

## Achieving Competitiveness through Supply Chain Practices

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### ABSTRACT

The following paper has a look at earlier advance towards use regarding provide cycle managing (SCM) associations around construction. It's with different literary works evaluation plus customer survey with the sights regarding engineering practitioners. Most people say of which SCM possesses a number of the options of the 'sixth creation creativity'. The following papers points too while engineering experts have any familiarity with SCM these people require a far better conceptual comprehending from it plus fresh and a lot more scientific strategies to it's implementation.

**KEYWORDS:-**SCM , Supply chain management

### INTRODUCTION

'SCM practices' is defined as "the set of activities undertaken by an organization to promote effective management of its supply chain" (Li et al., 2006).

Li et al. (2005, 2006) suggested 'SCM procedures' as a multi-dimensional construct that encompasses both upper stream and lower stream of the supply chain. Donlon (1996) realized outsourcing, supplier partnership, knowledge sharing, round time contraction, and uninterrupted procedure flow, as SCM functions. Tan et al. (1998) used quality, purchasing, and client relations to characterize SCM procedures, in their objective research. Alvarado and Kotzab (2001) paid attention on inter-firm network use, main competencies, and removal of extra stock through delaying, as SCM procedure. By making factor analysis work, Tan et al. (2002) realized: supply chain coordination, knowledge sharing, client service administration, nearness to a particular region, and JIT competency, as the main areas of SCM procedures. Lee (2004) in his case study distinguished five procedures at the supply chain level that are the main areas in building supply chain reaction. They are: outsourcing, strategic supplier alliance, client relationships, knowledge sharing, and item modularity. Chen and Paulraj (2004) applied long-term alliances, cross-procedural teams, supplier base deduction, and supplier development. Min and Mentzer (2004) pointed out long-term alliances, knowledge sharing, new ideas and targets, hazards and prize sharing, integration, procedures collaborated, and supply chain leadership essential to the notion of SCM. Li et al. (2005, 2006) realized important supplier alliances, client alliance, and knowledge sharing as main areas of SCM procedures. This research incorporates the similar procedures (viz: important supplier alliances, client alliance, and knowledge sharing) as sub-constructs for the SCM procedure constructs. Li et al. (2005) evolved an authentic and trustworthy tool to accomplish SCM procedures. The similar tool has been used in this research. Thus the literature portrays SCM procedures from distinct outlook with a common aim of revamping

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firms interpretation. In reexamining and coordinating the literature, three distinct measures of SCM procedures that are realized to command to supply chain reaction, have been pinpointed. These are important supplier alliances, client alliance, and knowledge sharing.

Table 1 lists the three dimensions of SCM practices along with their definitions and supporting literature.

**Table 1: List of Sub-Constructs for SCM Practices**

Constructs	Definitions	Literature
Important Supplier Alliance	“The long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits” (Li et al., 2006, p. 109)	Li et al., 2005; Gunasekaran et al., 2001; Balsmeier and Voisin, 1996; Monczka et al., 1998; Noble, 1997; Stuart, 1997; Lamming, 1993; Sheridan, 1998; Tan et al., 2002
Client Alliance	“The entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction” (Li et al., 2006, p. 109)	Li et al., 2005; Moberg et al., 2002; Aggarwal, 1997; Claycomb et al., 1999; Tan et al., 1998; Wines, 1996; Noble, 1997; Magretta, 1998, Day, 2000
Knowledge Sharing	“The extent to which critical and proprietary information is communicated to one’s supply chain partner” (Li et al., 2006, p. 110)	Li et al., 2005; Monczka et al., 1998; Mentzer et al., 2000b, Stein and Sweat, 1998, Yu et al., 2001; Towill, 1997; Balsmeier and Voisin, 1996; Jones, 1998; Lalonde, 1998; Vokurka and Lummus, 2000; Lancioni et al., 2000; Ballou et al., 2000.

