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The Study of Supply Chain Management Strategy and Practices on Supply Chain Performance

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Abstract

The aim of this study is to investigate the impact of supply chain management techniques and strategy on supply chain performance. A questionnaire was used as the primary data collection tool, and it was administered to a sample of 200 managers. The managers were categorized by their job titles, and the respondents were categorized by the positions they held: corporate executive, purchasing, manufacturing/production, distribution/logistic, supply chain management, transportation, material, and operation from Pakistan's manufacturing sector. 62% of the surveys were completed, and 51% of them were usable. The selection of the sample was done through convenience sampling. The mean, standard deviation, and correlation between the independent and dependent variables were used to examine the data. The analysis included statistical techniques including multiple regressions and evaluations of validity and reliability. The results demonstrated a statistically significant association between supply chain performance and supply chain management strategies. Nevertheless, supply chain management performance is not well predicted by supply chain management strategy.

Keywords: Supply chain management strategy, supply chain management practices, supply chain management performance, manufacturing firms

INTRODUCTION

The supply chain has emerged as a key area of competitive advantage for businesses. The study of supply chain management focuses on how to optimize the firm's total value through more efficient use and distribution of resources throughout the whole organization. The collection of value-adding operations that link an organization's suppliers and consumers is known as a supply chain. The basic idea behind supply chain operations is to take input from suppliers, create value, and then distribute it to customers (Levi et al., 2004; Salleh & Sapengin, 2023; Adeniyi et al., 2024). All of the stakeholders engaged, whether directly or indirectly, in completing a client request are included in a supply chain. Manufacturers, suppliers, carriers, warehouses, retailers, and even customers themselves are all part of the supply chain. The supply chain encompasses every operation that goes into receiving and fulfilling a client request inside any given firm, such a manufacturing. These include marketing, operations, distribution, financing, customer support, new product development, and other services that are associated with meeting client needs (Chopra and Meindl, 2007; Alamro et al., 2018; Zaim, 2023). A

company's ability to maintain and grow a competitive edge in its goods and services depends on its supply chain management. According to Sufian (2010) and Gunasekaran and Ngai (2004), controlling and incorporating important information into their supply chain has an impact on its performance. Businesses must use information technology to accomplish successful supply chain integration (Handfield and Nichols, 1999; Sufian, 2010; Al-Nawafah et al., 2022). According to Brandyberry et al. (1999), businesses might manage the flow and effect of several supply chain dimensions, including quality, cost, flexibility, delivery, and profit, by utilizing information technology. Information technology has an impact on the efficacy of the supply chain (Byrd and Davidson, 2003; Alshawabkeh et al., 2022; Feng & Tang, 2024). They claimed that improved company performance in terms of market share, return on equity (ROI), and return on investment (ROI) results from the development and long-term use of information technology. According to Vickery et al. (2003), integrated information technology facilitates supply chain integration and coordination, which has a direct effect on the businesses' financial performance. Sufian (2010) asserts that the company plan must be supported by the supply chain management strategy in order to get a competitive edge and improve performance.

This study aims to determine how supply chain management strategies, including lean, agile, and hybrid supply chains, affect supply chain performance. This study also looks into how supply chain management strategies affect supply chain performance in terms of customer relationships, information exchange, and strategic supplier partnerships. The structure of the paper is as follows. Research technique comes after a conceptual model has been developed through the study and synthesis of pertinent material. After that, the findings are discussed and presented. Finally, the conclusion and implications are presented.

LITERATURE REVIEW AND HYPOTHESES

The purpose of this study was to ascertain whether supply chain management practices have an influence on supply chain performance and to look into how supply chain management strategy affects supply chain performance. To get a grasp of these goals, it was necessary to investigate three notions inside them. These ideas include (1) supply chain management strategies that include lean, agile, and hybrid supply chains; and (2) supply chain management practices that include information sharing, supplier partnerships, and customer relationships. (3) The performance of the supply chain as measured by customer responsiveness, flexibility, and integration.

Supply chain management is becoming more and more crucial in today's cutthroat economic environment. Businesses must have a suitable supply chain management strategy in order to compete at the supply chain level. To improve the performance of supply chain participants, the approach must coordinate and integrate across the whole chain (Serani, 2024; Eldahamsheh et al., 2021; Green Jr. et al., 2008; Cohen and Roussel, 2005; Wisner, 2003). According to Lewicka (2011) and Mason-Jones et al. (2000), supply chains must choose a strategy that works for their specific product and market. Fisher (1997) said that determining the type of demand for a company's product—whether it be utilitarian or innovative—should be the first step in creating a supply chain strategy.

