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Research Article

Impact Of Lean Supply Chain Management Strategy On Supply Chain Performance And Organizational Productivity

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Abstract

This study aims to determine the effect of the lean strategy of supply chain management on supply chain performance and supply chain performance impact on organizational productivity. The primary data collection instrument used was a questionnaire administered to a total sample of 200 managers from the Indian manufacturing industry from various segments, including purchasing, manufacturing/production, distribution/logistic, SCM, transportation, material, and operation. The convenience sampling method was used to pick the samples. Mean, logistic regression and correlation between independent and dependent variables were used to examine the data. Statistical techniques such as reliability and validity were used in the studies. According to the findings, the lean supply chain management strategy has a statistically significant connection with supply chain performance and, therefore, corporate productivity. Lean management strategy, on the other hand, is a strong predictor of organizational productivity.

Keywords: Lean Supply Chain Management Strategy, Supply Chain Performance, Organizational Productivity.

Introduction

Supply chain management has evolved into a critical component of organizational competitive advantage. The management of supply chain research focuses on optimizing the firm's total Value by optimizing resource use and deployment throughout the organization. A supply chain is a collection of value-adding operations that link an organization's suppliers and consumers. The supply chain activity concept is as follows: receive input from suppliers – add Value – deliver to consumers Levi et al. (2004). A supply chain comprises all the parties engaged in satisfying a consumer request, whether directly or indirectly. Manufacturers, suppliers, transporters, warehouses, retailers, and even consumers are all part of the supply chain. The supply chain encompasses all functions inside an organization, such as a factory, that are involved in receiving and fulfilling a client request. These responsibilities include new product creation, marketing, operations, distribution, financing, and customer support, among others (Chopra and Meindl, 2007).

Effective supply chain management is critical for businesses to develop and maintain a competitive edge in their products and services. According to Gunasekaran and Ngai (2004) and Sufian (2010), the performance of supply chains is affected by the management and integration of critical information elements. Businesses must use information technology to integrate their supply chains effectively (Handfield and Nichols, 1999); Sufian (2010). According to Brandy berry et al. (1999), businesses may manage the flow and effect of many supplies chain dimensions such as quality, cost, flexibility, delivery, and profit by using information technology. Byrd and Davidson (2003) discovered that information technology influences the efficacy of supply chains. They said that the advancement and sustained use of information technology improves company performance in terms of return on investment (ROI), return on equity (ROI), and market share. Vickery et al. (2003) shown that integrating information technology enables supply chain coordination and integration, which has a direct effect on a firm's financial performance. According to Sufian (2010), supply chain management strategies must support business strategies in order to achieve a competitive advantage and improved performance. The purpose of this study is to determine the effect of supply chain management strategies such as lean supply chain, agile supply chain, and hybrid supply chain on supply chain performance. Additionally, this research examines the impact of supply chain management techniques on supply chain performance in terms of strategic supplier partnerships, customer relationships, and information sharing. The following is the organization of the paper. After reviewing and synthesizing pertinent literature, a conceptual model is developed, followed by the research technique. The findings are then discussed. Finally, the conclusion and implications are addressed.

Lean Supply Chain

Lean supply chain management is the application of Lean Thinking to the supply chain from beginning to finish. Traditionally, lean manufacturing was practised inside a manufacturing enterprise's four walls - from the receiving dock to the shipping dock and everything in between. Lean Supply Chain Management extends the application of Lean upstream into supplier management, downstream into distribution network management, and upward into the supply chain's overall integration and management.

The emphasis of Lean supply chain management is on the persistent removal of non-value-added time and subsequent decrease of lead time at every stage of the supply chain, from supplier production of raw materials through end-user delivery of completed products.

A lean supply chain is one that prioritizes providing Value to consumers while identifying and reducing waste—anything that does not contribute to that Value. Being nimble and responsive, on the other hand, means that your supply chain can deal with unpredictability—as well as a continuous influx of new, creative products—quickly and effectively.

