

# Chapter 93

## Supply Chain Resilience

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### **ABSTRACT**

*The chapter will consist of a literature review that will be framed to address the following three questions. The first question is “What is a resilient supply chain?” The aim is to provide an in-depth understanding of resilience and to distinguish a supply chain which is resilient from one which is not. The second question is “Why companies should build a resilient supply chain?” Some factors have increased firms’ vulnerability and the losses associated with unpredictable events. Companies should understand that the advantages linked to building resilience do not become evident only in case of disastrous events, but also during the ordinary operations execution. The third question is: “How to build resilience?” The most relevant ways to build resilience will be illustrated by drawing on some short case studies that were purposefully chosen in order to present a practical implementation of some of the different techniques used to create resilience. At the end of the chapter, conclusion, managerial implications, limitations and directions for future research will be provided.*

### **INTRODUCTION**

Today, companies are much more vulnerable than in the past. Indeed, some factors have significantly heightened the risk to which firms are exposed. Some reasons for the increasing risk are the creation of global and complex supply chains, the widespread use of outsourcing, and the extensive diffusion of the lean manufacturing principles across many companies. Simultaneously, firms must consider the growing expectations of customers who are increasingly unwilling to tolerate delays or increases in prices. Although modern supply networks must contend with significant risks, many companies do not implement sufficient measures to reduce them. It is therefore possible to identify a mismatch between the high risk exposure and the poor measures implemented by many firms. In fact, companies that attempt to prevent

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the disastrous consequences of high impact-low probability events are very few as the majority of firms only focus on low impact-high probability occurrences (Chopra & Sodhi, 2004).

The reasons for this lack of attention towards risk reduction practices can be identified in a psychological factor as some companies could be hardly withstand the diffusion of a culture of bad events prevention, which could be judged as a pessimistic and no-motivating attitude. However, the main reason for the inadequate risk reduction measures often lies in the complexity of weighting the economic benefits obtained when supply chain breakdown are prevented (Sheffi, 2005c). Indeed, resilient companies are able to continue their operations even after unpredictable negative events and this continuity allows them to avoid the costs associated with supply chain disruptions. It is difficult to measure the benefits obtained due to cost avoidance and this increases the difficulty in justifying resilience creation (Sheffi, 2005c).

Over the last few decades, the interest in supply chain resilience has increased due to the growing awareness of the huge direct and indirect losses associated with a lack of resilience (Ponis & Koronis, 2012). Events such as natural disasters and terrorist attacks have stressed the importance of building resilience in order to react quickly to unforeseen occurrences (Snyder & Shen, 2007). However, the attention paid to this topic is insufficient and can be considered as an emerging research area that is still relatively recent and yet unexplored (Ponis & Koronis, 2012). Conversely, resilience should be treated as a topic of primary importance and companies should prioritize this goal. The recent experience of the most resilient companies has provided some valuable lessons.

First, a quick reaction during and immediately after a disruptive occurrence is not an adequate response as the majority of consequences depends on what preventive measures the company has implemented prior to the event (Sheffi, 2005c). Therefore, suitable preventive measures aimed at fostering resilience should be planned well in advance when everything is going well and very often nobody wants to think of what could go wrong. Second, another valuable lesson for some firms is that resilience must be developed from the inside, which means delegating risk management to some external experts is not sufficient to protect the business (Sheffi & Rice, 2005). A culture of resilience should be shared among the members of the organization (Sheffi, 2005c). For these reasons, companies that strive to be competitive should focus their efforts on the creation of resilience which should be considered as a prerequisite to survive and prosper in the current troubled markets. Due to the growing importance of resilience, some academics have started to assess this issue in-depth and have started to propose different solutions to build resilience throughout the supply chain. The main pitfall of this stream of literature is that the research area is still highly fragmented and we still lack a comprehensive understanding of the topic. Therefore, there is a valuable opportunity to conduct further research on the existing literature so as to produce a more exhaustive theoretical framework.

To this end, this chapter consists of a literature review that will be framed to address the following three questions: 1) What is a resilient supply chain? The objective of this section is to help the reader to recognize resilience and to distinguish a supply chain that is resilient from one which is not; 2) Why should companies build a resilient supply chain? As previously mentioned, some factors have increased firms' vulnerability and the losses associated with unpredictable events. Companies should understand that the advantages linked to building resilience do not become evident only in case of disastrous events, but also during the ordinary operations execution (Sheffi, 2005c); and 3) How can resilience be built? Contributions from the extant literature aim at addressing this question. The most relevant ways to build resilience will be illustrated by drawing on some short case studies that were purposefully chosen to present a practical implementation of some of the different techniques used to foster resilience. At the end of the chapter, the conclusion, managerial implications, limitations and directions for future research

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