According to Vonderembse et al. (2006), standard, innovative, and hybrid supply chains are required to fit three different product kinds. They show that a lean supply chain should create standard items, which are often straightforward goods with little room for customization. Lean supply chains eliminate waste across the supply chain and use continuous improvement initiatives. However, creative items that could use sophisticated and new technologies need a supply chain that is flexible. Agile supply chains are dynamic and adaptable across enterprises, allowing them to react to quickly shifting global marketplaces. A range of supplier partnerships may be required for hybrid supply chains, which are complicated goods with several components and participating firms. In order to satisfy the demands of complex products, hybrid supply networks integrate the strengths of lean and agile supply chains. Agile, lean, and hybrid supply networks are the three categories of supply chain techniques proposed by Towill and Christopher (2002). In order to demonstrate how a lean and agile supply chain may be effectively coupled to create a lean/agile supply chain strategy—which they call a "hybrid" or "leagile" supply chain—a case study was presented in their paper. "Leanity" is defined by Naylor et al. (1999) as the combination of lean and agile concepts with the help of a supply chain decoupling point. In order to illustrate how agility and leanness may be effectively coupled within the supply chain to satisfy customers' needs, they use a personal computer manufacturer as a case study.

Enhancing an organization's efficacy and efficiency is the traditional focus of information systems strategy (Bakos and Treacy, 1986; Sufian, 2010; Karabag, & Berggren, 2016). The business strategy should be the starting point for the information sharing plan (Earl, 1989; Sufian, 2010; Kumar, & Singh, 2019). Information technology should thus make it easier to implement the company plan, whatever it may be, and assist in accomplishing its objectives. Supply chain management practices are a collection of methods and techniques that work well with manufacturers, distributors, suppliers, and consumers to enhance a company's supply chain and long-term business success (Chopra and Meindl, 2007; Tseng 2010; Afzal & Fatima, 2020; Mohammad, 2020; Al Masri & Wimanda, 2024). Several management actions aimed at enhancing supply chain performance are referred to as supply chain management practices in this study (Li et al., 2006; Wong et al., 2005; Zhou and Benton, 2007; Koh et al., 2007; Sufian, 2010; Monferdini, et al., 2024).

Better coordination between the company and its suppliers is necessary for strategic supplier partnerships; businesses often have enduring relationships with value-adding suppliers. According to this study, a strategic supplier partnership is a long-term relationship between an organization and its suppliers that helps each participating company achieve significant ongoing benefits by influencing its strategic and operational capabilities (Li et al., 2005; Li et al., 2006; Monczka et al., 1998; Schon et al., 2019). Purchasing products and services from suppliers, influencing their operational and system capabilities, creating value, and enhancing supply chain performance are all examples of strategic supplier partnerships (Monczka et al., 1998; Sufian, 2010; Ojha et al., 2020).

According to Li et al. (2006), a customer relationship encompasses all of the methods used to handle customer complaints, establish enduring connections with consumers, and raise customer satisfaction. According to Vickery et al. (2003), building strong customer relationships is a key component of supply chain integration that helps businesses react to customers more quickly. The significance of information exchange for SCM practice is emphasized by Li et al. (2005). Information exchange within supply networks is the fundamental tenet of supply chain management (SCM) (Moberg et al., 2002). A firm may react faster to the evolving demands of its customers by exchanging information with supply chain participants (Li and Lin, 2006; Yousaf et al., 2019).

The degree to which suppliers, customers, and the internal operations of a company are linked is known as supply chain integration (Stevens, 1990; Stock et al., 1998; Stock et al., 2000; Narasimhan and Jayaram, 1998; Ward et al., 2015). All supply chain participants must communicate effectively in order for the supply chain to be integrated (Turner, 1993). Information and customer responsiveness are closely related, and in order to get customer responsiveness, information must be used appropriately. Daugherty et al. (1995) discovered a favorable correlation between customer responsiveness and information availability, which led to an improvement in business performance. Customers are the source of the requirement for flexibility since they demand quality, variety, competitive pricing, and quicker delivery. This has compelled businesses to adapt their designs and client demands more rapidly in order to maintain their competitive edge. Companies must therefore be adaptable enough to respond to shifts in consumer needs (Aggarwal, 1997).

This study examines the supply chain management strategy that consists of lean supply chain, agile supply chain, and hybrid supply chain and its relationship to supply chain performance. Hence, the following hypotheses will be tested:

H1: Supply chain management strategy is positively related to supply chain performance.

