

THE IMPACT OF LOGISTICS INTEGRATION ON SUPPLY CHAIN OPERATIONAL EXCELLENCE IN THE SERVICE SECTOR

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Abstract

Focal firms have strategically used cooperative linkages to establish operational excellence in the service sector. The operational efficiency of a firm in the service sector highly depends on logistics practices, functions and activities and how all that is unified with those of other players in the supply chain, especially logistics service providers. The objective of this paper is to provide a review of literature and based on this, provide an insight into the factors affecting logistics integration capability and there on operational excellence of the firms. A structured analysis of 72 papers published in Scopus indexed journals in logistics, supply chain and operations management during the period 2015 to 2021 conducted. A multidimensional conceptual framework for logistics integration and operational excellence is proposed. The literature review has noticed the logistics process and operations, information and communication integration, value-added services offered by logistics service providers, and logistics practices being significant factors in logistics integration capability and supply chain operational performances. The research discussion and conclusion offer a foundation for future research in the field of 3PL roles and definitions and theoretical foundation in LSP's integration. Further testing and examination of the framework are needed to be conducted for the validity of the results. This study highlights the role of partner (actor) integration on logistics integration capability towards SC operational excellence.

Keywords: Logistics integration, Logistics practices, Logistics service providers, Logistics integration capability, Value-added services..

I INTRODUCTION

In today's global world of extreme market dynamism, firms recognized the importance of designing and coordinating their supply chain distribution network to deliver goods and services most efficiently and effectively. Due to this reason, the importance of supply chain integration has been enhanced. Most human activities and organizations require the production and consumption of goods and services. In most cases, there is a geographical distance between the production and the consumption of goods and services. The level of complexity increases with the increase in distance. Hence, the producers require

equipment, transportation services, documentation services, and customs clearance services to move the raw materials and finished goods to meet the customer demand. To facilitate these requirements, firms depend on logistics service providers to fulfill the physical movements of goods and services to the end customer.

Based on the existing evidence and the above discussion, it is imperative to have a study focussed on logistics integration for the logistics service providers in the organizational supply chain. The increasing market competition has led the manufacturers to improve their internal operations as well as integrate their supply chain

partners in their existing supply chain network [1]. Logistics integration by definition is a segment of the supply chain which is responsible for moving goods from the manufacturer to the end customers and involves the transportation and customs service providers. A higher level of collaboration and coordination among the entities is required for successful operations by these supply chain channels [2]. Majorly the logistics service providers are categorized as freight forwarders, transport operators, terminal operators, shipping lines, and customs house agents based on their role in the overall logistics operations in the supply chain.

To accomplish the solidarity and design of supply and distribution network among the logistics service providers the concept of logistics integration has originated. Integration of logistics is understood to be the degree of collaborative involvement of the service providers in the operations of logistics and supply chain towards enhancing the overall operational performance of the organizational supply chain [3]. For instance, there exists an association between the freight forwarders, shipping lines, transport operators, custom house agents, and terminal operators in the logistics operations and acts as an integral component of the overall supply chain. Logistics integration can be facilitated by applying various measures available like value-added services and information exchange. Other measures involve joint venture operations, which will in return help in improving the overall performance and productivity of the supply chain for the organization.

In the present competitive market situation in the international trade, the manufacturers adopt to collaborate with the logistics service providers to get their finished products delivered to the final customers. To sustain in the competitive market along with logistical challenges, this research attempts to develop a new conceptual framework and to identify the factors contributing to enhanced logistics integration among logistics service providers to execute the manufacturing firm's international logistics activities smoothly and efficiently to gain a competitive advantage in the market. The pressure of the growing competition and increasing demands of the clients in making the manufacturers integrate their operations with the logistics service providers. This integration

helps in cost reduction and significant improvements in the service to the customers [4]. As the organizational supply chain is growing and evolving, the role of logistics service providers becomes more crucial in supply chain integration [5].

