

Supply Chain Performance: A Study of Supply Chain Management Strategy and Practices

Md Okas Mikrani

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ABSTRACT: The goal of this study is to investigate how supply chain performance is affected by supply chain management strategy and practises. The primary tool for gathering data was a questionnaire, which was distributed to a sample of 200 managers in the manufacturing sector of Malaysia. Respondents were categorised by their job functions, which included corporate executive, purchasing, manufacturing/production, distribution/logistic, SCM, transportation, material, and operation. While only 51% of the questionnaires were usable, 62% of them were answered. Convenience sampling was used to choose the samples. The mean, standard deviation, and correlation between the independent and dependent variables were used to examine the data. Multiple regressions, reliability and validity tests, and other statistical techniques were used in the analyses. The results demonstrated a strong statistical correlation between supply chain performance and supply chain management strategies. However, the effectiveness of supply chain management is only moderately predicted by supply chain management strategy.

I. INTRODUCTION

Supply chain management has emerged as a key area of competitive advantage for businesses. The management of supply chain study focuses on how to increase the organization's overall value by more effectively employing and deploying resources throughout the whole firm. A supply chain is a network of value-adding interactions linking an organization's suppliers and customers. Receiving input from a firm's suppliers, adding value, and then delivering to clients is the basis of supply chain activity (Levi et al (2004)). All the stakeholders engaged in directly or indirectly completing a customer request are included in the supply chain. Manufacturers, suppliers, carriers, warehouses, retailers, and even customers themselves are all part of the supply chain. The

entire process of accepting and fulfilling a customer request is included in the supply chain within any organisation, including manufacturers. New product development, marketing, operations, distribution, financing, customer care, and other tasks connected to fulfilling consumer requests are among these functions (Chopra and Meindl, 2007). A company's ability to create and maintain a competitive advantage in its goods and services depends on effective supply chain management. According to Gunasekaran and Ngai (2004) and Sufian (2010), controlling and integrating important informational components into the supply chain had an impact on how well it performed. (2003) demonstrated that the use of integrated information technology facilitates supply chain coordination and integration, which has a direct impact on the financial performance of the businesses. Sufian (2010) asserts that the company plan must be supported by the supply chain management strategy in order to get a competitive advantage and improve performance.

The goal of this study is to determine how various supply chain management strategies, including lean supply chains, agile supply chains, and hybrid supply chains, affect the effectiveness of those chains. The effectiveness of the supply chain is also examined in this study in respect to information exchange, customer relationships, and strategic supplier partnerships. The structure of the paper is as follows. A conceptual model is first developed by reviewing and synthesising pertinent literature; research technique is then developed. The findings are then discussed and presented. Finally, we talk about the implications and conclusion.

II. LITERATURE REVIEW AND HYPOTHESES

The study's research goals were to ascertain whether supply chain management practises have an impact on supply chain

performance and how supply chain management strategy affects supply chain performance. For a better understanding of these objectives, three concepts within them required to be investigated. These ideas include (1) supply chain management strategy, which includes lean, agile, and hybrid supply chains, and (2) supply chain management practises, which include supplier partnerships, customer relationships, and information sharing. (3) The effectiveness of the supply network in terms of supply chain integration, flexibility, and customer responsiveness.

In a cutthroat economy, supply chain management has grown in importance. Businesses need to implement a suitable supply chain management strategy if they want to compete at the supply chain level. To improve the performance of supply chain participants, the strategy must coordinate and integrate throughout the supply chain (Green Jr. et al., 2008; Cohen and Roussel, 2005; Wisner, 2003). According to Mason-Jones et al. (2000) and Lewicka (2011), supply chains must select a strategy that is appropriate for both their specific product and market.

Fisher (1997) asserted that creating the supply chain should be the initial step. The Sukati et al. / *Procedia - Social and Behavioral Sciences* 40 (2012) 225 - 233 chain strategy suggests that an organization's products be either innovative or functional depending on the nature of the demand.

Standard, creative, and hybrid supply chains were explored as being necessary to match three different types of products by Vonderembse et al. (2006). They show how a lean supply chain should be used to produce conventional products, which are frequently straightforward with little room for diversity.

Continuous improvement techniques are used in lean supply chains, and waste elimination is the main goal. However, creative items that might make use of cutting-edge technology demand a flexible supply network. Agile supply chains adapt to quickly shifting international markets by being flexible and dynamic across enterprises. A variety of supplier partnerships may be required for hybrid products, which are complicated products with numerous components and participating companies in the supply chain. This is why they are referred to as having hybrid supply chains.

