



Supply Chain Risk Management: Literature Review and Future Research

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ABSTRACT

Supply chain risk management has increasingly becoming a more popular research area recently. Various papers, with different focus and approaches, have been published since a few years ago. This paper aims to survey supply chain risk management (SCRM) literature. Paper published in relevant journals from 2000 to 2007 are analysed and classified into five categories: conceptual, descriptive, empirical, exploratory cross-sectional, and exploratory longitudinal. We also looked at the papers in terms of the types of risks, the unit of analysis, the industry sectors, and the risk management process or strategies addressed. The literature review will provide the basis for outlining future research opportunities in this field.

Keywords: literature survey; supply chain risk management

INTRODUCTION

The practitioners and scholars believe that the effective supply chain management has become an important enabler to improve organization performance and valuable way of securing competitive advantage (Chirderhouse et al, 2003; Li et al, 2006). The intensifying business competition since 1990s has forced companies to improve efficiency in many aspects of their business. On the other hand, the increasing uncertainty requires them to spend more resources to anticipate for demand, supply, as well as internal uncertainties for better sustainability of their supply chain. Interestingly, such an

increasing uncertainty is not solely induced by the external business environments, but also due to increasing complexity of the supply chain structure and varying mechanism initiated by the supply chains in their business. The trend of companies outsourcing their activities to outside parties has certainly created a new source of uncertainty. The chance of having a delay in raw materials delivery is increasing if a company relies to outside parties to do most of the inbound logistics activities. Likewise, the trend of supply base reduction has exposed some companies to more risks than the associated benefits.

Risk and uncertainty has always been an important issue in supply chain management. Earlier literature consider risks in relation to supply lead time reliability, price uncertainty, and demand volatility which lead to the need for safety stock, inventory pooling strategy, order split to suppliers, and various contract and hedging strategies (see Tang (2006a) for an excellent review of various quantitative models considering supply chain risk). 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 due to increasing supply chain complexity, including the use of global contract manufacturers and suppliers. Faisal et al.(2006b) and Tang (2006a) believe that effective supply chain risk management (SCRM) has become a need for companies nowadays. Companies like Ericsson (Norrman and Jansson, 2004) and Nokia (Li et al, 2006), have long realized the need for an effective risk management in their supply chain operations.

According to Chopra and Sodhi (2004), the supply chain risks could be in the form of delays of materials from suppliers, large forecast errors, system breakdowns, capacity issues, inventory problems, and disruptions. Another classification is provided by Tang (2006a) who categorized supply chain risks into operations and disruptions risks. The operations risks are associated with uncertainties inherent in a supply chain, which include demand, supply, and cost uncertainties while disruption risks are those caused by major natural and man-made disasters such as flood, earthquake, tsunami, and major economic crisis.

Numerous articles on supply chain risk management have been published in the last 20 years, the oldest being the article by Kraljic in 1983 (Paulsson, 2004). An attempt to review articles on supply chain risk management was done by Paulsson (2004). The author classified the articles using three dimensions: the unit of analysis, type of risk, and risk handling. From our observation, there are many more SCRM articles published since the appearance of Paulsson's review, making it beneficial to pro-

vide a more up to date review to include more recent articles. Tang (2006a) reviewed SCRM articles, but he focused on quantitative models. The author classified articles according to four basic supply chain areas: supply management, product management, information management, and demand management. The purpose of this article is to provide an extensive literature review on supply chain risk management. In particular, we aim to:

- Classify SCRM articles according to their approach and methodologies
- Discuss opportunities for future research

REVIEW METHODOLOGY

Search Methodology

In this review, we did exhaustive search of the articles related to supply chain risk management. We collected articles published from 2000 to 2007, focusing on risk management issues pertinent to manufacturing and supply chain management. There are two reasons for not including papers published prior to 2000. First, although traditionally risk and uncertainty have always been an important issue related to supply chain management literature, the term "supply chain risk" is relatively new to the literature. Our search in two major literature databases (Science Direct and Emerald Online) using a keyword "supply chain risk" revealed no result for papers published prior 2000. Second, the issue of supply chain risk management has gained much attention after a series of events having major impacts on supply chain, including fire in one of the Ericsson's supplier in New Mexico in 2000 that led Ericsson to a loss of about 400 million Euros, insolvency of one of Land Rover's supplier in 2001 causing this company to lay off 14000 workers, and certainly the tragic terrorists attack on the World Trade Center on September 11, 2001 causing major supply chain problems to the world (Norrman and Jansson, 2004; Paulsson, 2004; Tang, 2006b).

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