2 LITERATURE REVIEW

The logistics service providers tender their expert services of inbound and outbound logistics to the members of the supply chain [6]. Integration of logistics is a collaborative and extended network of the supply chain providing integrated services along with its internal and external resources. Furthermore, supply chain integration (SCI) opposes the challenges that arise in the process of coordination in the flow of directions and materials in the supply chain. Organizations require a proper and relevant supply chain coordination setup for facilitating their efforts in improving the supply chain's performance [7]. From the perspective of the supply chain, every organization has information, and applying it with a higher level of integration will help in achieving and managing the information and services linkages in the organizations [8].

By and large, logistics integration is said to help the logistics service providers in integrating and efficiently managing the various activities involved in the supply chain. It also encourages the logistics service providers and focal firms to interchangeably share the resources in an integrated system to reduce uncertainties of the supply chain processes [9]. To achieve higher customer satisfaction and improved overall performance, organizations do outsource their supply chain operations from third-party logistics service providers. Among the logistics service providers, logistics integration plays a very crucial role and any interference in their service bears a significant impact on the overall supply chain performance. Integration of the logistics operations between LSP and the focal firms is an effective strategy to overcome dependency difficulties in logistics services [10]. It provides a better degree of assurance that is needed by the focal organizations to manage their resources for their logistics purposes [11]. Hence the supply chain becomes a mutual relationship across the organizational network [12].

Logistics integration in the supply chain management concept is explained as the extent of how strongly a manufacturing firm integrates with the logistics service providers to effectively manage their internal and external supply chain management processes [13]. Logistics integration becomes more important in organizations with a complex and network-driven business environment [14]. In their study, Chang and Ku [15] concluded that logistics integration works as an umbrella concept and covers a wide range of interrelated logistics and marketing activities of the firm. Usually, integrated logistics processes involve internal and external business processes that are correlated significantly [16]. There has been a considerable shift in the role of logistics functions in recent years in contrast to the in-house logistics operations during the 1970s [17].

The in-house conventional logistics operations took a turn by adopting outsourcing of the logistics activities to the logistics service providers in the 1980s. This transformation helped the organizational supply chain in procurement, inventory management, warehouse management, and transportation as well [18]. The emergence of the logistics service providers as strategic partners, with increasing outsourcing activities, helped the organizations improve their supply chain performance significantly [19]. Outsourcing of logistics activities became more common as more organizations started to adopt the phenomena basis on its benefits and competitive advantages. Innovative logistics integration benefited the organizations in performing the supply chain activities with reduced operating costs and improved flexibility in the operations [20]. In any organization, logistics management becomes crucial to meet and manage the customer demands and to do so, it involves processes such as planning, implementing, and controlling the flow of goods and services from the point of origin and the point of consumption [21].

Logistics management is considered a crucial component of the supply chain. The concept of logistics includes three stages: starting from inbound logistics, material management, and outbound logistics. Studies on logistics integration figured out that there exist four types of integrations such as internal and external integration, process integration, physical

information flow & integration of partners. Internal integration includes inter-correlation between the internal functions of the organizations such as procurement, marketing, finance, and sales [22]. External integration is the collaboration between the suppliers and the customers and is also referred supply chain integration. Process integration is the integration of the manufacturing and production functions facilitating the management of customer service and demand fulfilments [23]. Physical information flow becomes important in managing the operations in the logistics system and is helpful with lean and agile logistics systems [24]. The integration of the partners is the coordination between the agents involved in the overall supply chain of the organization [25]. These supply chain partners are very crucial for the business operations and maintaining a long-term relationship with these partners will help in the growth of sales and increased profitability [26]. The logistics service providers work as an integral component of the supply chain in logistics [27].

3 RESEARCH METHODOLOGY

The process of the systematic literature review is conducted which includes designing the review, conducting the review, and reporting the review. Designing the review consists of realizing the rationale for the review, commence the review, but the research question, develop and access the review protocol. The second one, conducting the review involves research recognition, predominant study selection, and quality appraisal, data uprooting, and monitoring, correlating the findings. Reporting the review includes, recognizing the dispersal process, setting an actual format, and evaluating the last report. The present study focuses to answer the following research questions:

RQ 1 What are the major factors of logistics integration towards supply chain operational performance?

RQ 2 What is the impact of logistics integration on supply chain operational performance?

RQ 3 What are the theories in the literature review supporting logistics integration?