In order to meet the demands of complex products, hybrid supply networks combine the strengths of lean and agile supply chains. There are three different types of supply chain strategies, according to Towill and Christopher (2002): agile supply chains, lean supply chains, and hybrid

supply chains. In their study, a case study was given to demonstrate how a lean and agile supply chain may be successfully merged to have a lean/agile supply chain strategy, or "hybrid" or "leagile" supply chain, as they refer to it. According to Naylor et al. (1999), "legality" is the combination of lean and agile concepts with the use of a supply chain decoupling point. In order to illustrate how agility and leanness may be successfully blended inside the supply chain to satisfy customers' requirements, they use a personal computer manufacturer as a case study.

The conventional focus of information systems strategy is to increase organisations' effectiveness and efficiency (Bakos and Treacy, 1986 cited in Sufian, 2010). Earl (1989; Sufian, 2010) proposed that the company strategy should be the source of the information sharing strategy. This implies that information technology should make it easier to implement the company plan, whatever it may be, and aid in achieving its objectives.

To enhance the long-term business performance and their supply chain, supply chain management methods include a variety of strategies and techniques that successfully integrate with suppliers, manufacturers, distributors, and customers (Chopra and Meindl, 2007; Tseng 2010). In this study, supply chain management practises are described as a number of management initiatives designed to enhance the performance of the supply chain (Li et al., 2006; Wong et al., 2005; Zhou and Benton, 2007; Koh et al., 2007; Sufian, 2010).

Better coordination between the organisation and its suppliers is necessary for strategic supplier partnerships; businesses typically have long-term relationships with suppliers who add value. A strategic supplier partnership, as used in this study, is described as a long-term cooperation between an organisation and its suppliers that influences the strategic and operational capabilities of each participating company to aid in the realisation of meaningful recurring benefits (Li et al., 2005; Li et al., 2006; Monczka et al., 1998). Purchasing products and services from suppliers, influencing their operational and system capabilities, creating value, and enhancing the performance of the supply chain are all components of a strategic supplier partnership (Monczka et al., 1998; Sufian, 2010).

According to Li et al. (2006), customer relationship refers to the full set of procedures used to handle customer complaints, develop lasting connections with customers, and raise customer satisfaction. In order for firms to respond to

customers more quickly, Vickery et al. (2003) highlight the significance of developing tight customer relationships as a key practise of supply chain integration. The significance of information sharing to SCM practise is emphasised by Li et al. (2005). Information exchange within supply chains is the core tenet of SCM (Moberg et al., 2002). An organisation can adapt more promptly to the shifting needs of the consumer by informing the supply chain's participants (Li and Lin, 2006).

The degree to which all of an organization's activities, suppliers, and consumers are interwoven is known as supply chain integration (Stevens, 1990; Stock et al., 1998; Stock et al., 2000; Narasimhan and Jayaram, 1998). Effective communication amongst all supply chain participants is required for supply chain integration.

Procedia - Social and Behavioral Sciences 40 (2012) 225–233 contributors Inda Sukati et al (Turner, 1993). Information and customer responsiveness are closely related, making effective information utilisation crucial to achieving customer responsiveness. In order to bolster this claim, Daugherty et al. (1995) discovered a favourable relationship between the availability of information and customer responsiveness, which enhanced business performance. Customers are the ones that drive the need for flexibility because they demand choice, quality, competitive pricing, and quick delivery.

In order to maintain their competitive advantage, businesses have been compelled to adapt swiftly to design changes and client requests. Companies must therefore be adaptable enough to respond to shifts in customer needs (Aggarwal, 1997).

This study explores the relationship between supply chain performance and the supply chain management method that includes lean supply chains, agile supply chains, and hybrid supply chains. As a result, the following theories will be investigated:

H1: Supply chain performance is positively correlated with supply chain management approach.

H1a: Supply chain integration and supply chain management approach are favourably correlated.

H1b: Supply chain flexibility and supply chain management strategy are positively correlated

H1c: Customer responsiveness and supply chain management approach are favourably correlated.

We suggested that supply chain management procedures include information sharing, customer relationships, and strategic supplier partnerships that contribute to the firm's competitive edge. As a result, the following theories will be investigated:

H2: Supply chain performance is positively correlated with supply chain management methods.
H2a: Supply chain integration and supply chain management methods are favourably correlated.
H2b: Supply chain flexibility is favourably correlated with supply chain management strategies.
H2c: Customer responsiveness and supply chain management strategies are favourably correlated.

III. RESEARCH METHODOLOGY

3.1 Sampling and Data Collection

A questionnaire was used as the data collection tool, and it was administered to a total sample of 200 managers. Respondents were categorised by their job titles as well as their job functions, which included corporate executive, purchasing, manufacturing/production, distribution/logistic, SCM, transportation, material, and operation in Malaysia's manufacturing sector.

