

# Improving of Organizational Performance Using Lean Supply Chain Management Practices: The Mediating Role of Supply Chain Collaboration

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## **Abstract**

**Purpose** - Surviving in the face of growing globalization, competition and rapid changes in consumer expectations would mean that, firms have to adopt modern business strategies that are flexible and capable of sustaining performance improvements among firms. The aim of this paper is to establish the effect of lean supply chain management (LSCM) approach on performance improvement among firms through the influence of supply chain collaboration (SCC).

**Design/Approach/Methodology** - This conceptual paper recommends an inclusive model that incorporate LSCM and SCC dimensions as well as organizational performance, underpinned by theories such as the Dynamic Capabilities (DCT) and Relational View (RV). The proposed model is to establish the direct and indirect effects of LSCM approach on firms' performance through the influence of SCC (intra and inter firm) dimensions in the manufacturing context, as the main goal of LSCM implementation which will subsequently lead to improvements in organizational performance.

**Originality:** The study effectively combines the DCT and RV to develop a comprehensive model involving the three broad operations and supply chain management concepts. Though there may be similar studies on LSCM practices among manufacturing firms, limited studies have explored similar model or work has limited discussion especially on exploring the mediating roles of individual dimensions of SCC in the LSCM practices – organizational performance among manufacturing firms. This is a novelty as it provides deeper insights on the mediating effects of each dimension of SCC in the relationship between LSCM practices and organizational performance. The proposed theoretical model will serve as a potential blueprint for the successful implementation of LSCM practices.

**Keywords:** Lean supply chain management (LSCM) approach, Organizational performance, Supply chain collaboration, Dynamic Capabilities Theory (DCT), Relational View (RV)

## 1. Introduction

Today's manufacturing is been termed as an evolving one. This is because, it is seen as an activity that focuses on production with much emphasis on complex forms of processes; demanding the combination of ideas and capabilities within and outside firms' supply chain to meet the changing trends in the market (Ebrahimi, Baboli & Rother, 2018). Currently, many firms have realized that, compliance alone in regulatory requirements without the adoption of modern business practices might not secure them adequate stay in today's competitive markets due to increased globalization, rapid changes in customer expectation and technologies (Pradabwong et al., 2015). Adopting modern business strategies such as lean supply chain management (LSCM) practices can enable firms' response to customers demand for products i.e. can enhance firms' competitiveness through improvements in their operations and performance (Nimeh, Abdallah & Sweis, 2018). LSCM practice ensures the direct linkage of upstream and downstream in the flows of products, services, information, and funds and collaboratively work to minimize cost and waste by efficiently producing at the demand of the customers (Vitasek et al., 2005; Nimeh et al., 2018). Additionally, enhancement of the manufacturing supply chain management (SCM) system has become very necessary due to the dynamism of market environment (Colin, Galindo & Hernández, 2015). Current literature recommend that, firms have to look at their SCM and develop collaborative practices within and outside as an avenue to improve their systems' flow, removing non-added adding activities and increase their knowledge and creativity to aid improvements in performance (productivity and product that meet customer expectations) (Ashok, Narula & Martinez-Noya, 2016). Despite the number of studies that cited LSCM practices as a frontline activity with respect to performance improvement across industries, nonetheless, LSCM practices adoption among firms still remain in its embryonic stages; as few studies in academia and among practitioners in this area have been recognized. Furthermore, there have been a number of unsolved issues of LSCM compared to other manufacturing practices which, if not properly tackled, could affect performance improvements among firms (Perez et al., 2010; Manzouri et al., 2014). Limited systematic literature reviews exist to synthesize knowledge across the studies that have been done. Therefore, the aim of this conceptual paper is to review LSCM using dynamic capability and relational view theories in establishing its effect on organizational performance through the influence of supply chain collaboration (SCC).