DATA ANALYSIS

The data analysis for the present study initiates with an attempt to answer the research questions mentioned in the above section. Based on the research questions, the study has explored keywords in five major areas such as logistics/supply chain integration, logistics management, supply chain operational performance, integration concept, and logistics service providers.

The research papers were collected from various publications and indexing such as 'Elsevier', 'Emerald', 'Scopus', 'Taylor and Francis', 'Google scholar', 'Thomson Reuters' and 'Web of science'. The majority of the research articles were taken from the highly cited journals including 'Supply Chain Management: The Asian Journal of Shipping and Logistics', 'Transportation Journal' and 'Journal of Transport Economics and Policy'. The total number of papers collected was 206 and was categorized according to the keywords mentioned above. A selection criterion was set for the decision on inclusion and exclusion of the papers. Many of the research articles were excluded after reading the titles, abstracts of the paper, and keywords. Besides, papers were also eliminated based on their source of publication, type of study, study design, the research agenda, and so on. Finally, around 72 research articles were selected out of the 206 identified research articles. A detailed summary of the research articles was recorded in a document using MS Word. There were two tables comprising studies on logistics integration as a common concept and another with logistics integration and its role in supply chain performance.

4 CONCEPTUAL FRAMEWORK

This section is aimed at developing a conceptual framework for logistics integration and SC operational performance. The framework denotes key influential factors on logistics integration and how logistics integration contributes to SC operational performances in the service industry. The conceptual framework is needed for various intentions such as extending previous literature studies and developing a logistics integration framework for operational performance.

There are three major functions in the logistics system: logistics information systems, operation, and physical activities, logistics infrastructure, and resources [28]. Efficient collaboration between these functions will lead to logistics integration capability. Three main factors influencing logistics integration have been identified in the literature review:

- Information and communication integration
- Actor (partner) integration
- Logistics commitment

Three major factors that determine supply chain performance have been identified in the literature review:

- Cost-efficiency performance
- Flexibility performance
- Customer service performance

The conceptual framework developed for this study is shown in Figure 1.

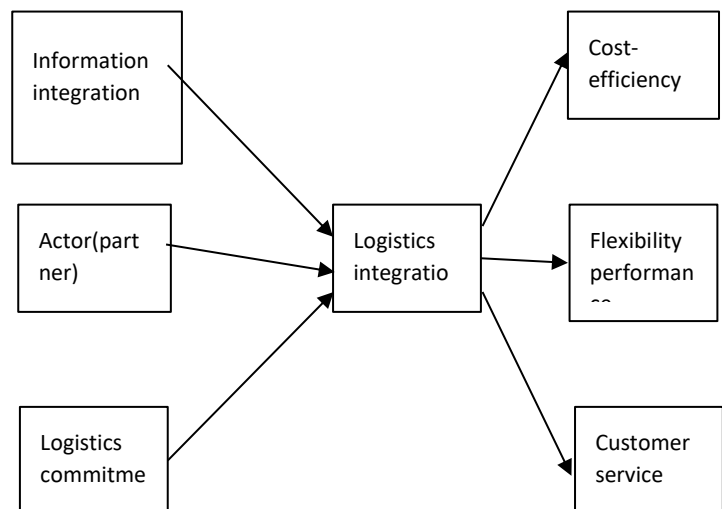


Figure 1. *The conceptual framework of the study*

4.1 Information Integration and Logistics Integration

Information sharing has tangible benefits on logistics integration. Sharing information could lead to improved forecasts and reduced inventory levels [29]. Information integration benefits the organization by enhancing the planning and decision-making processes [30], [31] that leads to an efficient and long-term relationship. These benefits are only achievable

if the information and knowledge are shared at different levels and with members of the supply chain of the organization [32]. The day-to-day logistics activity information (order status, inventory levels, and delivery schedules) sharing will efficiently support improving the capabilities of systematically integrating the logistics [33]. Sharing information on short-term forecasts, production planning, and capacity information will lead to improved logistics integration [34], [35]. Information sharing in the supply chain is defined as the flow of information among the organizations directly, including the upward and downward information flow, from source to the customer [36].