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**Strategic supplier partnership** is defined as “the long term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits” (Li et al., 2006, p. 109). Gunasekaran et al. (2001) guarantee that an important alliance highlights long-term alliance among trading partners and “promotes mutual planning and problem solving efforts” (as cited in Li et al., 2006, p. 109).

**Customer relationship** is defined as “the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction” (Li et al., 2006, p. 109). Noble (1997) and Tan et al. (1998) consider customer relationship management as an important component of SCM practices. Croxton et al. (2001) consider customer relationship and supplier partnership practices as key SCM practices.

**Information sharing** refers to “the extent to which critical and proprietary information is communicated to one’s supply chain partner” (Li et al., 2006, p. 110). Mentzer et al. (2000) mention that shared information can vary from strategic to tactical in nature. It could be pertaining to logistics, customer orders, forecasts, schedules, markets, or more.

Information sharing refers to the access to private data between trading partners thus enabling them to monitor the progress of products and orders as they pass through various processes in the supply chain (Simatupang and Sridharan, 2002). Simatupang and Sridharan (2005) bring forth some of the elements that comprise information sharing, including data acquisition, processing, storage, presentation, retrieval, and broadcasting of demand and forecast data, inventory status and locations, order status, cost-related data, and performance status. They further add that information sharing pertaining to key performance metrics and process data improves the supply chain visibility thus enabling effective decision making. Information shared in a supply chain is of use only if it is relevant, accurate, timely, and reliable (Simatupang and Sridharan, 2005). Information sharing with trading partners enables organizations to make better decisions and to take actions on the basis of greater visibility (Davenport et al., 2001).

**Table 2: List of Sub-Constructs for Competitive Advantage**

Constructs	Definitions	Literature
Price/Cost	“The ability of an organization to compete against major competitors based on low cost / price” (Li et al., 2006, p. 120)	Koufteros, 1995; Wood et al., 1990; Miller et al., 1992, Hall et al., 1993; Rondeau et al., 2000
Quality	“The ability of an organization to offer product quality and performance that	Li et al., 2006; Gray and Harvey, 1992;

	creates higher value for customers” (Koufteros, 1995)	Arogyaswamy and Simmons, 1993; Rondeau et al., 2000.
Delivery Dependability	“The ability of an organization to provide on time the type and volume of product required by customer(s)” (Li et al., 2006, p. 120)	Li et al., 2005; Hall, 1993, Koufteros et al., 1997; Rondeau et al., 2000
Product Innovation	“The ability of an organization to introduce new products and features in the market place” (Koufteros, 1995)	Li et al., 2006; Clark and Fujimoto, 1991; Rondeau et al., 2000.
Time to Market	“The ability of an organization to introduce new products faster than major competitors” (Li et al., 2006, p. 120)	Li et al., 2005; Stalk, 1988; Vesey, 1991; Handfield and Pannesi, 1995; Kessler and Chakrobarati, 1996.

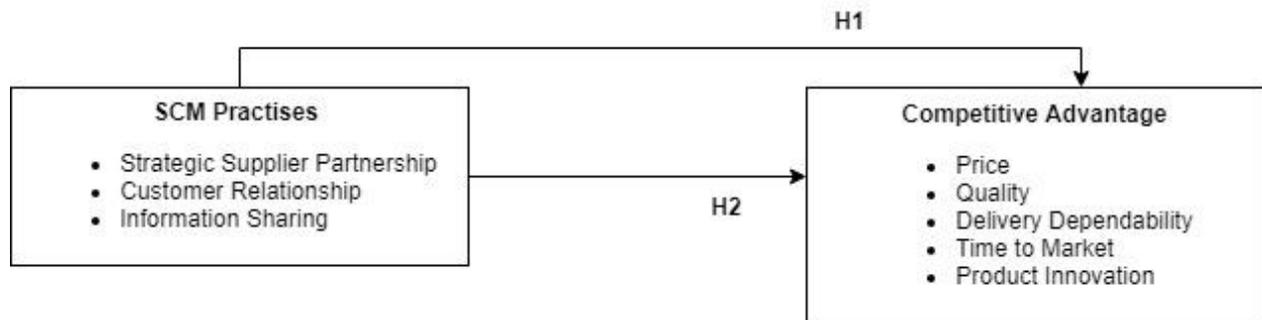
1. Price/Cost. “The ability of an organization to compete against major competitors based on low price” (Li et al., 2006, p. 120).
2. Quality. “The ability of an organization to offer product quality and performance that creates higher value for customers” (Koufteros, 1995).
3. Delivery Dependability. “The ability of an organization to provide on time the type and volume of product required by customer(s)” (Li et al., 2006, p. 120).
4. Product Innovation. “The ability of an organization to introduce new products and features in the market place” (Koufteros, 1995).
5. Time to Market. “The ability of an organization to introduce new products faster than major competitors” (Li et al., 2006, p. 120).

