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SCENARIO PLANNING IN SUPPLY CHAIN RISK MANAGEMENT

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ABSTRACT

This paper studies the risks and uncertainties surrounding global food supply chains and finds that "scenario planning" which is a popular tool used in other sectors for risk identification, is less widely used to identify risks within global food supply chains. Presented in this paper is a review of available literature and a discussion with regards to the feasibility of using scenario planning to address food supply chain risks. The feasibility of using scenario planning at the strategic, tactical and operational level is also discussed.

SUPPLY CHAIN RISK MANAGEMENT

Risk management has become an integral part of a holistic SCM ideology (Christopher and Lee, 2004). Local political turmoil, the ever increasing complexity and uncertainty of weather conditions, terrorism, counterfeiting, and a plethora of other such issues create external risks in the supply chain. The supply chain is also subjected to risks internally. Supplier issues, strikes, quality problems, and logistics issues are more internal operational risks, which need a different level of mitigation. Tang (2006) argues that with so many (e.g. terrorist attacks, hurricanes, earthquakes) disruptions that have happened in recent times, supply chain risk will become an important criterion for cost reduction in SCM. Chopra and Sodhi (2004) classify the supply chain risks in the form of delays of materials from suppliers, large forecast errors, system breakdowns, capacity issues, inventory problems, and disruptions. Whereas, Tang (2006) classifies risks as supply chain risks into operations and disruptions risks. According to Ritchie and Marshall (1993) risks emerge from one of the following sources: (1) Environmental factors (2) Industry factors (3) Organizational factors (4) problem-specific factors and (5) Decision-maker related factors. Tang and Tomlin (2008) recently classified supply chain risks as strategic (long term) or tactical (medium term).

SCENARIO PLANNING

Scenario planning was described by Ringland as a set of processes for improving the quality of educated guesses and also for deciding what their implications are (Ringland, Schwartz 2006). Scenarios were defined by Kahn and Weiner (1967) as "hypothetical sequences of events constructed for the purpose of focussing attention on the causal processes and decision points". Another more recent definition follows (Ringland, Schwartz 2006) "builds plausible views of different possible futures for an organisation based on groups of key environmental influences and drivers of change about which there is a high level of uncertainty" Gerry Johnson and Kevan Scholes (1999). A crucial point noted by many academics is that scenarios are not predictions for the future but rather plausible futures none of which may actually materialise (Wack 1985, Wright 2000). Its purpose is more to make managers more aware of how prepared they are about plausible futures and how these scenarios can assist in making sound management decisions resulting in better and more effective choices (Ringland, Schwartz 2006, Wack 1985). Scenario planning has now being adopted as a planning tool across many organisations but there remains ambiguity regarding the exact procedure and other variables like number of scenarios needed ,number and type of people involved etc. as there is no standard approach towards implementing it.

RESEARCH METHODOLOGY

A survey was conducted in an effort to explore further the understanding and perceptions that entities within the UK food supply chains have regarding supply chain risks and the techniques deployed to mitigate and manage risks and disruptions (Dani and Deep, 2009).

The study was conducted with the help of a confectionary and snack manufacturer. The respondents from the food manufacturer agreed to send the questionnaire to some of the companies within its supply chain. This consisted of upstream suppliers of raw/ finished food products to downstream distribution and logistics providers (including packers). Eight companies in total responded to the questionnaire which was deployed electronically using the 'surveymonkey' website and the question building toolkit. Twenty-eight respondents from the eight companies attempted the questionnaire, of which only fourteen filled it in completely, giving a survey return rate of 50%. Eight respondents from the fourteen were then interviewed for further insight into the risk management process.

DISCUSSION

The study highlighted that 'Loss of reputation' – primarily due to food contamination is the risk that is rated as 'high' and thus needs better 'strategic risk management techniques' to control and mitigate. As shown from this analysis, it is important to note that entities in the supply chain are focusing on operational techniques for risk management, but are paying less attention to 'strategic techniques' which may be needed in the longer term to make risk management a more proactive approach. The respondents also mentioned that the approach towards risk management was more reactive than proactive. Also, risk mitigation is highly dependent on experienced staff leading to knowledge management issues. The strategic risk management processes were conducted every 2-3 years and there was little collaboration with suppliers and hauliers towards risk management. These were important insights which raised a question whether "Scenario Planning should be restricted to a strategic level or brought down to a more operational level?"

SCENARIO PLANNING: STRATEGIC, TACTICAL OR OPERATIONAL?

Scenario planning has traditionally been used for long horizons and as a strategic planning tool primarily amongst large US organisations (Linneman, Klein 1983) and western European organisations (Malaska 1985) and is witnessing a revival in popularity. In a recent survey of UK organisation it was reported that over a third use scenario planning in their strategy workshops (Hodgkinson, Wright 2006). However, more recently there has been a change in the perception of limiting it to long horizons and the interval between its reviews. Healey and Hodgkinson (2008) in their critique of the scenario planning process identifies a potential way to reduce anchoring effects of long term scenarios is to regularly analyse multiple scenarios in a fast and simple manner as opposed to the traditional elaborate and infrequent practice. In a recent paper by Marren (Marren, Kennedy Jr 2010), it is argued that given the increasing level of uncertainty, companies are forced to make critical short term tactical decisions and therefore there is no reason why the scenario approach must be restricted to extremely long timelines. This research aims at combining the strategic scenario planning exercise with scenario based tools at tactical and operational levels with inbuilt feedback and communication processes

SCENARIO PLANNING CONCEPTUAL MODEL

The process for scenario planning for risk mitigation is broadly described in the figure 1. This model is discussed in detail in a separate paper (Deep and Dani, 2009) and is in the process of industrial validation. However, the first and perhaps the most crucial part of the process is scenario planning which is described in this paper.