Literature Review and Hypotheses

The purpose of this study was to evaluate the influence of lean supply chain management strategy on supply chain performance and the effect of supply chain performance on organizational productivity. Three ideas needed to be examined within two goals in order to get a better grasp of them. These concepts are as follows: (1) lean supply chain management strategy, which encompasses Lower Inventory Cost, Elimination of Waste, Increased Productivity and Flexibility, Quality Improvement, Reduces Production Cost, Timely Delivery, Reduction in Purchase Cost, Collaborative Supplier Relation and Lower Forecasting Dependency (2) organizational productivity which include increased sales and revenue. Supply chain management has become more critical in today's competitive corporate environment. To compete effectively at the supply chain level, businesses must have an effective supply chain management plan. The plan must integrate and coordinate activities throughout the supply chain in order to maximize the performance of supply chain participants (Green Jr. et al., 2008; Cohen and Roussel, 2005; Wisner, 2003). According to Mason-Jones et al. (2000) and Lewicka (2011), supply chains must choose a strategy that is tailored to their specific product and market. Fisher (1997) said that the first stage in creating a supply chain strategy should be to examine the nature of the demand for an organization's product, which may be functional or inventive.

Vonderembse et al. (2006) examined the three distinct supply chains required to support three distinct product types: standard, innovative, and hybrid. They show that basic goods, which are often straightforward with little difference, should be manufactured using a lean supply chain. Continuous improvement efforts are made in a lean supply chain, with the goal of reducing waste across the supply chain. On the other side, creative goods that may include novel and sophisticated technologies need a flexible supply chain. Agile supply chains are dynamic and adaptable across companies in response to quickly changing global marketplaces. Hybrid goods, which are complicated in nature, may need a range of supplier connections, which they refer to as hybrid supply chains. To fulfil the requirements of complex goods, hybrid supply networks integrate the characteristics of lean and agile supply chains. According to Towill and Christopher (2002), supply chain methods may be classified into three categories: agile supply chains, lean supply chains, and hybrid supply chains. A case study was included in their research to demonstrate how a lean and agile supply chain may be effectively integrated to create a lean/agile supply chain approach dubbed "hybrid" or "leagile" supply chain. Naylor et al. (1999) define "legality" as the process of integrating lean and agile paradigms via the deployment of a supply chain decoupling point. As such, they use a personal computer business as an example of how agility and leanness may be effectively integrated inside the supply chain to fulfil consumer needs.

The conventional domain of information systems strategy is to increase an organization's efficiency and effectiveness (Bakos and Treacy, 1986 cited in Sufian, 2010). Earl (1989; Sufian, 2010) suggested that

the strategy for information sharing should be derived from the company strategy. This implies that information technology should support the implementation of the company plan (whatever it is) and assist in achieving its objectives.

Supply chain management techniques are a collection of ideas and practises that integrate successfully with suppliers, manufacturers, distributors, and customers in order to enhance the long-term performance of the company and its supply chain (Chopra and Meindl, 2007; Tseng 2010). Supply chain management practises are described in this research as a collection of management actions aimed at enhancing supply network performance (Li et al., 2006; Wong et al., 2005; Zhou and Benton, 2007; Koh et al., 2007; Sufian, 2010).

Strategic supplier partnerships need improved coordination between the company and its suppliers; businesses often have long-term relationships with value-adding suppliers. A strategic supplier partnership is defined in this study as a long-term relationship between an organization and its suppliers that has an impact on the strategic and operational capabilities of the individual participating companies, thereby assisting them in achieving significant ongoing benefits (Li et al., 2005; Li et al., 2006; Monczka et al., 1998). A strategic supplier relationship entails purchasing products and services from suppliers and influencing their system and operational skills in order to create Value and improve supply chain performance (Monczka et al., 1998; Sufian, 2010).

According to Li et al. (2006), customer relationship management encompasses the full range of activities used to address customer complaints, develop long-term relationships with consumers, and increase customer satisfaction. Vickery et al. (2003) highlight the significance of developing a strong customer connection as a key supply chain integration strategy in order for businesses to react more quickly to consumers. Li et al. (2005) stresses the critical nature of information exchange in SCM practice. The fundamental tenet of supply chain management is information exchange within supplier networks (Moberg et al., 2002). By exchanging information with supply chain partners, a company may react more rapidly to changing consumer requirements (Li and Lin, 2006).

