

Susita Asree

Assistant Professor
College of Business and Economics
Winston Salem State University
North Carolina, 27103
Phone: 336-750-2351
Email: asrees@wssu.edu

Sufian Qrunfleh

Assistant Professor
Department of Operations and Information Management
Kania School of Management
The University of Scranton
Scranton, PA 18510
Phone: (570) 941-7407
Email: sufiqn.qrunfleh@scranton.edu

Emily M. Christiansen

Adjunct Professor
Department of Operations and Information Management
Kania School of Management
The University of Scranton
Scranton, PA 18510
Phone: (570) 941-4209
Email: emily.christiansen@scranton.edu

Alignment between business strategy and supply chain strategy: Impacts on firm performance

ABSTRACT

This paper investigates the alignment between typologies for business strategy and supply chain strategy. We develop hypotheses proposing that alignment between business strategy (exploitation and exploration), and supply chain strategy (lean and agile) respectively, enhances firm performance. Our empirical results based on structural equation modeling suggest that exploitation/lean supply chain strategy combinations are associated with improved firm performance. The study contributes to the supply chain management literature by identifying two types of alignments with business strategy.

Keywords: *Exploitation Strategy, Exploration Strategy, Lean Supply Chain, Agile Supply Chain*

INTRODUCTION

An important aspect of successfully achieving and sustaining a competitive advantage for a firm lies in managing their supply chains (Cohen and Roussel, 2005). Practice-based examples show that market leaders such as Wal-Mart and Dell constantly search for new ways to add value and improve its performance by realizing the importance of structuring their supply chain strategies. For example, Wal-Mart's strategic vision to build customer loyalty through everyday low prices being accomplished by adopting a cross-docking strategy in its supply chain. On the other hand, Webvan designed a supply chain with larger and fewer warehouses which resulted in higher transportation costs, mainly as a consequence of lack of fit between business strategy and supply chain strategy. Supply chain strategies are therefore essential to the performance of most businesses, and firms need to implement a supply chain strategy that supports and drives forward the business strategy.

In this paper we examine the research question – How can a focal firm align its business strategy (exploitation and exploration) within its supply chain strategy (lean and agile) so that it realizes benefits from such alignment? Building on March's (1991) typologies for business strategy and Fisher's (1997) classifications for supply chain strategy we examine the alignment between business strategy (exploitation and exploration) and supply chain strategy (lean and agile), and the effect of this alignment on firm performance. We theoretically develop and empirically validate a framework proposing that the respective fit between exploitation and exploration strategies with lean and agile supply chain strategies, respectively, is associated with enhanced firm performance. Our findings are based on statistical analysis (which included a Q-sort study, exploratory and confirmatory factor analysis, and structural equation modeling) applied to web survey data from 204 international firms in Asia.

The study contributes to the supply chain management (SCM) literature by analyzing the benefits of aligning different types of business strategies to supply chain strategies, by showing

that aligning particular types of business strategy to specific types of supply chain strategy can enhance firm performance. Additionally, it extends the literature on supply chain alignment by identifying two types of alignments with business strategy.

The paper is set out as follows. First, we provide theoretical background from business strategy and supply chain strategy literatures. Next, we develop the research model and hypotheses. We then describe methods and findings.

THEORETICAL BACKGROUND

The Effect of Business Strategy on Supply Chain Strategy

Studies on supply chain management have argued that supply chain strategy should directly support and drive forward the business strategy (Evans and Danks 1998). Several researchers have argued that aligning the appropriate supply chain strategies, (lean and agile), to product characteristics (functional and innovative), respectively, enhances firm performances (Fisher 1997; Mason-Jones et al., 2000; Lee 2002; Qi et al. 2009). Recent studies on supply chain alignment have focused on the alignment between supply chain strategy and firm capabilities. For instance, Narasimhan et al. (2008) suggest that the importance of aligning SCM strategy with corporate level strategy to achieve better firm performance. They argue that firms should consider first their supply chain strategy to make sure that it is consistent with their firm's capabilities to achieve competitive advantage in the market. Porter (1990, p.41) argues that a *“strategy guides the way a firm performs individual activities and organizes its entire value chain”*. For instance, if a firm has a low-cost strategy, then the firm should optimize and coordinate the supply chain by having frequent and timely deliveries from suppliers to reduce the required level of inventory and achieve low cost. Building on this general concept, and in a recent study, Qi et al. (2011) suggest that the alignment between competitive strategy (cost leadership and differentiation) and supply chain strategy (lean and agile) enhances business performance. They argue that companies with a low cost strategy should use a lean supply chain strategy to achieve a competitive advantage in the market. On the other hand, an agile supply chain strategy is best used to support a differentiation competitive strategy.