There are many benefits involved in information sharing, such as it helps in reducing the demand uncertainty which further facilitates the organization to optimize its capacity and inventory levels [37] leading to the increased overall performance of the supply chain. The logistics service providers are also benefited from reduced logistics costs if there exists a sound information sharing mechanism and this helps in reducing the overall supply chain costs [38]. Efficient information sharing is considered an important aspect of supply chain management in an organization [30] and this also influences the decision making by partners of the supply chain such as the suppliers, customers, logistics service providers on various macro-environment uncertainties by reducing the logistics cost and improving customer service [39]. New technologies have enabled effective logistics integration capabilities such as digital trading networks, innovative logistics technologies, and warehouse management systems (WMS).

4.2 Actor (partner) integration and Logistics Integration

A key factor in logistics management is the selection of transport mode and carrier for the inbound and outbound movement of goods and services. Mode choice and carrier nomination are the critical factors of the decision-making process in transportation that includes recognizing relevant transportation performance variables, selecting the right mode of transport and carrier, negotiating rates and service levels, and appraising carrier performance [40]. The integration between different logistics service providers on logistics operations is required for

speedy customs clearance, availability of vessel schedule, container booking, joint transport planning, the security of transport, collaboration with SC partners, container stuffing & de-stuffing activities, and cargo booking with shipping lines/air carriers and freight forwarders. These factors are leading to logistics integration capabilities and thereby enhanced SC performances.

The long-term relationships with actors or partners in the supply chain will lead to increased integration and add value to the entire logistics system [26]. They noticed that the long-term relationships with specific customers correlated directly to sales growth and increased profitability. Actor partner integration will increase the logistics capabilities to deliver suitable services, efficiently manage the capacity of sending cargo in the stipulated time, setting up the flexibility to meet customer expectations. Different parties are engaged in logistics activities, which include logistics service providers, transport operators (rail, road, air, sea, barge, and pipeline), shipping lines, port authorities, terminal operators, and custom house agents [41]. According to Fabbe-Costes and Jahre [42], one key element of logistics/supply chain integration is the integration of actors.

4.3 Logistics Commitment and Logistics Integration

Logistics commitment refers to the willingness of one party to commit sustain in the relationship and strengthen the success of an organizational relationship in the supply chain process [43]. The term commitment is defined as partner member intention to continue in the interrelation [44]. Logistics service providers who are occupied in the firm's product distribution function allow the focal firm to centralize on its core competencies rather than focussing on the distribution function [45]. The logistics commitment between logistics service providers is essential for a triumphant outcome for the organization. It is an important factor contributing to logistics integration capabilities by achieving the logistics targets within the stipulated time. Logistics commitment is only possible when members of the distribution network perform their responsibilities.

Logistics commitment generally refers to the maximum effort to maintain a long-term

relationship with supply chain partners [46]. Commitment is considered a vital element to establish long-term working relationships [47]. Logistics commitment is directly related to the attitude of supply chain members towards the sustainable development of an organization [48]. Showing logistics commitment by each partner in the supply chain distribution network leading to the greater capabilities of logistics integration. Ultimately, customer satisfaction can be achieved by delivering the right product with the right quantity and at the right place through the hands of each channel member in the SC network. In the context of logistics outsourcing, logistics commitment is a predominant factor in regulating the advantages of LSP's relationships [49]. When an LSP shows a higher level of faithfulness, its focal firm is likely to have a vigorous intention to keep up the relationship with that LSP [50]. LSP can attain a high level of logistics integration across different SC channel members if an LSP is dedicated to studying each customer's unique requirements.

4.4 Logistics Integration and Cost-efficiency Performance

Logistics integration facilitates by improving the supply chain performance as it helps the members take decisions jointly and in real-time [51]. Logistics integration effectively coordinates between supply and demand and helps in reducing the operational cost across the supply chain [52]. The theory of transaction cost economics observes logistics integration as an alternative approach to reducing the operating cost and minimizing the risks, uncertainties in the future supply chain [23]. Besides the internal integration, the external integration also benefits the organization's supply chain on very crucial aspects of reducing costs and uncertainties. They facilitate the reduction of overall costs by economies of scale, enhancing asset utilization, reducing inventory costs, and reducing the delivery lead time [53].

