

# Chapter 53

## Supply Risk Management Process: Modeling Enablers to Develop a Structural Framework

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### ABSTRACT

*The purpose of this study was to develop and analyze an interpretative structural framework for the Supply Risk Management Process (SRMP). The research questions were focused on understanding the casual factors as well as the link between the SRMP and Supplier Selection (SS) process. The Interpretative Structural Modeling (ISM) approach was used to develop a structural framework for the SRMP. An extensive literature followed by discussion with managers in different Indian Automobile companies was completed to identify the strategic enablers for the SRMP. Thirteen strategic enablers were identified and classified into four categories. An Indian Automobile manufacturing company was selected as a case study participant to serve as an authentic practice-based example of the model. The SRMP enablers and the SS factors were applied to the case study organization and analyzed. The significance of this study was that the SRMP enablers and SS factors assist managers to set priorities for decision making purposes. This allows supply chain managers to take proactive steps in order to reduce risk and improve the performance of the organization in the early SRMP stages.*

### INTRODUCTION

Current business trends show an increasing interest in outsourcing, a reduction of the supplier base, the cultivation of long term relationships with suppliers, a focus on reduced inventory, and the use of shorter lead times. These business trends have the potential to increase risks in the supply chain and redefine the functions of the business units. The purchasing function including the supplier selection is no longer

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solely an operational function but instead it is a strategic decision. To make a prudent supplier selection decision, it is important to plan for uncertainty to manage risk. The objective of risk management in the supply chain is to protect organizations from unpredictable events and their adverse effects (Borghese et. al., 2006). Tang (2006a) believes that effective supply chain risk management (SCRM) has become a need for today's companies. Although supply chain management has always had a strong emphasis on risk, the notion of supply chain risk management has gained an increasing popularity in recent years especially across disciplines and cultures (Goodwin & Strang, 2012). The topic of risk in supply chain is gaining increased importance for strategic decision making (Kelindorder and Saad 2005, Chopra and Sodhi 2004 and Chistopher and Lee 2004).

An increasing dependence on suppliers leads companies to be even more exposed to uncertain events, so that supply risk management process (SRMP) becomes necessary as part of supply management (Zsidisin et al., 2000; Zsidisin and Ellram, 2003; Wu et al., 2006). Thus supplier selection (SS) becomes one of the most important issues for purchasing managers (Hsu et al., 2006). An effort has to be made at various organizational levels to implement process improvement strategies to reduce the risk propensity, for example by forming strategic alliances (Giunipero and Eltantawy, 2004) and by developing suppliers (Krause and Handfield, 1999). SRMP is strongly related with risks arising from improper SS (Giunipero and Eltantawy, 2004). One of the most influential activities in the whole procurement process and the supply management performance is the proper supplier selection. Although supplier selection/development is considered a part of the conceptual supply risk framework as shown by Ritchie and Brandley (2007), little has been done to translate the conceptual work into operational approach. In the literature SS and SRMP are generally studied separately, and with little linkage established between the two issues (Mitcheli et. al, 2008). This research aims at understanding the link between SS and SRMP and its major enablers. The enablers for SRMP are identified and classified followed by exploration of the interactions among the enablers for an automobile supply chain in India. To identify and summarize the relationships among variables defining a problem, interpretive structural modeling (ISM) is an effective tool (Sage, 1977). ISM provides a medium to show the order imposed on the complexity of such variables (Jharkharia and Shankar, 2004; Ravi and Shankar, 2005). Therefore, in this paper, the enablers of the supply risk management process influencing supplier selection have been analyzed using the ISM methodology. This shows the inter-relationships of the enablers and their levels. Depending on their driving power and dependence, the enablers are categorized. The main objectives of this paper are:

1. To identify the enablers of supply risk management process that influence supplier selection in supply chains;
2. To determine the interaction among enablers identified using ISM; and
3. To discuss the managerial implications of the research.

## **ENABLERS OF SUPPLY RISK MANAGEMENT PROCESS INFLUENCING SUPPLIER SELECTION**

In this paper we used exploratory research to help formulate relevant factors that can be the basis of subsequent inquiries into the issues faced in supply risk management process (SRMP) and supplier selection (SS) related to automobile industry in India. The tools employed to conduct exploratory research include an extensive review of literature and surveys of opinion of experts.

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