As the above discussion shows, the literature suggests benefits of using supply chain strategy to support the execution of the business strategy. However, it lacks a theoretical and generalizable understanding of how or why specific supply chain strategies should be aligned with specific types of business strategy. As shown in Figure 1 we propose a matrix with four cells that represent four possible combinations of business strategy and supply chain strategy. Firms with exploitation business strategies are best aligned with lean supply chain, and firms with exploration strategy are best aligned with agile supply chain strategy.

		Business Strategy	
		Exploitation	Exploration
Supply chain strategy	Lean	Match	Mismatch
	Agile	Mismatch	Match

Figure 1 Matching Supply Chains with Business Strategies

Business Strategy

Exploration and exploitation strategies have been discussed and analyzed in the field of organizational learning for many decades (Holland, 1975; Kuran, 1988; Herriott, Leventhal, and March, 1985; March, 1991; Leventhal and March 1993). The choice between exploitation and exploration strategy is based on a firm's objectives in the market. The two general thoughts were that an organization could follow either a purist approach; either exploration or exploitation, or an organization could follow an ambidextrous approach; both exploration and exploitation. Contemporary research discusses a third choice, “*punctuated equilibrium*” in which the organization cycles through a period of exploration and then cycles through a period of exploitation (Burgelman, 2002; Gupta et al., 2006). In all cases exploration and exploitation are considered two different strategies, whether competing for resources or synergistic, each strategy is accepted to be associated with its own set of distinct synonyms (i.e. exploration; search, variation, risk taking, flexibility, discovery, innovation (March, 1991) exploitation; refinement, efficiency, selection, implementation, execution (March, 19991)). Understanding exploration and exploitation in terms of supply chain strategy is important. The focus of this paper is thus to examine the alignment between business strategy and supply chain strategy and its impact on firm performance.

Exploration refers to pursuing new possibilities in organizational learning with the intention of integrating these practices into the organization (March 1991). In contrast, exploitation refers to the pursuit of refining existing practices within the organization (March, 1991). In this paper we argue that it is important for a focal firm to align its business strategy (exploration and exploitation) with the supply chain strategy (lean and agile) in order to enhance its performance. For example if the goal of a firm is to be efficient, a lean supply chain strategy is more suitable and enhances the execution of an exploitation strategy since lean strategy is characterized by elimination of waste, and the exploitation strategy focuses on the refinement,

selection and production of existing resources. This alignment will help the firm achieve its market and financial goals. On the other hand, if the firm’s goal is to be able to respond effectively and react quickly to changes in the market, then an agile supply chain through operational flexibility will enhance the ability of the firm to execute an exploration strategy, one that is based on innovation and learning, and ultimately improves the firm’s performance through alignment with the business strategy.

Supply chain Strategy

A lean supply chain refers to a supply chain that utilizes a strategy for managing the supply chain in an efficient way by eliminating waste and employing continuous improvement techniques across the chain (Huang et al., 2002; Wang et al., 2004; Vonderembse et al., 2006). On the other hand, an agile supply chain can be recognized as a strategy for managing the supply chain when organizations need to respond quickly and effectively to rapid changes in customers’ demand (Christopher, 2000; Huang et al., 2002; Wang et al., 2004; Vonderembse et al., 2006).

Firm Performance

Firm performance refers to how well a firm achieves its market-oriented goals as well as its financial goals (Yamin et al., 1999). This definition has been adopted in previous studies (Li et al., 2006) to measure the impact of SCM practices on firm performance. Li et al., (2006) measured firm performance through its market share, ROI, the growth of market share, the growth of sales, growth in return on investment, profit margin on sales, and overall competitive position.

HYPOTHESES DEVELOPMENT

The research framework in Figure 1 depicts our hypothesized relationship between business strategy, supply chain strategy, and firm performance. We propose that exploitation strategy is aligned with lean supply chain strategy and exploration strategy is aligned with agile supply chain strategy. These alignments are associated with improved firm performance. We next describe the rationale for the research hypotheses.