Supply chain integration refers to the degree to which an organization's operations, suppliers, and consumers are connected (Stevens, 1990; Stock et al., 1998; Stock et al., 2000; Narasimhan and Jayaram, 1998). Integration of the supply chain entails efficient communication among all supply chain participants (Turner, 1993). Customer responsiveness is inextricably linked to information; therefore, it is critical to make effective use of information in order to achieve customer responsiveness. To bolster this claim, Daugherty et al. (1995) discovered a favourable correlation between information availability and customer response, which resulted in improved company performance. Customers drive the need for flexibility; they want choice, quality, competitive pricing, and expedited delivery. This has compelled businesses to make rapid design modifications and react more rapidly to consumer demands in order to maintain their competitive edge. As a consequence, businesses must be adaptable to changes in consumer expectations (Aggarwal, 1997).

This research investigates the association and impact of lean supply chain management strategy on supply chain performance and organizational productivity

Research Objectives

I. To assess the impact of lean supply chain management strategy on supply chain performance.

II. To assess the association and impact of lean supply chain management strategy on organizational productivity.

Research Hypotheses

I. H_{01}: Lean supply chain management strategy does not have impact on supply chain performance.
II. H_{O2}: Lean supply chain management strategy does not have association with supply chain performance.
III. H_{O3}: Lean supply chain management strategy does not have impact on organizational productivity.
IV. H_{O4}: Lean supply chain management strategy does not have association organizational productivity.

Research Methodology

The main data collection instrument used was a questionnaire, which was administered to a total sample of 200 managers from the Indian manufacturing industry from various segments which include purchasing, manufacturing/production, distribution/logistic, SCM, transportation, material, and operation. The convenience sampling method was used to pick the samples. Mean, logistic regression and correlation between independent and dependent variables were used to examine the data.

Data Interpretation and Analysis

Model Fit Measures

Model	R	R^2
1	0.841	0.707

R Valve of (.841) shows positive association between independent variable i.e. Lean supply chain management strategy and dependent variable, supply chain performance. And **R^2** Value (0.707) shows that independent variable i.e. Lean supply chain management strategy explains the dependent variable 70% i.e. supply chain performance, there are other factors too having impact on supply chain performance.

Omnibus ANOVA Test

	Sum of Squares	df	Mean Square	F	p
Supply Chain Performance	45.1	1	45.1432	479	< .001
Residuals	18.7	198	0.0943		

Note. Type 3 sum of squares

Model Fit Measures

Model	R	R^2

Model Coefficients - Supply Chain Performance

Predictor	Estimate	SE	t	p
Intercept	0.3912	0.06630	5.90	< .001
Lower Inventory Cost	0.1419	0.01867	7.60	< .001
Elimination of Waste	0.1728	0.02344	7.37	< .001
Increased Productivity and Flexibility	-0.0201	0.01885	-1.06	0.289
Quality Improvement	0.1457	0.00941	15.49	< .001
Timely Delivery	0.1827	0.02212	8.26	< .001
Reduction in Purchase Cost	0.1477	0.01932	7.64	< .001
Collaborative Supplier Relation	0.1199	0.01724	6.96	< .001