H1a: Supply chain management strategy is positively related to supply chain integration.

H1b: Supply chain management strategy is positively related to supply chain flexibility.

H1c: Supply chain management strategy is positively related to customer responsiveness.

We proposed that supply chain management practices that consist of strategic supplier partnership, customer relationship and information sharing and its relationship to competitive advantage of the firm. Hence, the following hypotheses will be tested:

H2: Supply chain management practices is positively related to supply chain performance.

H2a: Supply chain management practices is positively related to supply chain integration.

H2b: Supply chain management practices is positively related to supply chain flexibility.

H2c: Supply chain management practices is positively related to customer responsiveness.

RESEARCH METHODOLOGY

SAMPLING AND DATA COLLECTION

A questionnaire was used as the data collection tool, and it was given to 200 managers in total. The managers were categorized by their job titles, and the corporate executives, purchasing, manufacturing/production, distribution/logistic, supply chain management, transportation,

material, and operation from Pakistan's manufacturing industry were the job functions of the respondents.

RELIABILITY ANALYSIS

The reliability of each scale was evaluated using Cronbach's alpha. All scales can be regarded as dependable if their alpha values are more than 0.7 (Nunally, 1978). The total number of items on each item scale was reduced to a manageable factor using factor analysis. Factors having an eigenvalue larger than one are extracted using principal components analysis. The factor matrix can be more easily interpreted by using varimax rotation. Kaiser-Meyer-Olkin statistics are also used to analyze sampling adequacy measurement tests in order to verify the usage of factor analysis.

The KMO score of 0.81 indicates sample adequacy, according to factors analysis. Lean supply chain, agile supply chain, and hybrid supply chain are the three different components that the factor model shows loading without any misclassification. Twenty of the surveys' questions had Cronbach's alphas greater than 0.7. There are five components for the hybrid supply chain (HSC), seven for the lean supply chain (LSC), and eight for the agile supply chain (ASC). These things are regarded as separate variables.

The supply chain management practices areas of information sharing (IS), customer relationships (CR), and strategic supplier partnerships (SSP) were subjected to a similar factor analysis. During the factor analysis, five of the questionnaire's twenty-three items are eliminated. Table 2 shows the seven underlying factor loadings that were obtained from a total of 23 items. The 18 questionnaire questions have Cronbach's alphas greater than 0.7. There are five items for customer relationships (CR), seven items for information sharing (IS), and six items for strategic supplier partnerships (SSP). These items are considered independent variables as well. A KMO value of 0.78 indicates adequate sampling.

The supply chain performance was also examined using factor analysis, namely supply chain integration (SCI), supply chain flexibility (SCF), and customer responsiveness (RC). Six items out of eighteen items are eliminated during the factor analysis. Table 2 shows the six underlying factor loadings that were obtained from a total of 12 items. The 18 questionnaire questions have Cronbach's alphas greater than 0.7. There are seven items for information sharing (IS), five for responsive customers (RC), and six for strategic supplier partnerships (SSP). These items are regarded as separate variables. Adequacy of sampling is shown by the KMO value of 0.72.

CORRELATION ANALYSIS

There was a positive association between the dependent variables (supply chain performance) and the independent factors (supply chain strategy and management practices). The correlation between lean supply chain and supply chain integration was 0.243, $p < 0.01$, supply chain flexibility was 0.232, $p < 0.01$, and responsive customers was 0.241, $p < 0.01$. Consequently, when supply chain performance is positive, respondents are more likely to consider lean supply chain to be positive. Agile supply chain exhibited a correlation of 0.225, $p < 0.05$ supply chain integration, 0.281, $p < 0.05$ supply chain flexibility, 0.266, $p < 0.05$ responsive customer. The

correlation between a hybrid supply chain and supply chain integration is 0.282, $p < 0.01$, supply chain flexibility is 0.287, $p < 0.01$, and responsive customers is 0.335, $p < 0.01$.

REGRESSION ANALYSIS

Multivariate regression analysis is used to estimate this model's parameters. Each model's coefficients and associated test data are displayed in Table 1. Overall supply chain performance is the dependent variable in Model 1, and the model appears to be dependable (p -value for $F < 0.01$ and adjusted R-square of 0.130). In Model 2, supply chain integration is the dependent variable. The model also appears to be dependable (adjusted R-squared of 0.199 and p -value for $F < 0.01$). The key factors in supply chain integration are strategic supplier partnerships, customer relationships, and information sharing (p -value $t < 0.01$). Agile supply chains come in following a p - $t < 0.05$), while lean and hybrid supply chains are not significant (p -value $t > 0.05$).