## 2 THEORETICAL FRAMEWORK

To better understand the effect of SCM practices on on competitive advantage, a framework is established which describes the causal relationships between SCM practices, and competitive advantage (Figure 1).

The model (Figure 1) establishes direct, positive relationships between SCM practices of firm and competitive advantage of a firm.

**Figure 1: Theoretical Model**



## 2.1 Research Hypothesis 1 (SCM Practices and Competitive Advantage)

Effective SCM produces competitive advantage for a firm in that it is said to reduce costs (Martin and Grbac, 2003; Sheth and Sharma, 1997; Tan et al., 1998; Araujo et al., 1999). SCM practices have been found to be positively related to competitive advantage (price, quality, delivery dependability, product innovation, and time to market) in prior literature (ex: Li et al., 2006)

Sharing information (and data) with other parties within the supply chain can be used as a source of competitive advantage (Jones, 1998; Novack et al., 1995). Furthermore, Tompkins and Ang (1999) consider the effective use of pertinent, timely, and accurate information by supply chain members as a key competitive factor. Information sharing with suppliers has given Dell Corp. the benefits of faster cycle times (implying faster time to market), reduced inventory (implying reduced costs), and improved forecasts. Customers, for their part, have benefited by getting a higher-quality product at a lower price (Magretta, 1998; Stein and Sweat, 1998). The above arguments lead to:

**Hypothesis 1:** 'SCM practices' of a firm is positively related to competitive advantage of a firm.

## 3 INSTRUMENT DEVELOPMENT - ITEM GENERATION AND PILOT TEST

The development of the instrument was carried out in two stages. As per Churchill (1979), the content validity is enhanced if steps are taken to ensure that the domain of the construct is covered. In accordance with Churchill (1979), in the first pre-pilot stage (also called as the pre-testing stage), potential items were generated through a literature review and from construct definitions. Then the initial pool of items was pre-tested with six academicians, one practitioner and one doctoral student. Also the definitions of the sub-constructs - operations system responsiveness, logistics process responsiveness and supplier network responsiveness - were presented to these respondents to receive input on accuracy and modifications. Further the respondents were asked to provide feedback on representativeness, clarity, specificity, ease of understanding and interpretation of the questions. The respondents were also requested to provide instructions on the length of the questionnaire. Based on the feedback, items were modified or discarded, and definitions were modified to ensure that the domain of the construct is covered and thus strengthen the content validity. The second stage was scale development and

testing through a pilot study using Q-sort method. Items placed in a common pool were subjected to required number of sorting rounds (three in our case) by the judges to establish which items should be in the various categories. The objective was to pre-assess the convergent and discriminant validity of the scales by examining how the items were sorted into various construct categories. The instruments were further refined based on Q-sort results. The Q-sort is then followed by the large scale survey which includes the validity and reliability tests using the data from large-scale sample and is described in detail in Chapter 5.