## 2. Review of Literature

### 2.1 *Effect LSCM on Organizational Performance*

The concept of LSCM was initially identified in the Japanese automobile industry as an integral part of the just-in-time delivery system (Shingo, 1988). The success of the Japanese automobile firms became a center of attraction for the western researchers as they wanted to understand the practices that needed to achieve excellence in manufacturing operations (Jasti and Kurra, 2017). Lean philosophies and practices gained popularity in the 1990s, however their application in the SC attracted much attention few years back according to Ugochukwu et al., (2012). The extension of lean philosophies and processes to the SC may be linked with the publication of the book “Lean Thinking” by Womack and Jones (1996), which support lean application through the SC. Lamming (1996) stated that, LSC is an arrangement which should provide flow of goods, service and technology from supplier to customer without waste, thus the effective adoption of LSC is possible with close relationships, open information systems and trust among SC partners. The primary objective of a LSC is to get access to communication data on inventories, capacities, and delivery plans and fluctuations, within the framework of just-in-time (JIT) principles (Womack et al., 1990).

Previous studies have mentioned that different LSCM practices such as just in time (JIT) (Hartono, Astanti & Ai, 2015), total quality management (TQM) (Perez et al., 2010), people involvement (Manzouri et al., 2014; Vlachos, 2015) and information technology (IT) (Zhou, 2016) can enhance firms’ performance such as productivity, transfer of high-quality products within a short time frame and maximize firm survival in the market (Tortorella, Miorando & Cawley, 2019). For example, JIT as a practice of LSCM has attracted lot of concerns among practitioners and researchers. Nimeh et al. (2018) posit that JIT as workflow practice it aims at decreasing the flow times within production systems, and response times from suppliers and to customers, therefore its likely to reduce waste in inventory and improve organizational performance (Belekoukias et al., 2014; Shah & Ganji, 2017). However, there has been conflicting opinion among researchers about its applicability in developing countries especially where the process, product, supply chain and market characteristics are significantly different from discrete repetitive manufacturing (Belekoukias et al., 2014; Stuchly & Jasiulewicz-Kaczmarek, 2014).

Additionally, TQM adoption by firms is to increase firms’ competitiveness by improving productivity, reducing cost and delivering products based on customer fulfilment in the marketplace (Psomas et al., 2014; Banuro, Ntiri-Amponsah & Banuro, 2018). However, there have been lots of debate among researchers and professional as to whether TQM is a great quality phenomenon or a terrible quality malpractice, despite the number of studies that have tackled the practical implications of TQM on an increasing range of firms’ operations. Further studies could help provide a common understanding as to which methods and tools could be used to support constant improvement and improve the quality scoring of firms (Banuro et. al., 2018; Bhatia & Awasthi, 2018).

More so, prior research on operations strategy suggest that people involvement (top management commitment and support as well as employee empowerment and participation) can positively affect organizational performance (Longoni & Cagliano, 2015). However, people involvement has been one of the LSCM practices that researchers and practitioners tend to lose sight of (De Brandao & Michael, 2011). Yang (2012) content that firms that adopted LSCM practices tend to focus more on lean tools and techniques while neglecting people and principles. Therefore, Manzouri et al. (2014) campaign that employees

training and involvement, team decision making and cross-functional activities should be deemed important by top management in LSC implementation as it can affect quality systems. Further, Karim and Arif-Uz-Zaman (2013) call for the creation of formal “improvement teams”, which should be responsible for lean principle and practice training and education to empower employees with the needed knowledge and experiences to be able to be attuned with the market environment and offer their support alongside that blueprint (Raman et al., 2013).

Furthermore, there has been growing argument that rapid development of IT can accelerate effective LSCM practices (Tortorella et al., 2019); information sharing between business functions in a SC. IT is essential and provides internal and external (supplier and customer) linkages on which performance can be improved, yet implementing such strategy remains scant among firms, especially, from emerging economies (Ye & Wang, 2013).