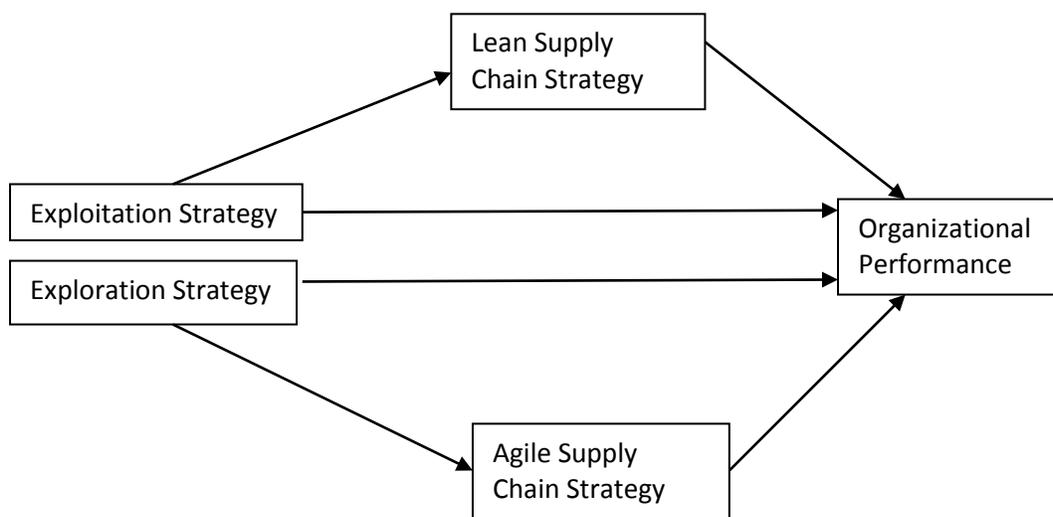


Figure 2 Business-supply chain strategies research framework

Exploitation Strategy-Lean Supply Chain Alignment and Firm Performance: Research hypothesis H1

The concept of exploitation strategy is characterized by refinement, efficiency, choice, production, selection, implementation, execution and re-use of existing resources (Gupta et al., 2006; Holmqvist, 2004; Benner and Tushman, 2003; March 1991). This simply means that after firms identify a particular product to be manufactured; it would focus on refining the same idea over and over again through several processes aimed at deriving efficiencies. Firms adopting an exploitative strategy will focus on improving a repetitive manufacturing process and move away from creating brand new products (Yalcinkaya et al, 2007). Firms with an exploitation objective do not invest in expensive product innovation but rather have simple, standardized products that are easy to manufacture. Standard products, which tend to be simple products with limited amounts of differentiation, should be produced by a lean supply chain (Vonderembse et al. 2006). The primary objectives of exploitation strategy can be executed by using lean supply chain strategy. Firms targeting process improvement should exploit existing resources which require operational collaboration with suppliers (Tokman Richey, Marina, & Weaver, 2007). Improving coordination and collaboration of information across suppliers will enable the firm to execute its exploitation strategy. Thus, working together closely with key suppliers will reduce inventory, decrease lead-time, and foster improvement (e.g. share problems with them and conjointly find more effective solutions) (Thun 2010). The lean supply chain strategy requires supplier integration to eliminate waste and achieve a low cost strategy (Qi et al. 2009; Lamming 1996). Firms that apply lean supply chain strategy focus on enhancing operational processes and procedural efficiency (Tokman et al., 2007). Thus, adopting lean supply chain strategy enhances efficiency and product improvement which allows the firm to execute its cost efficient strategy, exploit its resources, and improve its performance. Therefore, it is hypothesized that:

H1:Lean Supply Chain Strategy mediates the relationship between Exploitation Strategy and Firm Performance

Exploration Strategy-Agile Supply Chain Alignment and Firm Performance: Research hypothesis H2

Firms that face higher degrees of uncertainty in the market need to invest in exploration activities. Exploration strategy is characterized by elements of search, risk taking, experimentation, play, flexibility, discovery and innovation (March, 1991). Firms that pursue an exploration strategy tend to be more innovative which is suitable for markets with uncertain demand potentials and a shorter product life cycle. This necessitates the need for a focal firm to arrive at a long-term and strategic collaboration with its supply chain members which allows them to achieve radical innovation and leads to learning experience and knowledge accumulation. Innovative products which may employ new and complex technology require an agile supply chain (Vonderembse et al. 2006) to respond to changes in customers' demand. An agile supply chain strategy focuses on organizational activities that add value to customer satisfaction through the development of new products or services. It requires supplier attributes such as speed and flexibility that provides customized products at short lead-times (Huang et al., 2002; Wang et al., 2004). Thus, adopting an agile supply chain strategy enables the focal firm to identify changes and respond quickly to them, which enhances the firm's ability to introduce new products, improve service levels, and reduce lead-times. Therefore, it is hypothesized that:

H2: Agile Supply Chain Strategy mediates the relationship between Exploration Strategy and Firm Performance

RESEARCH METHODOLOGY

The process of developing the measurement instrument involved several steps. First step was an initial literature view, followed by structured interviews with practitioners and academicians. The next step was Q-sort analysis. The objective of the Q-sort was to pre-establish convergent and discriminant validities of the scales by examining how the items were sorted into the dimensions. A total of six practitioners were interviewed and asked to participate in the Q-Sort method. For each round of interviews, two independent judges were involved. The next step was the large scale data analysis. The large scale data was analyzed through two step process. First is the analysis of measurement model and second is structural model.