From the perspective of logistics integration with logistics distributors or 3PL service providers, firms can reduce their logistics and distribution cost while maintaining the potency of their supply chain [23]. Through long-term relationships with supply chain partners, firms decrease the probability of opportunistic behavior and thereby reduce transaction cost and sustain high levels of supply chain efficiency

[54], [55]. Therefore, logistics integration among logistics service providers and focal firms could be considered as an alternative mechanism to improve efficiency and reduce cost, permitting the firm to gain a competitive margin through cost advantage.

4.5 Logistics Integration and Flexibility Performance

Logistics integration leads to increased flexibility both in operational flexibility and in strategic flexibility [56], [57]. The extending coordination between logistics service providers on transportation, equipment availability, vessel schedule, customs clearance, customs duty, and customs inspection, dispatch of material, shipment delivery, and order tracking will help the focal firm's flexible performances in the delivery to end customer. The integration between LSPs and focal firms will provide better information and knowledge on the capacity change of the equipment if the production volume increases as well as or decreases. Therefore, logistics integration makes it possible for the organization to satisfy customers as per the changing needs of customers on product capacity and volumes. Flexibility performance referring to adjustments in the product quantity, capacity in production, and product mixes. The product quantity has a simultaneous impact on the equipment capacity provided by the LSPs.

Customer requirements in the product quantity differ as per the initial and final orders; the production firms would be in a position to meet the customer demands according to the transpose. Logistics integration enhances the flexible performances of the firms and arranging equipment accordingly to meet product quantity changes. Thus, logistics integration contributes to focal firms' flexibility in delivery performances by providing ample resources to reduce supply chain (SC) uncertainty. Organizations face different challenges in the coordination of the physical flow of materials in the absence of logistics service providers. Therefore, logistics integration is inevitable for focal firms to efficiently deliver their product requirements [7]. Logistics integration ensures timeliness and flexibility in delivery as per the customer demands and thereby enhancing the cost reduction and service improvements [4].

4.6 Logistics Integration and Customer Service Performance

Firms with improved logistics service capabilities can better coordinate and collaborate with their supply chain members. This allows focal firms to develop external knowledge on logistics activities through different logistics service providers. With better logistics integrative mechanisms, firms can improve their process efficiency and flexibility in customer service and delivery performances. In an integrated logistics environment, firms mutually share information and knowledge characterized by long-term relationships, open communication, trust, commitment as well as shared risk and rewards. Logistics integration is aimed to align the material flow within the supply chain; this will lead to improved customer service and delivery of the product [52]. Efficient logistics integration provides numerous benefits such as higher quality of products and services, higher level of customer service, and efficient knowledge management mechanisms [58].

Proper coordination between logistics service providers benefits focal firms to reduce delivery lead-time and improve higher quality of service [59]. The coordination of all supporting members in the supply chain leads to highly efficient processes that increase the productivity of the firms. Increased customer service benefits such as clear information about product delivery, reliable service levels, and shorter delivery times. Better exchange of information with logistics service providers on the product delivery reduces the burden of carrying more capital on the inventories. Collaboration and coordination between focal firms and logistics partners in the supply chain enhance order tracking and product delivery [60]. Logistics integration helps the whole supply chain partners in the distribution network to have clear visibility towards the logistical needs and activities to be performed to ensure improved customer service performances.

Table 1 shows detailed information about each proposed factor, variables, and references on logistics integration.

Table 1. *Factors and dimensions influencing logistics integration*

Dimension	Variables	Authors
Information and Communication Integration	Information sharing practices,	[32], [33], [34], [35], [39], [29], [30], [31]
	Collaborative functions	
Actor (partner) integration	Selecting the right transport mode	[40], [26], [41], [42], [33], [29], [30], [31], [43], [44], [45]
	The right choice of carrier nomination	
	Collaboration with channel members	
	Joint transport planning	
	Relationship with channel members	
Logistics commitment	Long term relationship with channel members	[43], [44], [44], [46], [48]
	An attitude of supply chain members	

Table 2 shows detailed information about each proposed factor, variables, and references of supply chain performance through logistics integration.