## *2.2 SCC and Its Effect on Organizational Performance*

As firms seek to increase their performance (productivity, product quality and market share) in today’s dynamic market environment, they frequently seek collaborative efforts of both internal and external SC partners (Rahbari and Jalali, 2016), as efficient SCC places vital resources of all cooperative partners together and connects all functional processes in order to effectively use these resources (Zhang et al., 2015). According to Liao et al. (2017), collaboration signifies a state where more than two partners work together with the purpose of concluding tasks and ultimately attaining mutual objectives. SCC has been defined by Whipple et al. (2010) as a long term relationship where individuals liaise, share information, and work together to strategize and even adjust their business processes to mutually enhance their performance. SCC can be grouped into internal and external.

Internal collaboration is referred to as the degree to which firms arrange their own structures, approaches, practices and processes into a collective, synchronized processes, in order to realize their customers’ requests and proficiently interact with their suppliers (Cespedes, 1996; Flynn et al., 2010), whereas external collaboration explains a firm’s cooperation with or extension of firms’ operations to external chain partners such as customers and suppliers (upstream and downstream members) to jointly streamline processes through sharing of vital information, knowledge as well as collaboratively communicate to improve performance (Cao and Zhang, 2011; Nimeh et al., 2018). SCC collaboration ensures smooth communications, and sharing of transactional and strategic information within and outside the firm (Durugbo, 2014), leading to generation of more ideas, enabling firms to be ready to take actions toward opportunities of the market (Kim and Chai, 2017). Wong et al., (2015) affirmed that inter-firm collaborations such as information and knowledge exchange permit firms to respond quickly to market expectation through increased speed of development and heightened responsiveness to customer needs. However, inadequate competences and skills among SC partners can perhaps deteriorate the power of the relationship (van Hoek & Wagner, 2013; Sohal 2013). For instance, Nix and Zacharia (2013) postulate that collaborative engagement has a direct effect on knowledge gained, operational performance and relational outcomes. Kim and Chai (2017) study revealed a positive relationship between internal and external chain integration on firms performance as avowed by Yuen and Thai (2017) although internal and external collaboration differ with respect to the product and service SC. Nevertheless, Qi et al (2017) contend that supply chain integration (SCI; internal and external), on firm performance is more significant with external collaboration than internal collaboration. Therefore to overcome competition in this current business environment, firms have to effectively and efficiently integrate internal functions

and relate them with the external operations of SC members to enhance organizational performance.

### *2.3 Mediating Effect of SCC on LSCM Practices and Organizational Performance*

Studies have revealed that information and knowledge on demand such as real-time demand, point-of-sale information and understanding of market trends, customers' value as well as product information (product designs and documentation) and supply information consisting of quality, inventory levels, lead times, schedules, delivery and shipment specifications, and transportation and production capacities etc., which constitute operational and process capabilities that can assist firms to improve their performance are influenced by SCC (Flynn et al., 2010; Feyissa, Sharma and Lai (2019)). Thus, firms' operations and strategies towards improvements drive on the full cooperation and collaboration from intra and inter-firm SC members in areas such as bi-direction communication, information sharing and knowledge sharing (Ardito et al., 2018; Yu et al., 2018; Savino, Messeni Petruzzelli, & Albino, 2017). Linking SC collaborative practices on just-in-time, total quality management, people involvement and information technology have been tremendously associated with firms' performance and survival in a dynamic market (Wakolbinger & Cruz, 2011; Cao & Zhang, 2011; Xian, Sambasivan & Abdullah, 2018). For instance, studies have suggested that LSCM practices such as JIT system positively affects organizational performance through efficient and effective information sharing and communications in the production stream (Azim, 2018), TQM and firm performance is significantly influence by SCI (Thai & Jei, 2018), IT is positively associated with firm performance through SCI, as integrative IT does not have a positive correlation directly with firm performance (Kim, 2017) whiles Alfalla-Luque et al. (2014) study declare a significant relationship between employee commitment and organizational performance as well as fully mediation of supply chain integration. Although the benefits of implementing LSCM has been identified in existing literature, however, its effect on organizational performance with SCC as mediator among manufacturing firms remains limited. Therefore LSCM practices will need business model, which call for improvement as a result of cooperation rather than bargaining or imposition of power over SC partners (Chiromo et al., 2015; Sambasivan et al., 2013).