### 3.1 SCM Practices – Reliability Analysis

The construct ‘SCM practices’ has been adopted from Li et al. (2005, 2006). The reliabilities (Cronbach’s  $\alpha$ ) of the sub-constructs - strategic supplier partnership, customer relationship, and information sharing - that form the construct ‘SCM practices’ and as obtained from Li et al. (2005, 2006) are reported in Table 3. Both these reliabilities are above 0.80, depicting a good measure of reliability for the ‘SCM practices’ sub-constructs.

**Table 3: Reliability Analysis for SCM Practices**

Measurement Items	$\alpha$	$\alpha$
	(Li et al., 2005, 2006)	(present study)
<b>Strategic Supplier Partnership</b>		
We consider quality as our number one criterion in selecting suppliers	$\alpha = 0.83$	$\alpha = 0.81$
We regularly solve problems jointly with our suppliers		
We have helped our suppliers to improve their product quality		
We have continuous improvement programs that include our key suppliers		
We include our key suppliers in our planning and goal- setting activities		
We actively involve our key suppliers in new product development processes		
<b>Customer Relationship</b>		
We frequently interact with customers to set reliability, responsiveness, and other standards for us	$\alpha = 0.82$	$\alpha = 0.81$
We frequently measure and evaluate customer satisfaction		
We frequently determine future customer expectations		
We facilitate customers’ ability to seek assistance from us		
We periodically evaluate the importance of our relationship with our customers		

Information Sharing		
We inform trading partners in advance of changing needs	$\alpha = 0.89$	$\alpha = 0.87$
Our trading partners share proprietary information with us		
Our trading partners keep us fully informed about issues that affect our business		
Our trading partners share business knowledge of core business processes with us		
We and our trading partners exchange information that helps establishment of business planning		
We and our trading partners keep each other informed about events or changes that may affect the other partners		

### 3.2 Competitive Advantage – Reliability Analysis

Table 4 shows the reliability analysis for CA.

**Table 4: Reliability Analysis for Competitive Advantage**

Measurement Items	$\alpha$	$\alpha$
	(Li et al., 2006)	(present study)
<b>Price</b>		
We offer competitive prices	$\alpha = 0.71$	$\alpha = 0.77$
We are able to offer prices as low or lower than our competitors		
<b>Quality</b>		
We are able to compete based on quality	$\alpha = 0.87$	$\alpha = 0.81$
We offer products that are highly reliable		
We offer products that are very durable		
We offer high quality products to our customers		
<b>Delivery Dependability</b>		
We deliver customer orders on time	$\alpha = 0.91$	$\alpha = 0.93$
We provide dependable delivery		
<b>Product Innovation</b>		
We provide customized products	$\alpha = 0.83$	$\alpha = 0.87$

We alter our product offerings to meet client needs		
We cater to customer needs for “new” features		
<b>Time to Market</b>		
We are first in the market in introducing new products	$\alpha = 0.77$	$\alpha = 0.76$
We have time-to-market lower than industry average		
We have fast product development		

## 4 CAUSAL MODEL AND HYPOTHESES TESTING

SEM is widely recognized as a powerful methodology for capturing and explicating complex multivariate relations in social science data. It represents the unification of two methodological traditions: factor analysis originating from psychology and psychometrics, and simultaneous equations (path analytic) modeling originating from econometrics (Kaplan and Elliot, 1997). Therefore, the standard SEM is composed of two parts – the measurement model (a sub model in SEM that specifies the indicators of each construct and assesses the reliability of each construct for latter use in estimating the causal relationships) and the structural model (the set of dependence relationships linking the model constructs).

### 4.1 Proposed Structural Model

The proposed structural model depicted in Figure 2 is a replica of the framework presented in Figure 1.