Table 2. *Factors and dimensions of supply chain performances*

Dimension	Variables	Authors
Cost-efficiency performance	Minimize storage cost	[51], [52], [23], [53],
	Minimize total cost of distribution	[54], [55]
Flexibility performance	Flexibility to adjust equipment capacity in short time	[56], [57], [7], [4]
	Flexibility to adjust on delivery time	
Customer service performance	On time delivery	[52], [58], [59], [60]
	Customer satisfaction	

5 CONCEPTUAL AND THEORETICAL BACKGROUND

The proposed conceptual framework is based on a key aspect of five extended theories: Supply Chain Management (SCM), Resource Dependency Theory (RDT), Transaction Cost Economics (TCE), Resource-Based View (RBV), and Relational View (RV).

5.1 Supply chain management (SCM)

Supply chain management has been considered in various fields such as quality revolution, materials management, and integrated logistics network system [61], [62]. Logistics integration is the perspective based on supply chain management, which is succeeded and applied to make use of the supply chain to provide effective execution and respond to customer requirements.

Perspective on logistics integration and SC performance: Supply chain management theory

emphasizes the coordination and collaboration between the supply chain members in the distribution network to manage the flow of information and material to satisfy the end customer. The supply chain partnership and collaboration between LSP's and focal firms improve the supply chain performance of an organization and thereby meeting customer demand.

5.2 Resource dependency theory (RDT)

Resource dependency theory (RDT) states that organizations are dependent on interconnections and associations with other parties. Based on this theory, managing outward dependencies and resources with supply chain partners can decrease uncertainty due to supply chain disruptions. Considering RDT theory into the field of logistics and supply chain domain, RDT points out that supply chain members need to coordinate and collaborate to ensure greater performance and improvements in the long-term running [63]. This theory states that resource sharing would be one of the core practices to acquire an integrated logistics system. The RDT theory highlights that firms need to carry on and control the inter-organizational relationships in the proceedings of acquiring resources [9]. However, the organization does not have full control over its resources. The survival of an organization is set based on its capability to alleviate environmental uncertainties [17]. Directing the relationships between organizations is considered a tool to reduce power disparity and to manage reliance [64]. The level of dependency has a significant productive influence with the inspiration to establish stronger relationships [65]. Organizations are restricted by social systems from fully achieving desired goals. Therefore, RDT encourages synchronized decisions through integration and collaboration between organizations [66].

Perspective on logistics integration and SC performance: A LSP has a vital role in the entire supply chain process, and any disruption of the LSP's service would lead to a significant impact on supply chain performance [67]. Directing to RDT, the integration between focal firms and LSP's is a fruitful strategy to solve any problems in the supply of logistics services [10]. Integration between organizations and LSP's offers a better extent of certainty, which focal firms need to manage their resources for

logistics purposes [68]. Based on RDT, an SC is a mutual agreement and a long-term relationship throughout the SC process [12]. Integration is established for the whole SC network that is needed wherever resources are scarce in the distribution network [69]. Therefore, the resources are interchanged with organizations to overcome the impact of inadequate resources. Thus, organizations collaborate in the supply chain network to make any uncertainty in their resources more predictable [70].

5.3 Transaction cost economics (TCE)

Rationality and opportunism lead to the transaction cost. The TCE theory points out that transaction costs are important aspects of the supply chain and distribution process and they should be controlled by organizations [71]. TCE theory gives rise to the concept of collaboration activities to alleviate opportunistic behavior. The integration of internal and external resources is one strategy to reduce the imbalance of information [72]. The organization manages the relationships within the department and the external activities through rules and regulations such as incentives, administrative controls, and contracts and synchronized decision-making [73].

Perspective on logistics integration and SC performance: Supply chain integration confronts challenges for the movement of goods and services as well as in the flow of information. Based on TCE's perspective, organizations need an appropriate SC coordination mechanism to improve their SC performances [7].

TCE points out that organizations determine to make or outsource after considering the transaction cost [74]. In the supply chain perspective, each organization has information, with the help of integration, which is a connection to higher resources for efficiently managing information, products, or services [8]. Competition in the market and customer requirements force firms to coordinate with LSP to make cost reductions and service improvements through on-time delivery and flexibility in delivery performances [4]. An LSP can offer value-added service to its customers by integrating outbound and inbound logistics activities [75]. Therefore, logistics integration encourages an LSP and its focal firms to share

available resources to achieve certainty in the supply chain process [9].