Results of measurement model analysis: The measurement model was tested through SPSS software. Internal reliability was assessed based on Cronbach's coefficient alpha. The recommended cut-off value for Cronbach's alpha is 0.70 (Nunnally, 1978) and all values for internal validity were above 0.7, indicating a good and reliable model.

Results of structural model analysis: Partial least square is a distribution free and a powerful instrument for analyzing small samples (Chin, 1998). The model fit using PLS analysis can be assessed either by examining the magnitude of statistical significance of the path coefficient and R-square (Teo et al., 2003; Mallin et al., 2010) or by a rigorous test of the significance of various proposed path relations using the bootstrap function in Visual PLS (Chin, 1995).

H1 is supported by $\beta = 0.21$, $p < .005$, which indicates that lean strategy fully mediates the relationship between exploitation strategy and firm performance. H2 is not supported by $\beta = 0.13$. This result indicates that agile strategy does not mediate the relationship between exploration strategy and firm performance. However, we do note that there a significant direct relationship between exploration strategy and firm performance. The results are shown in Figure 3.

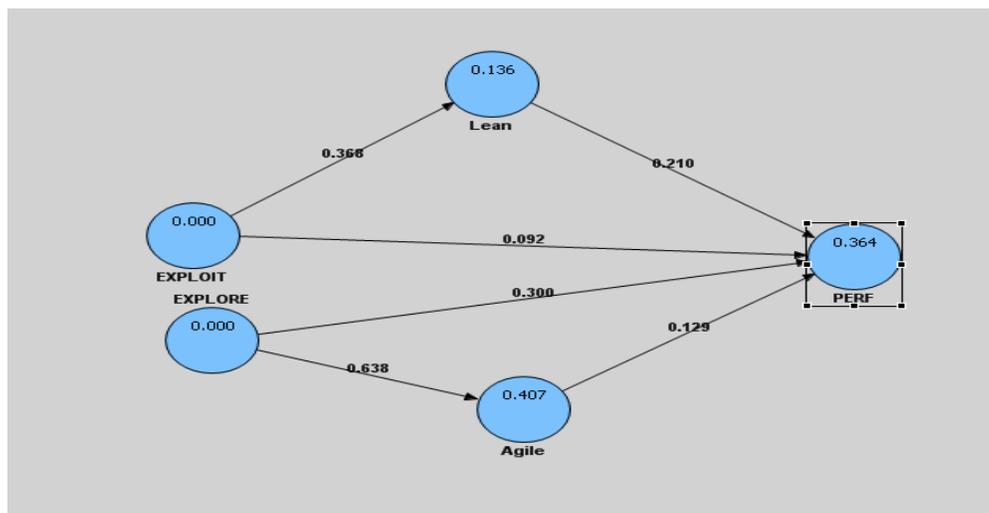


Figure 3 Results of structural model (PLS)

CONCLUSION

Many organizations believe that effective SCM is the key to building and sustaining competitive advantage in the market. To effectively manage their supply chains, organizations need to adopt an appropriate supply chain strategy that matches with business strategy. The research shows that in order to do so, there is a need to integrate supply chain strategy into business strategy.

This research is one of the first large-scale empirical studies to explore the mediating alignment between supply chain strategy and business strategy, and the impact of this alignment on firm performance. The research looks at different supply chain strategies and assesses appropriately-aligned business strategies that would enhance their effectiveness by positively influencing firm performance. Second, this study provides a theoretical framework of exploration and exploitation theory based on supply chain strategy. The empirical results from this study are the first that support the application of exploitation and exploration theory at the selected design of supply chains. For instance, exploitation strategy is supported by a lean supply chain design. Thus lean supply chain design is suitable if firms decide to produce products that have standardized attributes. The reason that lean supply chain fits the exploitation concept is because the characteristic of lean supply chain such as cost reduction, efficiency, incremental learning activity and using standardized products are similar with exploitation characteristics. Organizations that apply a lean manufacturing system are not looking to have expensive product innovation but rather to have standardized products that could save cost, so they pay more attention to the operational activities of the supply chain. This is not the case in agile supply chain. Firms with exploration strategy do not need the support of agile supply chain strategy to help execute its exploitation strategy.

***** REFERENCES ARE AVAILABLE UPON REQUEST*****

Sufian Qrunfleh
The University of Scranton
Scranton, PA 18510
Phone: (570) 941-7407
Email: sufian.qrunfleh@scranton.edu