

# Towards a Definition and Concept of Collaborative Resilience in Supply Chain: A Study of 5 Indian Supply Chain Cases

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## ABSTRACT

In the era of turbulent environment, handling disruptions and building resilience is of prime importance to businesses. Most literature on building resilience in a supply chain is organization-focused and discusses firm-level abilities to bounce back after a disruption. In this study, the authors explored and defined collaborative resilience in a supply chain. Specifically, a case study approach across five supply chains was followed. Through this research, an empirical definition and understanding of collaborative resilience in supply chains was derived as the finding of the study. To the best of our knowledge, this is the first empirical research to develop a definition of collaborative resilience in supply chain. This study may strike many future research studies for research on the phenomenon of collaborative resilience in supply chains.

## KEYWORDS

Case Study, Collaboration, Definition, Resilience, Supply Chain

## INTRODUCTION

Rising volatility and turbulence in corporate environment have been the most critical concern of supply chain managers lately (Christopher and Holweg, 2011). There have been numerous industry reports, case examples, and surveys in the recent past to show that companies lose big on market share, revenue and profits in the aftermath of a supply chain disruption (Hendricks and Singhal, 2005). A disruption could be caused by fire breakout, cyber-attack, employee strike, machine breakdown, earthquake etc. and can adversely affect the operations of the whole supply chain (Pettit et al., 2010). In today's inter-connected world, companies that have long and complex supply chains face risks not only from their own suppliers but also from suppliers of suppliers and so on (Sheffi and Rice, 2005; Pettit et al., 2010; Namdar et al., 2017; Xin-jun et al., 2018; Raghunath et al., 2018, etc.). Disruptions due to events like natural disaster; accident, loss of key supplier etc. may arise at any point along a supply chain and have a huge impact on other entities of the supply chain as well. In 2013, the Business Continuity Institute surveyed 519 organizations from over 71 countries in their 5th Annual Survey on Supply Chain Resilience. The study found that due to supply chain incidents alone, companies lose productivity for more than half of businesses along with increased cost of working and loss of revenue. "The ability to bounce back from such a disruption is called resilience. The term supply chain resilience was first used in academics by Christopher and Peck in the year 2004. Other authors like Sheffi and Rice (2005), Ponomorov and Holcomb (2009), and

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Scholten et al. (2014) have conceptualized resilience in supply chain context over the past decade. About a hundred research papers on supply chain resilience have been published in various journals. Hohenstein et al. (2015) conducted a thorough review of literature and highlighted potential research areas in the domain of supply chain resilience. They suggested that future research must focus on empirical studies on supply chain resilience. Gu and Huo (2017) studied the impact of supply chain resilience on company performance. Li et al. (2017) on a further note investigated the impact of supply chain resilience, supply chain preparedness, supply chain alertness and supply chain agility, on a firm's financial outcomes. They found out that all the three dimensions significantly impact supply chain resilience. Tukamuhabwa et al. (2017) conducted empirical investigation in developing country context and found out that threats of disruption, resilience strategies and outcomes are indeed inter-related in the practical sense.

In most literature, however, researchers have focused on 'organizational perspective' of resilience building. For example, "organizations lack awareness to take into consideration a resilient supply chain as part of their strategy" (Christopher and Peck, 2004), "company can develop resilience in its supply chain" (Sheffi and Rice, 2005); "organization would be able to bounce back after deformation along its supply chain" (Mensah and Merkurjev, 2014), etc. This perspective of building resilience has been incomplete and ineffective to handle 'supply chain' disruptions. The nature of a supply chain disruption is such that a disruption happens at one point in a supply while its effect is seen at multiple points across the supply chain. Therefore, building resilience collaboratively along with other supply chain members would be an effective strategy. There has been a long-standing debate in supply chain literature over whether supply chain management refers to one organization's supply chain operations or it considers role of other supply chain members in processes and operations (Croom et al., 2000). Currently, the concept of resilience in supply chain management literature lacks clarity in this sense. Sheffi (2005), Sheffi and Rice (2005), Pettit et al. (2010); Mensah and Merkurjev (2014); Golgeci and Ponomorov (2015) have clearly focused on firm's supply chain when studying supply chain resilience, while some researchers (Scholten et al., 2014; Scholten and Schilder, 2015) have taken a broader perspective moving beyond single firm level, however, they have also used the term supply chain resilience. Birkie et al. (2014) conducted a systematic review of literature on resilience in supply chains and argued that supply chain literature focuses on individual firm's resilience. While there is vagueness in supply chain literature on this front, resilience has been studied with a focus on enterprise and only supply chain practices of the enterprise are taken into consideration. Ambulkar et al. (2015) states that there is an ambiguity of the concept of resilience in the context of supply chain disruptions as also noted by previous researchers like Ponomorov and Holcomb (2009), Wieland and Wallenburg (2013), etc. Ambulkar et al. (2015) use the word 'firm resilience', to clarify the stand of previous studies on resilience in supply chains.

In this paper, our aim is to study the perspective of Indian managers on resilience building in supply chain context. Therefore, to avoid any confusion we have used the term collaborative resilience. This term is borrowed from the discipline of community resilience in which it was used by Goldstein in his book 'From Crisis to Opportunity' published in 2012. The concept of resilience in supply chain context has been defined by researchers through the lens of firm's supply chain. A list of key definitions of resilience in supply chain literature was compiled and presented in Table 1. Through this research, we aim to derive an empirical understanding of the concept and definition of collaborative resilience in supply chain context through survey of supply chain professionals. Other studies close to this concept have explored the role of "supply chain collaboration" which is directed towards enhancing performance and efficiency in supply chain (Christopher and Peck, 2004; Scholten and Schilder, 2015, Gu et al., 2017). Collaborative resilience is a concept in which collaboration between supply chain members is sought for the sole purpose of building resilience. In this concept, all the possible avenues on strategic, operation and tactical levels could be explored to integrate with supply chain members for handling disruptions proactively. Similar concepts like 'collaborative planning, collaborative transportation etc. have studied for their respective niche domains (Fliedner, 2003, Chan

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