Figure 2: Theoretical Framework

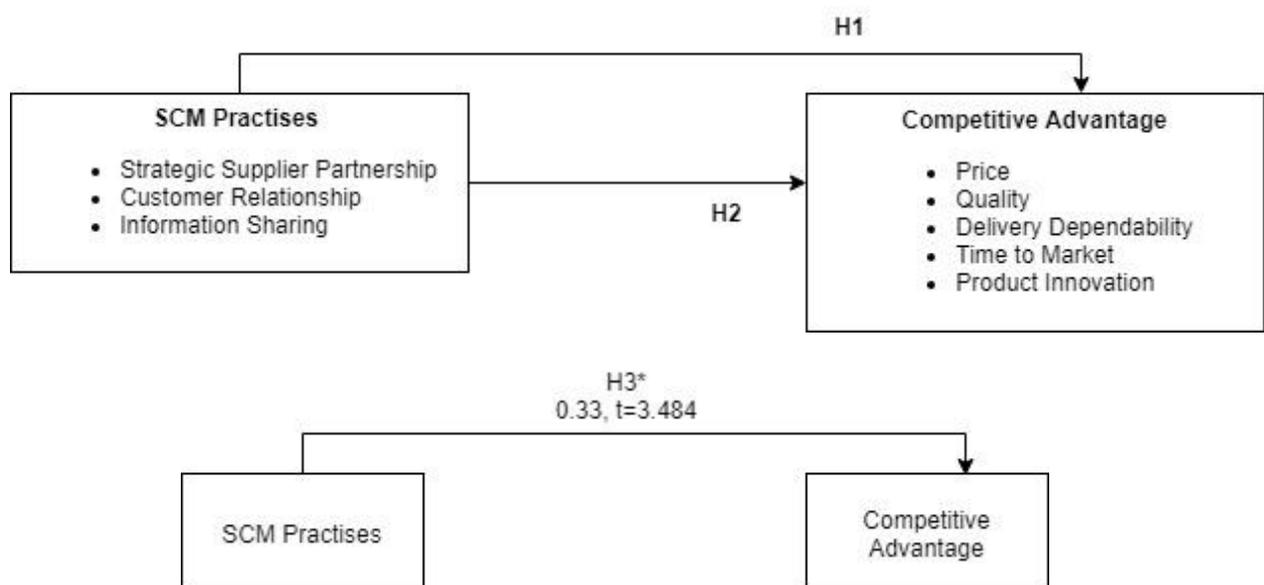


Table 5: Initial AMOS Structural Modeling Results

Hypotheses	Relationship	AMOS Coefficients	Effect Size	t-value	P	Support
H1	SCMP → CA	0.33	Medium	3.484	***	Yes
<b>GFI = 0.963 AGFI = 0.932 RMSEA = 0.056 *** P &lt; 0.001</b>						

**Hypothesis 1:** *‘SCM practices’ of a firm is positively related to competitive advantage of a firm.*

Hypothesis H3 was found to be significant and thus supported. This indicates that the higher the level of SCM practices by a firm, the higher the level of its competitive advantage. In other words ‘SCM practices’ of a firm has a direct positive influence on its competitive advantage. The successful SCM implementation will improve the organization’s performance on cost, quality, dependability, flexibility, and time-to- market, and give the organization a defensible position over its competitors through the coordination of inter-organizational activities along the supply chain. This backs the argument from prior literature (Li et al., 2005), that by adopting effective SCM practices firms can gain greater competitive advantage.

## 5 SUMMARY OF FINDINGS

It aims to answer the following important questions 1) What SCM practices affect competitive advantage of the firm? 2) What supply chain responsiveness dimensions create competitive advantage for a firm?

As of supply chain responsiveness. In this research, the developed research model considers the various practices between and within organizations that are correlated with the responsiveness of the supply chain and competitive advantage of a firm. The relationships between those practices and competitive advantage are tested.

### 5.1 Implications for Practitioners

As today’s competition is moving from among organizations to between supply chains, more and more organizations are increasingly adopting SCM practices, in the hope for securing competitive advantage. The findings of this research assure the practitioners that SCM is an effective way of competing, and the implementation of SCM practices does have a strong impact on competitive advantage of the firm.

