Chapter 72

Managing Risk in Small and Medium Enterprises (SMEs) Supply Chains' Using Quality Function Deployment (QFD) Approach

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ABSTRACT

Supply chain risk management (SCRM) is the process of risk mitigation in supply chains achieved through collaboration, coordination and application of risk management tools among the partners, to ensure continuity coupled with long-term profitability of the supply chain. Supply chain risks emanate from multiple sources and similarly risk mitigation in supply chains is dependent on several variables. The most difficult part of supply chain risk management is prioritizing risks and an understanding of the relationships among various types of risks and risk mitigation variables. Drawing from the standard framework, in this research a modified house of quality is developed to understand the relationships between various supply chain risks and risk mitigation variables. It helps to prioritize various risks and understand the current status of the supply chain and the deficient areas with regard to risk mitigation capabilities. The structured QFD process provides the supply chain managers a conceptual map that enables the improvement of planning and control of various risks that could impact a supply chain.

INTRODUCTION

The simultaneous integration of customer requirements, internal processes, and upstream supplier performance is commonly referred to as supply chain management (SCM) (Tan et al., 1999). Today, vulnerability drivers in the supply chain structure stem to a large degree from the disintegration of supply chains and the globalization (and off-shoring) of value-adding activities (Srai & Gregory, 2008). With greater focus on higher levels of integration with partners, elimina-

tion of waste (i.e., becoming lean), dependence on outside support the more likely uncertainties, dynamics and accidents in one link affect the other links of the chain. For example risks due to larger variation of inventory and demand may result when each supply chain entity tries to optimize its own operation without considering the impact on other entities (Liang & Huang, 2006). Firms' now recognize that the survival in the modern business environment is no longer an issue of one firm competing against another firm but has, instead, become an issue of one supply chain competing against another supply chain. But the understanding that the failure of any one link in the supply chain would have ripple effect on the overall supply chain performance has come rather late. Thus,there is a growing realization among the companies that adopting supply chain risk management practices can yield continuous improvement of supply chain operations (Elkins et al., 2005).

Top executives at Global 1000 firms now consider supply chain disruptions and their associated operational and financial risks to be their single most pressing concern (Craighead et al., 2007). But companies partnering in a supply chain try to myopically reduce their own risk (Agrell et al., 2004) disregarding the impact on other partners. Also coordinating actions across firms is tough because organizations have different cultures and companies can't count on shared beliefs or loyalty to motivate their partners (Narayanan & Raman, 2004). The degree of the vulnerability of a supply chain is determined to a large extent by the degree of complexity of the network (Nieger et al., 2009). In recent times the complexity has increased many-fold due to firms' focus on their core competence and increased dependence on outsourcing.

Supply chain risk management (SCRM) is defined as "the process of risk mitigation achieved through collaboration, co-ordination and application of risk management tools among the partners, to ensure continuity coupled with long term profitability of the supply chain" (Faisal et al., 2007). SCRM forms the link between the organization, customers, suppliers and the business environment and reduces dependency and promotes synergy (Lee, 2008). Due to the relative newness of the SCRM field it is currently chaotic and somewhat disorganized (Trkman& McCormack, 2009). It should also be noted that risks cannot be completely eliminated from supply chains but strategies can be developed to manage these risks if the dynamics between the variables related to risks in a supply chain are understood (Faisal et al., 2006).

Considerable benefit can be derived from examining risk at the level of the supply chain, rather than restricting that view to the immediate dyadic focal firm/supplier relationship (Harland et al., 2003). With a clear understanding of the types of supply-chain risks, managers in many types of industries can adapt effective risk reduction approaches to their own organizations (Chopra & Sodhi, 2004). To assess supply chain risk exposures, organizations must identify not only direct risks to its operations, but also the potential causes or sources of those risks at every significant link along the supply chain (Souter, 2000; Christopher et al., 2002). The organization's attitude toward risk will affect its reward system, and mold how individuals within the organization will react to events (Olson & Wu, 2010). Thus, risk management skills, including awareness of risk signals and developing risk management plans are essential requirements for supply chain management success (Giunipero & Pearcy, 2000).

The consequences of failing to manage risk have also become more severe. In addition to the direct impact on revenue and profit, disruptions can hurt a firm's customers and suppliers, since the interconnectedness of a supply chain has a ripple effect that affects the entire supply chain ecosystem (Shi, 2004). It is also reported that companies experiencing such disruptions

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