Supply Chain Risk Assessment in the Ornamental Fish Supply Chain

Mohammed C. Iqbal, Government Engineering College Thrissur-Kerala, Thrissur, India
Shalij P.R, Government Engineering College Thrissur-Kerala, Thrissur, India

ABSTRACT

Systematic risk management plays a key role in confronting the emerging challenges of business. A conceptual framework is presented here for the evaluation of risks in the ornamental fish supply chain. With a prolonged study and deliberations with field experts, various types of risks are brought out of the ornamental fish supply chain. From the study, the types of risks associated are clustered into six categories, namely macro level risk, demand risk, supply risk, quality risk, risk on asset and infrastructure and financial risk, to find out the major risks in this supply chain. Friedman's ranked data test is applied to find the significant difference in various risks clustered in the categories. The study allows a supply chain member to develop a clear view of risk related to the entire supply chain. The article can help the members of the ornamental fish supply chain to make use of the study and information to make more efficient and effective supply chain.

KEYWORDS

Empirical Study, Friedman’s Test, Ornamental Fish Supply Chain, Risk Management, Supply Chain Management

INTRODUCTION

Supply chains have become more complex in today’s global environment primarily due to the shorter product life cycles, increasing demand, and complicated business strategies. With the adoption of lean production systems, just in time philosophy, and by reducing the number of suppliers, supply chain operations become smooth provided unexpected events do not happen in the supply chain (Christopher and Lee, 2004; Lee, 2002, 2004). But these operational strategies are associated with significant increase in the level of risk. Ericsson crisis in 2000 is a typical example. Due to its single source policy, a fire accident in its chips supplier immediately disrupted the material supply. Ericsson’s production was disturbed and orders worth USD 2.34 million were lost (Norrman and Jansson, 2004).

A few companies have implemented adequate methods for risk management as they are quite aware of the consequences of risks for their supply chain (Tang, 2006). In general risk management is defined as the identification and analysis of risks as well as their control. This paper provides a detailed study on the supply chain risk and risk management strategies and aims to study about the supply chain of ornamental fishes with a specific focus on Kerala, India and to identify the risks involved in the supply chain operations.
SUPPLY CHAIN RISK ASSESSMENT

The risk is the chance of danger, damage, loss, injury or any undesired consequences. Royal society (1992) defined risk as “The probability that a particular adverse event occurs during a stated period of time, or results from a particular challenge. As a probability in the sense of statistical theory, risk obeys all the formal laws of combining probabilities”. The consequences of risks are not easy to manage. Critical incidents may influence another member of the supply chain in a hostile manner and distort their perception of the company or the brand.

Supply chain risk management is the management of supply chain risks through coordination or collaboration among the supply chain partners so as to ensure profitability and continuity (Tang, 2006). Norrman and Lindroth (2002) defined supply chain risk management as collaborating with parties to deal with risks and uncertainties caused by or impacting on logistics related activities or resources. The aim of supply chain risk management is the identification and management of risks for the supply chain, through a coordinated approach among supply chain members to reduce supply chain vulnerability as a whole (Juttner et al., 2003). Supply chain vulnerability is an exposure to serious disturbance, arising from risks with in the supply chain as well as risk external to the supply chain. There is no clear consensus on the definition of supply chain risk management (Sodhi & Tang, 2012).

The term ‘risk’ is a vast and multidimensional construct. Numerous interpretations of ‘risks’ are seen the academic sphere. The variance-based definitions drawn from classical decision theory are deliberated mostly, where risk is the variation in the distribution of possible outcomes, their likelihoods, and their subjective values. In the hazard focused risk measurement, the numeral value of risk can be measured in terms of probability of the given event multiplied by the negative business impact. March and Shapiro (1987) consider risk as the variation in the distribution of possible outcomes, their likelihoods, and their subjective values. Zsidisin et al. (2003) defined risk as a detrimental event with relatively high likelihood and that event has a significance associated with impact or cost. Peck (2006) proposes risk as a “measure of the possible upside and downside of a single rational and quantifiable decision”. Stemmler (2006) describes that “…risk denotes the chance of danger, loss or injury…” Supply chain risk management has to deal with all aspects of risk pertinent to it.

The incidents like Tsunami in 2004, hurricane Katrina in 2005 and problems arise due to the supply chain strategies, envisage the need and relevance of supply chain risk management. Ericsson reported year end losses of USD 2.34 million for the mobile phone division after its supplier’s semiconductor plant caught on fire in 2000. Dole suffered a large revenue decline after their banana plantations were destroyed after the hurricane which hit South America in 1998. Land Rover laid off 1400 workers after their supplier became insolvent in 2001. Ford closed five plants for several days after all air traffic was suspended after September 11 in 2001. Mattel recalled 19 million toys due to lead paint or loose magnet in 2001. In the year 2006 Dell recalled 4 million laptop computer batteries made by Sony due to fire hazard. The impact of such disruptions was catastrophic. (Chopra and Sodhi, 2004; Christopher and Peck, 2004; Sheffi. 2005).

Tang (2006) dealt the supply chain risk management in two dimensions by classifying it into operational risks and disruption risks. Operational risks include uncertainties such as uncertain customer demand, uncertain supply, and cost. Risks caused by natural or non-natural disasters such as earthquakes, floods, hurricanes, terrorist attacks or economic crisis such as currency devaluation or strikes come under disruption risks. Tang (2006) has conducted a survey on the research works in risks and classified the risk management articles on the basis of four basic approaches i.e. supply, demand, product, and information management approaches.

Manuj and Mentzer (2008a) categorize supply chain risks as supply, operations, demand risks and other risks which include security and current risks. Manuj and Mentzer (2008b) created an integrated framework for global supply chain management with five step approach, namely risk identification, risk assessment and evaluation, selection of appropriate risk management, implementation of appropriate risk management strategies and mitigation of supply chain risks. They categorized the risk as supply,
ROCRSSI++: An Efficient Localization Algorithm for Wireless Sensor Networks
[www.igi-global.com/article/rocrssi-efficient-localization-algorithm-wireless/53466?camid=4v1a](www.igi-global.com/article/rocrssi-efficient-localization-algorithm-wireless/53466?camid=4v1a)

Boosting Semantic Relations for Example Population in Concept Learning
[www.igi-global.com/chapter/boosting-semantic-relations-example-population/56079?camid=4v1a](www.igi-global.com/chapter/boosting-semantic-relations-example-population/56079?camid=4v1a)