 2001). It controls the entire process—from procurement, manufacturing, transportation, and storage to negotiation and sales—based on information flow, business flow, capital, and value (Simchi-Levi, Kaminsky, & Simchi-Levi, 2003). Moreover, SCM requires enterprises to share risks, information, and benefits, fostering cooperation and understanding from a strategic perspective (Chopra & Meindl, 2010).

Logistics management seeks to achieve higher efficiency and service quality with lower costs, which constitutes its basic goal (Bowersox, Closs, & Cooper, 2002). However, as enterprises evolve, traditional logistics management struggles to adapt to the dynamic environment of modern SCM. Supply chain management, by contrast, aligns logistics activities with the overall goals of the supply chain, emphasizing the fulfillment of customer needs as a competitive advantage (Christopher, 1998). Hence, SCM not only coordinates logistics but also enhances overall performance by integrating business objectives across partners.

Logistics management and supply chain management differ in levels and modes, their management methods also vary. Logistics management, mainly supported by modern information technology, generally follows administrative guidance and strategy-based planning to coordinate logistics functions (Bowersox et al., 2002). In contrast, supply chain management relies on trust and commitment, integrating financial operations and formal agreements to establish collaborative relationships among partners. This approach ensures shared benefits, risks, and information under a unified technological framework (Mentzer et al., 2001; Chopra & Meindl, 2010).

CONCLUSION

Even though supply chain management (SCM) and logistics are not new ideas, their importance has grown as more businesses realise how they may provide a sustained competitive edge. While supply chain management (SCM) is a more comprehensive strategic framework that unifies suppliers, customers, and partners into a single value-creating network, logistics is the practical foundation of SCM, guaranteeing the effective transportation and storage of items and information. The core of supply chain management (SCM) is managing upstream and downstream interactions to provide higher customer value at lower total costs, as Martin (2011) highlights. This calls for cooperation, trust, and the understanding that group achievement is more important than individual self-interest in addition to preparation and coordination.

Porter noted that rather than being viewed negatively, competition could be seen as a catalyst for value creation, innovation, and uniqueness. By providing unique goods and services and cutting down on inefficiencies, businesses that strategically coordinate their logistics and supply chain management procedures can win over loyal customers. In order to ensure long-term business resilience, efficient supply chain management and logistics ultimately seek to strike a balance between quality, cost, and customer pleasure. According to Lamar Johnson, the supply chain includes all commercial activities, from sourcing raw materials to delivering goods to customers, highlighting its crucial role in ensuring company competitiveness in a world that is becoming more interconnected by the day.

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