



# Bridging and buffering: Strategies for mitigating supply risk and improving supply chain performance



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## ABSTRACT

The area of buyer-supplier risk management is increasingly drawing the attention of academicians and professionals. However, less focus has been given to identifying the right mitigation strategy (specifically, bridging and buffering) for firms having different strategic orientations (such as, prospector, defender and analyzer). To this end, we review the literature and present a theoretical model grounded in strategic choice theory that explores how firms operating in different business environments respond to buyer-supplier risk by adopting appropriate mitigation strategies. The relationship between buyer and supplier is influenced by motivating factors (for example, trust and dependence) as they are the key elements of social exchange theory. Based on a sample of 184 responses from a survey with Indian organizations, we validate the theoretical model and test the research hypotheses using structural equation modelling. Findings reveal that the decision of firms to adopt a particular mitigation strategy varies with the environment in which the firm operates and this decision is majorly influenced by motivating factors. Another interesting finding shows that these mitigation strategies help the firms in managing buyer-supplier risk and enhancing downstream supply chain performance.

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## 1. Introduction

During the mid to late twentieth century, the manufacturing process was manageable due to the direct flow of raw materials from supplier to manufacturer and then final products to the end users. However, the supply chain now has become intricate as the product life cycle has shortened owing to frequently changing customer demand. Although, this transition in the nature of supply chain has enabled firms to perform and compete efficiently in their business environment, it has left supply chains vulnerable to risk (Christopher and Towill, 2002; Christopher and Peck, 2004). This observation has led to the necessity of developing procedures and techniques for identifying, assessing and mitigating buyer-supplier risk (Narasimhan and Talluri, 2009; Tang and Musa, 2011). Prior research reveals that there are well known empirical studies which highlight various approaches for minimizing and managing buyer-supplier risk (Kleindorfer and Saad, 2005; Blackhurst et al., 2005; Tomlin, 2006; Dong and Tomlin, 2012; Hu and Kostamis, 2015; Gao, 2015). For instance, Kleindorfer and Saad (2005)

provided a conceptual framework for assessing and managing disruptive risks in the U.S. Chemical Industry. Tomlin (2006) came up with dual sourcing strategy as a way to minimize buyer-supplier disruption risk. As noted in Dong and Tomlin (2012), business interruption insurance, inventory and emergency sourcing play a crucial role in managing firm's disruption risk whereas, Gao (2015) reflected upon the importance of private information in managing buyer-supplier risk.

Moreover, a number of classifications for the sources of buyer-supplier risk are also available in literature (Chopra and Sodhi, 2004; Hallikas et al., 2004; Jüttner, 2005; Wagner and Bode, 2008). For instance, Chopra and Sodhi (2004) proposed nine sources of buyer-supplier risk; disruptions, delays, systems, forecasts, intellectual property, procurement, receivables, inventory, and capacity. Another study by Wagner and Bode (2008) classified risk sources as demand side; supply side; regulatory, legal and bureaucratic; infrastructure, and catastrophic. Researchers have also attempted to study the attitude of supply chain managers towards risk. For example, scholars (Singh et al., 2005; Jiang et al., 2009; Thun and Hoenig, 2011; Lavastre et al., 2012) examined the role of buyer-supplier risk management in Australian, Chinese, German and French companies, respectively.

Till date, researchers have mainly focused on establishing the relationship between buyer-supplier risk/or disruption and

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performance (Hendricks and Singhal, 2003, 2005a, 2005b; Wagner and Bode, 2008). In addition, Ganesan (1994) suggested that high level of trust may reduce the perception of risk and strengthen the faith in the relationship. Researchers (Bode et al., 2011; Jiang et al., 2011) also pointed that buyer-supplier relationship is majorly influenced by two interfirm factors; trust and dependence. In this direction, another important contribution was made by Bode et al. (2011) who took a close look at the role of various factors affecting buyer-supplier relationship and their impact on the mitigation strategy adopted by a firm for minimizing supply chain disruptions but it doesn't speak much about the influence of business strategy of the firm for such an analysis. Thus, it is apparent that the aforementioned discussion doesn't provide transparency in choosing and implementing the right mitigation strategy and its role in boosting downstream supply chain performance. To address this gap in the literature, we develop a theoretical model that explains (i) how selection of appropriate risk mitigation strategy can help a firm in improving downstream supply chain performance while minimizing the buyer-supplier risk, and (ii) what is the role of motivating factors (trust, dependence) in selecting a suitable risk mitigation strategy for firms with different strategic orientations. By using the survey data of 184 Indian organizations to empirically validate the research model, this study offers a unique contribution to the literature on buyer-supplier risk management. The findings of this study are relevant both to an academic audience, interested in strategy and management, and to practitioners interested in improving the performance by minimizing buyer-supplier risk.