### *2.4 Theoretical Model*

Ordinarily, most firms only pay attention to performance pertaining to the internal processes without relating these processes to external chain practices such as the market, which make it difficult for them to survive (Frigo, 2003). Firms' access to information and knowledge about competition and changes in the market can strengthen their capabilities to perform effectively and efficiently leading survival (Daneshgari & Moore, 2016). A strong dynamic capabilities (DC) should encourage firms to contest competitors that highlight on efficiency over enhancement, overlook (or are ignorant of) changes in customer expectation or fail to empower workforce and actors of change. DCT stresses on the need for collaborative effort; realigning and configuration of both internal and external resources and competencies to achieve that (Teece, 2017). For instance, Kulkarni et al. (2014), argued that, firms should be able to blend important lean tools and work study methods in a useful framework to improve their performance (productivity). This has been affirmed by Yash and Sohani, (2019) who believed that, productivity improvements rest on firms' capabilities to implement LSCM practices in an integrative manner. More so, Shah and Ganji (2017) cited that LSCM impact on the performance of organizations by dropping and averting quality deficiency thus making room for quality improvements. Performance improvement such as growth in the market share, quality and productivity provide some evidence that, lean and DC are closely linked;

and that lean companies should consciously or otherwise, employ strategies that co-ordinate their competences to deliver customer value and attain competitive advantage (Parry, Mill & Turner, 2010).

Additionally, firms operating with the urge to fulfil the current and future market expectation, will need to balance internal process with external chain process i.e. to jointly search for an inflow of knowledge originating beyond their boundaries to supplement and renew firms' internal knowledge base, with the ultimate aim of improving firms' performance (Pradabwong et al., 2017 Messeni Petruzzelli, & Albino, 2017). Supply chain collaborative relationship can be a major source of companies' improvements and competitive advantage through process efficiency, flexibility, business synergy, quality, and innovation. The RV identifies that, vital performance-enhancing resources that stem from SC partnerships and alliances embedded within cross-firm processes and activities such as information integration, joint knowledge creation and collaborative communication (Dyer & Singh, 1998; Cao & Zhang, 2011). Thus firms jointly searching, acquiring and assimilating new and relevant information and knowledge about customer needs, discoveries new of or emerging markets, learn the intentions and capabilities of their competitors, anticipate demand visibility and involvement of their SC in their product and process development to enhance performance and to meet market expectation (Cao & Zhang, 2011; Iyer, Srivastava, & Rawwas, 2014).