3.2. Reliability Analysis

Each scale's dependability was evaluated using the Cronbach's alpha. All scales can be regarded as dependable if their alpha values are greater than 0.7. (Nunnally, 1978). Factor analysis was used to condense the entire number of items into a single, manageable factor for each of the item scales. Using principal components analysis, factors with eigenvalues greater than 1 are extracted. The factor matrix is easier to read by using varimax rotation. In order to validate the use of factor analysis, sampling adequacy measurement tests are also examined using Kaiser-Meyer-Olkin statistics.

Analysis of the factors revealed that the KMO value of 0.81 indicates adequate sampling. The factor model shows three distinct factors loading—lean supply chain, agile supply chain, and hybrid supply chain—without any misclassification. The questionnaires' 20 items had Cronbach's alphas that were higher than 0.7. There are five items for a hybrid supply chain, seven items for a lean supply chain, and eight items for an agile supply chain (HSC). These components are handled as separate variables.

The supply chain management practises areas of information exchange, customer relationships, and strategic supplier partnerships (SSP) underwent a similar factor analysis (IS). Five of the 23 questions in the survey are removed during the factor analysis. Table 2 shows the reduction of 23 items to seven underlying factors loadings. The 18 items in the questionnaires have Cronbach's alphas that are higher than 0.7. Six elements are identified for strategic supplier

partnerships (SSP), five items are identified for customer relationships (CR), and seven items are identified for information sharing. Inda Sukati et al (IS). Additionally, these elements are handled as independent variables. The KMO score of 0.78 indicates adequate sample size.

The following factors were also taken into consideration while analysing the supply chain performance: customer response, supply chain flexibility, and supply chain integration (RC). Six of the 18 questions in the survey are dropped during the factor analysis. Table 2 shows the six underlying factors loadings obtained after reducing a total of 12 items. The 18 items in the questionnaires have Cronbach's alphas that are higher than 0.7. Seven items are recognised for information sharing, five items are identified for responsive customers (RC), and six items are identified for strategic supplier partnerships (SSP) (IS). These components are handled as separate variables. The KMO score of 0.72 indicates adequate sample size.

3.3. Correlation Analysis

The correlation between independent variables (supply chain strategy and management practices) and dependent variables (supply chain performance) were positive. Lean supply chain had a correlation of 0.243, $p < 0.01$ with supply chain integration, 0.232, $p < 0.01$ supply chain flexibility, 0.241, $p < 0.01$ responsive customers. Which mean that the respondents are more likely to evaluate lean supply chain was positive when supply chain performance is positive. Agile supply chain had 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. Hybrid supply chain has a correlation of 0.282, $p < 0.01$ with supply chain integration, 0.287, $p < 0.01$ supply

chain flexibility, 0.335, $p < 0.01$ responsive customers.

3.4. Regression analysis

The parameters of this model are estimated using multivariate regression analysis. Table 1 shows coefficients of each model along with corresponding test statistics. In Model 1 where the dependent variable is overall supply chain performance, the model seem to be reliable (p-value for $F < 0.01$ and adjusted R-square of 0.130. Model 2, dependent variable is supply chain integration. The model also seem to be reliable (p-value for $F < 0.01$ and adjusted R-square of 0.199. Strategic supplier partnership, customer relationship and information sharing are the important determinant in supply chain integration with p-value for $t < 0.01$, followed by agile supply chain with p-value of $t < 0.05$, lean supply chain and hybrid supply chain are not significant with p-value of $t > 0.05$. Model 3, dependent variable is supply chain flexibility. Once again, the model also seem to be reliable (p-value for $F < 0.01$), and adjusted R-square of 0.185. Strategic supplier partnership, customer relationship and information sharing are important determinant in supply chain flexibility with p-value for $t < 0.01$, followed by agile supply chain with p-value of $t < 0.05$, while lean supply chain and hybrid supply chain are not significant with p-value of $t > 0.05$. Model 4, dependent variable is customer responsiveness. The model seem to be reliable (p-value for $F < 0.01$). and adjusted R-square of 0.163. It appears, strategic supplier partnership and customer relationship has similar effect on the customer responsive. Followed by agile supply chain and information sharing with p-value for $t < 0.05$ while lean supply chain hybrid supply chain are not significant with p-value of $t > 0.05$.