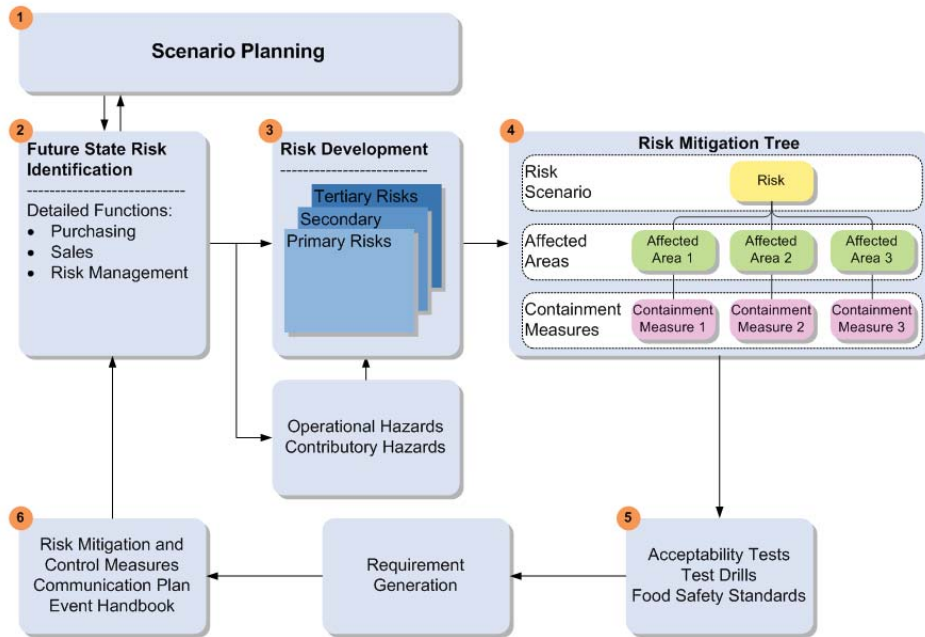


Figure 1: Scenario planning and supply chain risk management

The first step in the toolkit includes an exercise in scenario planning. It is proposed that the scenario building should be done at three levels, operational, tactical and strategic with each feeding into the other. The involvement in terms of team composition should also vary with only Steve’s team acting as a common link between the three. Each stage has a set of input and output with the aim of developing a comprehensive scenario at the end (Figure 2)

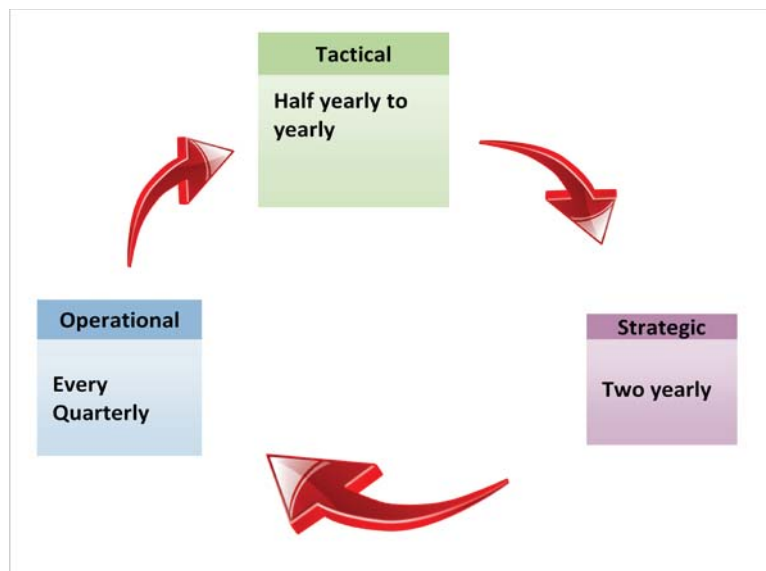


Figure 2: Scenario Planning at three levels

Table 1, depicts the characteristics of the three levels in the process.

	Operational	Tactical	Strategic
Frequency	Quarterly	Half Yearly to yearly	Once in two years.
Members	Middle management from purchasing, distribution ,sales, compliance , warehousing etc	Senior management from sales, haulage, finance , sales, purchasing etc	Directors of different functions.
Horizon	6months-1Year	2-3 Years	5-10 Years
Questions	Where will we be in the next one year? What is happening to our key performance indicators? Where do we think are our weaknesses?	What will be the logistics structure be like? What will happen to our number of production and distribution sites. Will it go up or down? Where will be expanding internationally? What issues might arise from these changes?	What might the economic landscape look like in the next 5-10 years? What social/technological changes might affect the organisation in the future?

Table 1: the three levels of Scenario Planning

CONCLUSION

The paper presents a study which considers scenario planning as an important process in supply chain risk management. The initial qualitative process has provided insights into the lack of strategic risk planning and the time lag in between scenario planning and risk management. The paper has proposed a scenario planning approach which brings the scenario planning process on an operational level. The framework highlighting the three levels of scenario planning has been tested positively on a limited basis in industry.

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