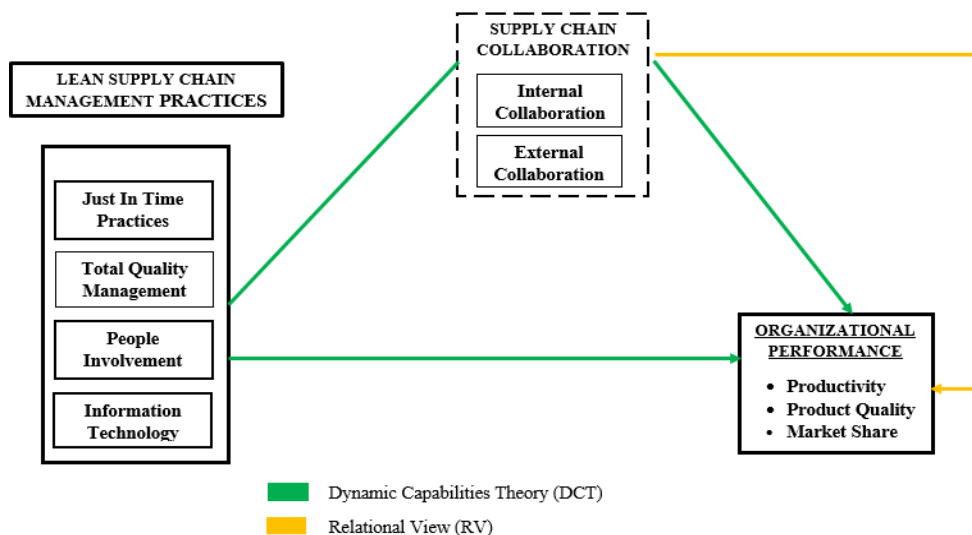


Figure 1. Theoretical Model

### 2.5 Dynamic Capabilities and Relational View Theories

According to Teece (2007) and Teece et al. (1997), the dynamic capabilities theory (DCT) is derived from the resource-based view (RBV) (Barney, 1991, 2001; Wernerfelt, 1984, 1995), a theory of competitive advantage that postulate that a firm derives competitive performance by acquiring and assembling idiosyncratic resources that are valuable, rare, inimitable and non-substitutable (VRIN). Theoretical advances have since extended the RBV to what is referred to as the dynamic RBV, suggesting that firms can develop improvements that secure competitive edge, if they can match their strategic resources to changing market conditions (Helfat & Peteraf, 2003), which include capabilities such SCM and SCC or SCI and performance of firms being influenced by market turbulence (Forkmann et al., 2018). The DCT, by extending this notion further, offers explanation as to how firms can attain and retain improvements and competitive edge under conditions of instability (Teece, 2012). It is

assumed that through dynamic capabilities (DC), firms will be able to extend, modify and reconfigure their resource base, which are heterogeneous across firms and firm specific (Peteraf, Di Stefano, & Verona, 2013).

Additionally, the relational view (RV) theorizes collaboration as a means of building new capabilities and creating relational rents (Dyer & Singh, 1998). Specifically, the RV posits that firms will engage in collaborative relationships if they believe that their capabilities will attain and sustained better performance, create efficiencies and synergies through long-term alliances and mutually beneficial relationships (Madhok & Tallman, 1998; Cao & Zhang, 2011). More importantly, if it is assumed that performance enhancement outcomes will be accumulated from such relationships that cannot be achieved by parties in isolation (Dyer & Singh, 1998; Sambasivan, 2009). For instance Cao and Zhang's (2011) theoretical framework on SCC (internal and external) suggests that collaboration in areas such as information sharing, collaborative communication and joint knowledge creation are critical to firms performance. Therefore to obtain these advantages, partners must incorporate human and technical resources without the burden of financial ownership (Iyer, Srivastava, & Rawwas, 2014). The alignment between LM and SCM as DC aims at improving the delivery of value to customers through systems such as JIT, TQM, people involvement and IT based on information and knowledge sharing to effect decision making. This leads to the reduction in or elimination of the all types of wastes in connection with SC; through the involvement of all chain participants in the process of value creation by developing a close collaboration within and outside a firm's SC. Further, the study theoretically puts forward a combined practices of SCC from a relational view and examine its effect on operational performance of firms.