	Model 1 Dependent variable= overall SC performance	Model 2 Dependent variable = SCI	Model 3 Dependent Variable = SCF	Model 4 Dependent Variable=RC
Constant	126.311 (7.422)**	21.188 (7.095)**	17.244 (5.812)**	16.294 (6.481)**
LSC	1.031 (1.589)*	0.119 (1.062)	0.127 (1.142)	0.130 (1.183)
ASC	0.749 (2.065)*	0.216 (2.256)*	0.162 (2.102)*	0.170 (2.186)*
HSC	1.031 (1.989)*	0.119 (1.072)	0.117 (1.172)	0.110 (1.193)
SSP	0.847 (3.054)**	0.216 (3.247)**	0.183 (3.111)**	0.191 (3.185)**
RC	1.221 (3.789)**	0.129 (3.172)**	0.127 (3.171)**	0.122 (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-Value	11.243**	11.040**	7.643**	6.469**

*p value <0.05, **p value <0.01

IV. RESULTS

The following findings from this investigation were attained: The correlation research revealed that the integration, performance, and customer responsiveness of the supply chain are unrelated to the lean supply chain. Agile supply chains are linked to customer responsiveness, supply chain flexibility, and integration. Not all supply chain performance is correlated with hybrid supply chains. The study also discovered that information exchange, customer relationships, and strategic supplier partnerships are key factors in supply chain performance.

This study showed no statistically significant link between supply chain strategy and supply chain performance for hypothesis 1a, which looked at the relationship between supply chain management strategy and supply chain integration. Supply chain management approach and supply chain flexibility were compared according to Hypothesis 1b. Findings indicate that there is little correlation between supply chain performance and supply chain management approach. Testing revealed that there is a poor association between supply chain management strategy and customer responsiveness, contrary to Hypothesis 1c, which examines the interaction between these two factors.

The relationship between supply chain management procedures and supply chain integration was taken into account in hypotheses 2a and 2b. The findings indicate a strong connection between supply chain integration and supply chain management techniques. Supply chain management procedures and supply chain flexibility were compared under Hypothesis 2b. Findings indicate a strong relationship between supply chain flexibility and supply chain management techniques. The purpose of Hypothesis 2c is to examine the connection between supply chain management techniques and client responsiveness. The results also demonstrate that the link between the independent and dependent variables is significant.

V. DISCUSSION AND IMPLICATIONS

Implementing a strategy into organisational practises is the most significant challenge that firms must overcome. Research demonstrates that the association between supply chain performance and supply chain management strategy is weak (refer to Table 5). Despite the fact that supply chain management strategy is the less reliable of the two factors that influence supply

chain performance (supply chain strategy and supply chain management practises), businesses should nonetheless be aware of its significance. However, organisational procedures should be changed to reflect the top management's developed strategy. Organizations must include proper supply chain strategies into supply management chain practises in order to manage the supply chain efficiently (Sufian, 2010). To create and maintain a competitive advantage in the marketplace, effective supply chain management is a key factor. This study also demonstrated that strategic supplier partnerships, customer relationships, and information exchange are powerful predictors of supply chain performance (refer to Table 5). It should be highlighted that a supply chain management strategy without accompanying supply chain management procedures will not result in a successful supply chain. The results of the study indicate that in order to achieve this, supply chain management methods must be integrated with supply chain strategy.

The research hypotheses are examined using multiple regression models based on information gathered from 200 corporate executives, purchasing managers, manufacturing managers, logistic managers, and operation managers in Malaysia's manufacturing sector. The findings of this study could advance our understanding of supply chain management in a number of ways. By examining the connection between supply chain management strategy, supply chain practises, and supply chain management performance, this study aimed to advance our understanding of supply chain management performance.

This study represented one of the investigation the relationship between supply chain management strategy, supply chain management practises, and supply chain performance by developing and testing a research framework of supply chain management strategy and practises constructs and conducting an analysis of a number of manufacturing firms with valid and reliable instrument. In general, this study advances our understanding of the role of supply chain management methods and strategies in the industry. It first suggested a theoretical framework for supply chain management strategy that distinguished between lean, agile, and hybrid supply chains.

Second, this study offers supply chain managers a helpful and practical instrument for

auditing and evaluating supply chain performance procedures. To assess the degree to which organisational performance techniques have been adopted and their effect on the firm's capacity to compete, for instance, supply chain management methods might be employed. Third, this study offers conceptual and directive literature on supply chain management practises. Fourth, the findings support the idea that improved supply chain performance is a direct effect of improved supply chain management methods.

VI. LIMITATION AND FUTURE RESEARCH

The generalizability of this study is impacted by a variety of limitations. First, the manufacturing sector was the only one covered in this study. The outcomes of this one-sector study may not be transferable to other industries, which is one of its drawbacks. The performance of the supply chain would be better understood in the future through studies that replicate this research across many industries and sectors. Second, rather than using a random probability sample, the sample was chosen using a convenience sample, which is frequently utilised for exploratory work (Zikmund, 2003).

A random probability sample could be used to perform additional study. Third, the sample only included a small number of businesses from a narrow range of industries. Fourth, a self-reported questionnaire served as the study's foundation. As a result, it is possible for respondents to provide information that is seen as more desirable or acceptable than what they truly believe or experience. Because of these restrictions, the study's findings should only be regarded as indicative rather than conclusive.

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