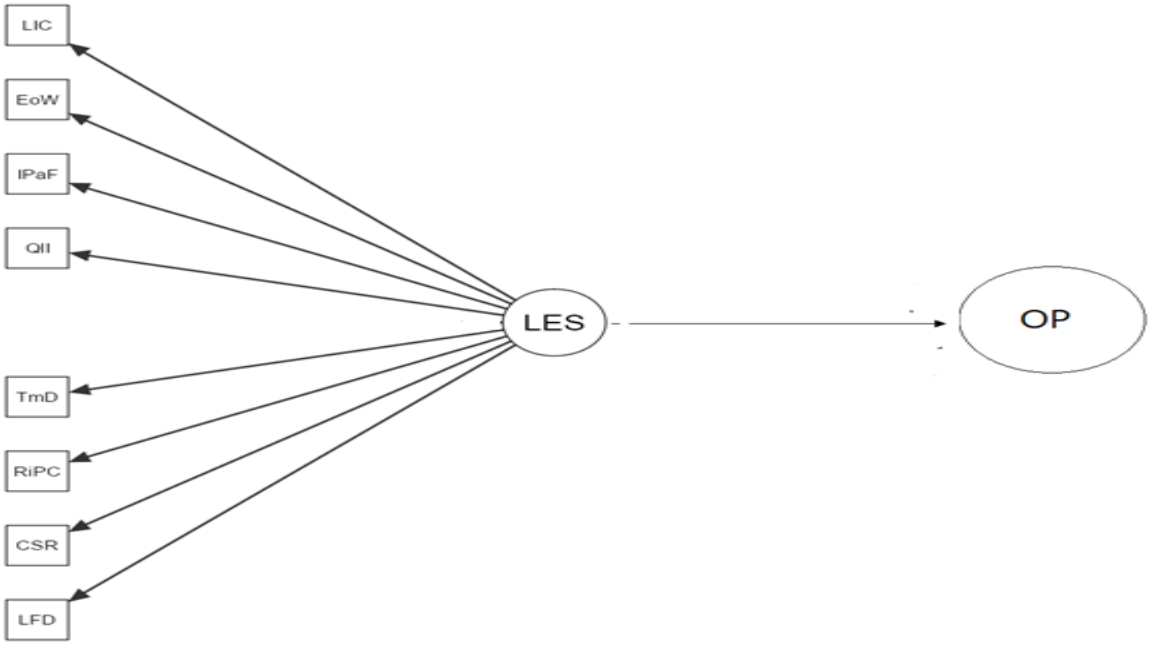
Above table states that model is significant which mentioned the impact of lean supply chain strategy on supply chain performance as significant Value is less then < .001. the other observed variable of lean supply strategy shows that Lower Inventory Cost (0.1419, Elimination of Waste (0.1728), Quality Improvement (0.1457), Timely Delivery (0.1827), Reduction in Purchase Cost (0.1477), Collaborative Supplier Relation (0.1199) positively impact the supply chain performance, although Increased Productivity and Flexibility (-0.0201), contrary to general notion, having negative impact on supply chain performance.

Model Coefficients - Organization Productivity

Predictor	Estimate	SE	t	p
Intercept	1.586	0.1251	12.7	< .001
Supply Chain Performance	0.652	0.0298	21.9	< .001

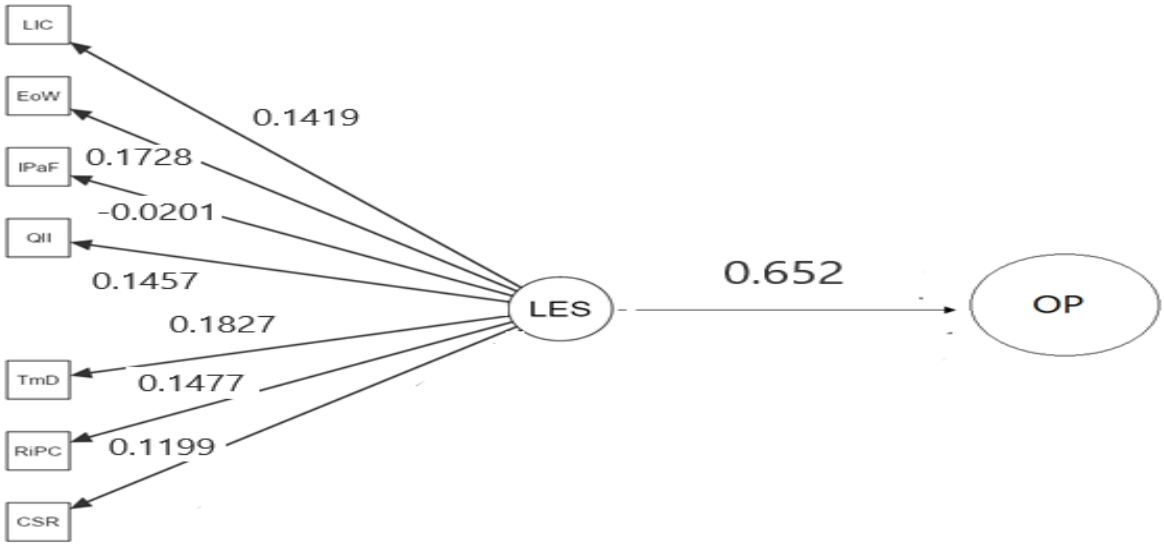
There's no disputing that the efficiency of your supply chain is closely linked to the success of your company. With the development of globalization and technological advancements, and Coefficient value of (0.652) shows that supply chain performance is a key to enhance origination productivity and it is positively related with later. The Regression Analysis can be used to validate the following model as illustrated in Figure 1.