### **3. Discussions**

The performance of every organization is very perilous since it serves as the basis on which the organization can make decisions, choose operational strategies and convert these strategies into desirable outcomes and behaviours as well as improvements in the organization (Silvestro, 2014). Quantifying the performance of an organization is very imperative, because through that, the organization is able to identify its success in term of monitoring progress, giving feedback and meeting customers' needs, bottlenecks, waste and enhancement openings, and assisting for a more open and clear communication process (Teeratansirikool et al., 2013). For instance, Jin, Fawcett, and Fawcett (2013) state that performance of an organization determines whether it is meeting the current needs and expectations of its customers with respect to the amount resources available that enable it to be in competition with its rivals. Performance of an organization is termed as an indicator with which a firm outlines and evaluates the progress towards its business goal (Parmenter, 2007) and can be categorized in terms of operations and firm wise. Operational performance measures the expectations of consumers or customers of a firm with respect to achieving satisfaction, providing value to customers, retaining customers, and attaining a desired market share (Gupta and Malhotra, 2013; Payne and Frow, 2014) or use of key indicators such as productivity, quick response to market changes, timely delivery, product quality, flexibility, unit manufacturing cost, lead time, scrap and rework cost, waste reduction (Shah and Ward 2003; Angus and Hajinoor, 2012; Bortolotti et al., 2015; Shrafat and Ismail, 2018). On the other hand, organizational performance is denoted by firms' effectiveness and efficiencies in conducting their operations in order to achieve their best throughput (Busse, 2016; Rajab, 2014) and firm's ability to achieve its financial and non-financial performance (market) (Li et al., 2006; Qrunfleh and Tarafdar 2013). Financial performance sometime focuses on cash

flow, profitability, returns on investment, returns on sales and liquidity (Broccardo, 2014; Stock and Reiferscheid, 2014) whereas market performance includes market share, sale and revenue growth, profitability, competitive advantage (Kumar and Nambirajan, 2013; Valmohammadi, 2017). Ordinarily, most firms only pay attention to performance pertaining to the internal processes without relating these processes to external chain such as the markets which make it difficult for them to survive (Frigo, 2003). Firms' knowledge about competition and changes in the market can strengthen their capabilities to perform their activities effectively and efficiently (Daneshgari and Moore, 2016). Therefore, a strong dynamic capabilities (DC) should encourage firms to contest competitors that highlight on efficiency over enhancement, overlook (or are ignorant of) changing customer expectations or fail to empower workforce and actors of change. DCT stresses on the need for collaborative effort by realigning and configuration of both internal and external resources and competencies to achieve that (Teece, 2017). For instance, Kulkarni et al (2014), argue that, firms should be able to blend important lean tools and work study methods into useful framework to improve their performance (productivity). This has been affirmed by Yash and Sohani, (2019) who believed that productivity improvements rest on firms' capabilities to implement LSCM practices in integrated manner. More so, Angus and Hajinoor (2012) reveal a connection between LSCM product quality and business performance (market share) as Shah and Ganji (2017) cited that LSCM impact on the performance of organizations by dropping and averting quality deficiency thus making room for quality improvements. Keitany and Riwo-Abudho (2014) and Yang et al. (2011) have also affirmed that increase in market share or value can be attributed to LM implementation by most firms. Performance improvement such growth in market share, quality and productivity provides some evidence that lean and dynamic capabilities are closely linked; and that lean companies should consciously or otherwise, employ strategies that co-ordinate their competences to deliver customer value and attain competitive advantage (Parry, Mill and Turner, 2010).

#### **4. Conclusion**

The effect of LSCM on improvement of organizational performance through the influence of SCC which is underpinned by the dynamic capabilities theory as well as the relational view can be cemented through empirical studies. In view of this, a research has been taken in effect to examine the effect of LSCM practices on improving organizational performance. As a work-in progress, the study nearing its completion with data collection and analysis. The outcome of this research will be documented and reported accordingly. The implications of the study will be viewed from the theoretical and practical perspectives. Theoretically it will assist researchers have diverge response to paucity empirical studies on the implementation LSCM in the manufacturing firms especially those in the emerging economies whiles practically it is to equip managers with sound knowledge and skills to identify individual LSCM practices that are appropriate for easy transformation by reassessing their operations and processes. The essence is to assist practitioners to appreciate the relevance of developing and matching their resources and capabilities towards enhancing their firms' activities to improve performance and at the same time gaining survival in unpredictable market.



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