5.4 Resource-based view (RBV)

RBV emphasizes that organizations create and maintain a competitive advantage through valuable, rare imperfectly mobile, not imitable, and not substitutable resources. This resource management gives a competitive organizational advantage to organizations [76]. Organizations would not be competitive if other firms have the same resources and there are no restrictions to acquire these resources [77]. Resources are called valuable and rare if a competitive organization does not have these resources [78]. According to RBV, a competitive advantage is created through the internal resource management capability of an organization using a plan of action, which is not processed by its competitors [79].

Perspective on logistics integration and SC performance: RBV emphasizes that every supply chain activity requires resources to be successful in the SC. An organization would not be able to compete with other organizations that do not support it by providing ample resources [80]. In the supply chain, organizations are interdependent and have their resources [81]. These resources can be interchanged in the form of collaboration [82]. In the perspective of RBV, the acquisition of external resources is a kind of strategy to acquire a competitive advantage [83]. RBV points out that SCI is the process of accessing the external resources that are offered in the SC network [84]. RBV assumes that the purpose of integration is to acquire desired complementary resources [85].

5.5 Relational View (RV)

Rational view theory assumes that competitive advantage can be achieved through the distinctive joint contribution of alliance parties in the supply chain. The RV is characterized by its partnerships with other members, exchanges, knowledge, resource, or capabilities. This will lead to reducing the transaction cost through coexisting of assets, knowledge, and capabilities [86]. RV is built on interdependent organizational functions. Interdependency is the core driving force of integration and collaboration activities between organizations [87]. Collaborative activities reduce uncertainty. RV theory points out that network partnership is

a source of knowledge and exclusive assets that are difficult for the opponent to imitate [88].

Perspective on logistics integration and SC performance: LSP plays an increasing role in the development of the supply chain on logistics integration. LSPs offer value-added services such as inventory management, warehousing, customer service, and reverse logistics [89]. LSPs operate based on mutually beneficial services with focal firms as well as channel partners [90]. Collaboration is the keystone of firms and LSPs to improve the quality of their synchronized decision-making skills and sharing the information [91]. Information sharing and joint demand planning will help the organization to achieve integrated strategies. Information sharing is considered as real-time information exchanges that are conducted through mutual trust across the SC members [92].

6 DISCUSSION AND IMPLICATIONS

Logistics integration is the key element in the operational excellence of supply chain management. Logistics service providers have a crucial role in the transport of goods and services from one point of origin to a destination to meet customer demand. A higher level of logistics integration helps to improve the operational efficiency and competitiveness of LSPs in the supply chain distribution cycle. Our study contributes to the literature in different important aspects. In this study, we identified that logistics integration is the core stone for firms to sustain the SC operational performances. We identified factors and dimensions influencing logistics integration. This is one of a few studies that build a conceptual framework and illustrated five theoretical backgrounds. This study leads us to extend the value of logistics integration and supply chain performances by providing a more comprehensive view of the organization's attempts to attain supply chain performances across global supply chains in the three sectors such as cost efficiency, flexibility, and customer service.

Second, in line with the five theories, LSPs and partner collaboration is key for focal firms to overcome operational difficulties. The firms need to join in collaborative SC partnerships with supply chain members to ensure the smooth

functioning of operational challenges in the global supply chain. Moreover, actor (partner) integration mitigates the risk of unexpected supply chain disruptions as described in the conceptual framework. The study results have significant inferences in the current pandemic as well. Unprecedented supply chain disruptions have come to the global supply chain, and many companies have suffered from the consequences of the pandemic outbreak. Some of the companies are partially or completely stopped. As suppliers confront difficulties with production, crucial business operations are stagnant due to the pandemic [93]. The relationship between client firms and logistics service providers is crucial during this time of the pandemic outbreak. LSPs are more required to closely work together with focal firms to achieve end-customer satisfaction

The result of this study will be more helpful for managers and practitioners to efficiently utilize their resources and optimize their supply chain and logistics decisions. First, firms should understand that practices such as joint decision-making, coordinated planning, and collaboration with LSPs and other supply chain members in the distribution network would lead to achieving more competencies. Since logistics service providers are the backbone of focal firms in the operation industry, they need to realize the facts and dimensions, which are contributing to logistics integration capability in the supply chain. This research will be a base for more studies related to actor (partner) integration since there are not many studies in this domain.