### 5.2 Implications for Researchers

First, the study provides inferences made from an instrument that is valid and reliable for the current study’s context for evaluating the level of supply chain responsiveness, and tests the construct with the outcome - competitive advantage - of the firm. Although several previous studies discussed the responsiveness of firms, they were oriented toward customer responsiveness at a firm level. The instrument developed in this research captures three important aspects of supply chain responsiveness – operations system responsiveness, logistics

process responsiveness, and supplier network responsiveness. Since practices are designed to achieve efficiency and responsiveness, the new instrument shall provide better guideline for researchers in the SCM area, and thus, can be considered as a strategic management tool.

Second, the study takes a look at the supply chain responsiveness at the firm level, by measuring the extent of a firm's ability on various dimensions to address changes in customer demand. The concept of supply chain responsiveness is difficult to measure; however, the degree to which demand changes are addressed at various nodes of a firm (viz: upstream, within the firm, and downstream) can be used as an indirect measure of this concept. This measure is useful to researchers who are interested in measuring supply chain responsiveness but cannot specify a sampling frame of the supply chain. Measuring supply chain responsiveness at the firm level provides an alternate way to study supply chain outcomes.

Third, the study provides a research framework that identifies positive and significant relationships between SCM practices, supply chain responsiveness, and competitive advantage.

### 5.3 Limitations of the Research

This research has extended past research in several ways, by building on past theoretical and empirical studies. Although this research has significant contributions from both theoretical and practical point of views, it also has some limitations, which are described below. The examination of those limitations will assist future researchers to work around them.

First, due to the limited number of observations, the revalidation of constructs was not carried out in this research. This needs to be addressed in future research. New mailing lists and research methods can be used to improve the response rate.

Second, in this research, individual respondents (high level executives from purchasing, operations, materials, and logistics functions) in an organization were asked to respond to complex SCM issues dealing with all the participants along the supply chain, including upstream suppliers and downstream customers. However, no person in an organization is in charge of the entire supply chain: for example, purchasing managers are mainly responsible for purchasing and supply side, and may be not in an appropriate position to answer the customer-related questions; the main area of manufacturing managers is production and they may not have enough knowledge of their suppliers and customers; similarly materials managers are mainly responsible for inventory and materials management, and they may not have enough knowledge of their customer. Therefore, the use of single respondent may generate some measurement inaccuracy.

Third, Future research questionnaires may be directed through the top management (captive audience) to ensure higher response rates. The survey may also be endorsed by leading educational institutes / professional organizations / practitioners' councils and the like to guarantee higher response rates.

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## 5.4 Recommendations for Future Research

This section discusses some interesting directions for future research based upon the limitations discussed above and careful considerations of the research potentials.

First, future research should revalidate measurement scales developed in this research by using similar reference populations. Such a validation shall confirm our measurement instrument and create generalizability for it.

Second, future research should conduct factorial invariance tests. Generalizability of measurement scales can further be supported by factorial invariance tests. Using the instrument developed in this research, one may test for factorial invariance across industries, across different organization size, and across organizations with different supply chain structure (such as supply chain length, organization's position in the supply chain, channel structure, and so on).

Third, future research should apply multiple methods of obtaining data. The use of single respondent to represent what are supposed to be intra/inter-organization wide variables may generate some inaccuracy, more than the usual amount of random error (Koufteros, 1995).

Fourth, future research can study SCM issues at the supply chain level. Taking a complete supply chain as an example, it is of interest to investigate the various practices and mechanisms governing this supply chain, and how the SCM practices differ across supply chains operating in different industries (ex: electronic and computer, heavy machinery manufacturing, fashion and apparel, and consumer goods).

## CONCLUSION

Because international market segments develop ever more productive, rivalry don't happens amongst specific enterprises, yet amongst full price chains. Relationship by wise e-business cpa affiliate networks provides the particular edge against your competitors so that many of the individuals with a worth cycle in order to win in addition to grow. Relationship calls for specific individuals to consider made easier, consistent options depending on frequent architectures in addition to details models. Time frame to promote is crucial, in addition to individuals have to leave the particular gratification connected with change in addition to adjustment that will recognized the particular little-known infrastructures on the past.

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