TABLE 1: MODEL PARAMETER ESTIMATES OF SUPPLY CHAIN ORIENTATION (T- VALUE IN PARENTHESIS)

	Model 1	Model 2	Model 3	Model 4
	Dependent variable = overall SC	Dependent variable = SCI	Dependent variable = SCF	Dependent variable = RC
Performance				
Constant	126.311	21.188	17.244	16.294
(7.422)**		(7.095)**	(5.812)**	(6.481)**
LSC	1.031	0.119	0.127	0.130
	(1.589)*	(1.062)	(1.142)	(1.183)
ASC	0.749 (2.065)*	0.216 (2.256)*	0.162 (2.102)*	0.170 (2.186)*
HSC	1.031	0.119	0.117	0.110
	(1.989)*	(1.072)	(1.172)	(1.193)
SSP	0.847	0.216	0.183	0.191
	(3.054)**	(3.247)**	(3.111)**	(3.185)**
RC	1.221	0.129	0.127	0.122
	(3.789)**	(3.172)**	(3.171)**	(2.993)**
IS	1.642 (3.531)**	0.265 (3.280)**	0.242 (2.801)**	0.163 (2.095)*
Adj R2	0.130	0.199	0.185	0.163
F-alue	11.243**	11.040**	7.643**	6.469**

RESULTS

In this research, the following outcomes were obtained: The correlation analysis showed that lean supply chain is not related to supply chain integration, supply chain performance and customer responsiveness. Agile supply chain is related to supply chain integration, supply chain flexibility and customer responsiveness. Hybrid supply chain is not related to all supply chain performance. The research also found that strategic supplier partnership, customer relationship and information sharing are the important determinant of supply chain performance.

For hypothesis 1_a investigate the relationship between supply chain management strategy and supply chain integration, this study found that not significant correlation between supply chain strategy and supply chain performance. Hypothesis 1_b assessed the relationship between supply chain management strategy and supply chain flexibility. Finding show there is a weak relationship between supply chain management strategy and supply chain performance. Hypothesis 1_c examine the relationship between supply chain management strategy and customer responsiveness and testing found that there is a weak relationship between supply chain management strategy and customer responsiveness. Hypothesis 2_a considered the correlation between supply chain management practices and supply chain integration. According to the result shown that there is significant relationship supply chain management practices and supply chain integration. Hypothesis 2_b assessed the relationship between supply chain management practices and supply chain flexibility. Finding show that also significant correlation between supply chain management practices and supply chain flexibility. Hypothesis 2_c investigates the relationship between supply chain management practices and customer responsiveness. Finding also show that there is a significant relationship between independent and dependent variables.

DISCUSSION AND IMPLICATIONS

The most important factor that faced by organizations is implement the strategy to organizational practices. Research findings show that supply chain management strategy is the weak relationship to supply chain performance. Although supply chain management strategy is the weak of the two predictors (supply chain strategy and supply chain management practices) of supply chain performance, firms should take note that supply chain management 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, 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.

This study also showed that the strong predictor of supply chain performance are strategic supplier partnership, customer relationship and information sharing. It should be noted that the supply chain management strategy that not implemented into supply chain management practices can not generate the supply chain performance. The research finding shows that in order to do so, there is a need to integrate supply chain management strategy into supply chain management practices.

Based on the data collected from 200 corporate executives, purchasing managers, manufacturing managers, logistic managers and operation managers from Pakistan manufacturing industry, the research hypotheses are tested by using multiple regression models. The result of this study may be contributes to the supply chain management knowledge in several ways. This study was to add to the knowledge on supply chain management performance by exploring the relationship supply chain management strategy, supply chain

practices and supply chain management performance. By developing and testing a research framework of supply chain management strategy and practices constructs and conducting an analysis a number of manufacturing firms with valid and reliable instrument, this study represented one of the investigate the relationship supply chain management strategy, supply chain management practices and supply chain performance. Overall, this study contributes to the knowledge of the role of supply chain management strategy and practices in supply chain management field. First, it proposed a theoretical supply chain management strategy framework that identified lean supply chain, agile supply chain and hybrid supply chain. Second, this study provides a practical and useful tool for supply chain managers to audit and assess supply chain performance practices. For instance, the supply chain management practices can be used to evaluate the extent to which organizational performance practices have been implemented, and their impact on the competitive capability of the firm. Third, this study provides conceptual and prescriptive literature regarding supply chain management strategy and practices. Fourth, the results lend support to the claim that higher level of supply chain management practices lead to higher levels of supply chain performance.

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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