Figure 1: Validated Model of Impact of Lean Supply Chain Management Strategy on Supply Chain Performance and Organizational Productivity



The data sets were combined, and a unified model was created to understand the impact of various factors such as Lower Inventory Cost, Elimination of Waste, Quality Improvement, Timely Delivery, Reduction in Purchase Cost and Collaborative Supplier Relation on supply chain performance and organizational productivity Using Partial Least Square, a structured equation model was created that is illustrated in figure 2 as below:

Figure 2: Estimated Model Using Pls of Impact of Lean Supply Chain Management Strategy on Supply Chain Performance and Organizational Productivity



This study also showed that the strong predictor of supply performance are Lower Inventory Cost, Elimination of Waste, Quality Improvement, Timely Delivery, Reduction in Purchase Cost and Collaborative Supplier Relation. Although lean supply chain strategy is the weak of the one predictors (Increased Productivity and Flexibility) of supply chain performance, firms should take note that lean supply chain strategy is important factors and being impact supply chain performance.

Discussion and implication

Discussion and implications the most important factor that faced by organizations is implement the strategy to organizational practices. Research findings show that lean supply chain strategy having positive relationship to supply chain performance. Although lean supply chain strategy is the weak of the one predictors (Increased Productivity and Flexibility) of supply chain performance, firms should take note that lean supply chain strategy is important factors and being impact supply chain performance. However, the strategic that has been formulated by top management should be implemented in organizational practices. To effectively managing the supply chain, Inda Sukati et al. / Procedia - Social and Behavioral Sciences (2012) organizations need to adopt appropriate supply chain strategies into supply management chain practices (Sufian, 2010). Effective supply chain management is critical determinant to building and sustaining competitive advantage in the market place.

It should be noted that the lean supply chain management strategy that not implemented into supply chain management practices cannot generate the supply chain performance. The research finding shows that in order to do so, there is a need to integrate lean supply chain management strategy into supply chain management practices.

The result of this study may be contributing to the lean supply chain management knowledge in several ways. This study was to add to the knowledge on supply chain performance by exploring the relationship lean supply chain strategy, supply chain performance and productivity. this study provides conceptual and prescriptive literature regarding supply chain management strategy and pr Fourth, the results lend support to the claim that higher level of lean supply chain implication led to higher levels of supply chain performance and therefore the productivity.

Suggestion

A top-down strategy may help to achieve improved supply chain productivity fast and easily. Business owners and executives must concentrate on developing process standards, communicating effectively, empowering and educating employees, and establishing a hierarchy of significance.

Conclusion

Improving efficiency in the supply chain is critical to a company's present and future success. Some of the most successful methods for increasing supply chain productivity include using, Lower Inventory Cost, Elimination of Waste, Quality Improvement, Timely Delivery, Reduction in Purchase Cost, Collaborative Supplier Relation new and innovative technology, paying careful attention to the personnel, thorough training. These factors will work together to provide substantial commercial Value for organization as a whole.

Limitation and future research

There are a number of limitations that influence the generalizability of this study. First, this study limited only on manufacturing industry. One of the limitations of this single-sector study is that the conclusions may not be generalizable to other sectors. Future studies replicating this research across multiple industries and sector would increase the understanding of supply chain performance. Second, the sample selection was based on a convenience sample, which is often used for exploratory work (Zikmund, 2003), rather than a random probability sample. Additional research could be conducted using a random probability sample. Third, the sample represented a limited number of companies in limited industry. Fourth, the study is based on a self-reported questionnaire. Therefore, there is a possibility of respondents answering questions in a way that is perceived to be more desirable or acceptable than what is actually experienced or believed. Thus, the results of this study should be considered indicative rather than definitive based on these limitations

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