The study put forward the importance of logistics integration throughout the supply chain process. LSP has the ultimate power to offer a wide range of equipment and services to their customers such as inbound and outbound logistics. Logistics integration helps to manage interdependencies and integrate SC activities. Suggested theories from the literature recommend that integration between logistics service providers and focal organizations overcome dependency problems by providing logistics services. By outsourcing external logistics services, a focal firm acquires complementary capabilities and expertise. The study revealed that collaboration between organizations and SC partners is the key strategy that firms need to adhere to to boost up the quality of their decision-making skills and

service performances. Logistics and supply chain managers should target logistics integration to adhere to their business strategy.

The organization is benefitted from integrated logistics by improved customer service, such as clear communication and information about products and services, reliable service levels, and arranging delivery within a short period. Integrated logistics functions would help the firms to improve their cost savings through more efficient use of logistical resources and more efficient use of company resources. Optimization of the logistics network is feasible through an integrated logistics network and thereby resulting in optimal product flow and simplified administration of documentation. Logistics integration contributes to the standardization of global logistics processes such as proper use of information technology systems, the periodic inspection of the supply chain, integration between information technologies, and the advanced integrated cloud computing for better track/creation of logistics movements. Integrated logistics would be helpful for improved picking of goods in warehouses, packing of goods, and speed up the dispatch procedures.

End-to-end logistics service is possible via enhanced logistics integration. The logistics service providers do all the custom-related activities on behalf of manufacturers. Thus, logistics integration will alleviate the pain of logistics/ supply chain managers regarding customs inspection, bill of entry filing, customs clearance, customs duty procedures, and getting the duty refund for some of the customers. Integrated logistics management is a technique that uses different sources to fulfill the demand of the customers in time. The effectiveness of a logistics integration system from strong participation of management. A well-structured logistics integration system requires proper management and collaboration with logistics partners. Logistics integration contributes to rapid responses, minimum variances, minimum inventory, consolidated movements, etc.

Integrated logistics bring together all the activities of internal and external organizations into one process or one activity. Thus, leading to more efficient customer service at the lowest total cost. The organizations and logistics/supply chain managers will benefit from integrated logistics by providing enhanced

logistics functions such as forecasting, planning, organizing, control, and operations management of information and physical flow of products, from product development to delivery, production, and distribution of final customers to meet the customer demand at the lowest cost. The ultimate aim of logistics integration is to increase productivity. The competitiveness of a firm highly depends on the efficiency of logistics integration, functions and activities, and logistics practices in terms of customer satisfaction. In this study, logistics integration and collaboration with SC members facilitates the overall movement of goods and services initiating from the raw material supply, movement of goods within the organization, and physical distribution of goods from finished goods inventory to end customers through logistics service providers.

In terms of logistics integration, logistics and supply chain managers should focus on cost efficiency, flexibility, and customer service performance. Based on the findings of this study, logistics integration has the most significant effect on a firm's supply chain performance. This suggests that investments in practices such as synchronized decision-making, collaboration, and coordination with LSPs enhance the firm's competitive position. Outsourcing warehouses or any other logistics activities may not guarantee superior performance. It is only through the logistics chain integration process that firms could enhance their competitive edge.

7 CONCLUSION

In this study, we discussed the effect of logistics integration on a firm's SC performances. Our findings suggest that logistics integration has a significant effect on a firm's competitiveness. Firms could enhance their SC performances through effective logistics integration in inter-organizational processes across logistics and supply chain activities. Logistics integration is the driving force of a firm's competitiveness in supply chain practices. In this regard, focal firms should align their logistics/supply chain practices with enhanced logistics integration procedures to ensure that they can maintain their excellence in operations. In this study, we focus that focal firms' need to assure efficient and effective collaboration with LSPs to achieve SC

operational excellence in the competitive global supply chain.

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