The rest of the paper is organized as follows. In the next section, we discuss the literature on buyer-supplier risk, mitigation strategies, motivating factors, business strategies and supply chain performance. The following sections consecutively develop a theoretical model and hypotheses based on this review, describe the construct operationalization and data collection process, present the data analysis procedure and the results of the model testing. The paper concludes with a discussion on the findings, theoretical and practical implications, limitations and future research directions.

## 2. Literature review

In this section, we review the literature on the key constructs used in the study.

### 2.1. Buyer-supplier risk, risk mitigation strategy and motivating factors

A review of buyer-supplier risk management literature reveals that this recently emerged area has gained immense popularity among researchers and professionals (Sodhi, 2005; Sodhi et al., 2008; Cohen and Kunreuther, 2007; Manuj et al., 2014; Sodhi et al., 2012; Macdonald and Corsi, 2013; Tang et al., 2014). In their study of buyer-supplier risk management, Sodhi (2005) and Sodhi et al. (2008) reported that risk management is not merely about dealing with natural disasters but, considers other risks associated with supply chain as well. Several authors have attempted to shed light on different perspectives of buyer-supplier risk. In this regard the first attempt was made by March and Shapira (1987) who contemplate it as the "variation in the distribution of possible supply chain outcomes, their likelihood, and their subjective values". Zsidisin (2003) later defined supply risk "as the probability of an incident associated with inbound supply from an individual supplier failure or the supply market occurring, in which its outcomes result in the inability of the purchasing firm to meet customer demand or causes threats to customer life and safety". In

addition, Peck (2006) defined it as "anything that disrupts or impedes the information, material or product flows from original suppliers to the delivery of the final product to the ultimate end user".

As discussed earlier, various taxonomies have been provided by authors to distinguish between buyer-supplier risk and other business risks. In this context, Wagner and Bode (2008) classified buyer-supplier risks into two broad categories; risks internal and those not necessarily internal to the supply chain. In the first category, demand and supply side risks were included whereas, regulatory, legal and bureaucratic; infrastructure; and catastrophic were considered as risk adhering to the second category. However, it appears from the prior research that supply chains are more vulnerable to buyer-supplier risks (Singhal et al., 2011). Thus, for the purpose of our study we focus on the buyer-supplier (upstream) risk associated with the supply chain. The literature search reflects that the essential parameters related to buyer-supplier risks are comprised of the number of suppliers, their location, flexibility, delivery reliability, infrastructure capability and information sharing (Singhal et al., 2011).

### 2.2. Risk mitigation strategies

Scholars (Oliver, 1991; Gresov and Drazin, 1997) claimed that resource dependency theory provide options to firms for minimizing environmental uncertainty in order to fulfil the stability motive. According to this theory, firm responses can be distinguished depending upon whether they are external (buffering) or internal (bridging) to a current exchange relationship (Carroll, 1993). Bode et al. (2011) have argued that how a firm responds to supply chain disruptions is based on information processing and resource grounded theories. On the other hand Talluri et al. (2013) argued that the risk mitigation strategies appropriateness and effectiveness are contingent on the internal and external environment which is firmly grounded in contingency theory. The contingency theory has immense potential to explain the strategic behavior of the organizations towards buyer-supplier risk but we feel that in comparison to Bode et al. (2011) where they have identified two strategies towards responding to supply chain disruptions has more clarity in terms of measurement. Hence, these two strategies; buffering and bridging turn out to be most suitable while coping with environmental uncertainty (Bode et al. 2011). Therefore, we have considered them in our study.

Buffering is one of the most commonly used mitigation strategies followed by a firm. It helps the managers to protect their supply chain from any kind of disruptions or risk by keeping sufficient inventory. Carroll (1993) and Chattopadhyay et al. (2001) noted that a buffering strategy acts as a safeguard to minimize the exposure of a firm to the current supplier and alleviate the harmful outcomes of the disturbances induced by this relationship. Sinha et al. (2004) emphasized that the impact of risk can be minimized by implementing appropriate buffering strategies, which aim to maintain inventories at proper levels and locations in a supply chain. Thus, buffering helps to avoid unforeseen risks which cannot be eliminated by adopting process improvement strategies. Lynn (2005) defined buffering as "the regulation and/or insulation of organizational processes, functions, entities, or individuals from the effects of environmental uncertainty or scarcity". This definition reflects that buffering acts as a shield for an organization and can be done at different degrees and levels, it may be functional or dysfunctional, intentional or unintentional and differ with location, amount, and form. Additional guidance in this regard was provided by Tang (2006) who suggested that a firm can generate slack resources (e.g. huge inventories, flexible production processes, redundant suppliers, and product design not completely dependent on a specific supplier) which may function as "shock

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