The Importance of Supply Chain Resilience: An Empirical Investigation

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Abstract

This study aims to explore how supply chain resilience (SCRes) influences firm reputation. SCRes dimensions and their underlying mechanisms in relation to firm reputation attributes are investigated. For gaining a deep understanding of SCRes and its benefits, seventeen in-depth interviews were conducted with key informants in the UK manufacturing sector. The study results show the process by which SCRes plays a role in sustaining and maintaining a good firm reputation. Underlying mechanisms of these relationships are identified, within the supply chain network. The majority of extant studies have focused on the elements and strategies that can increase supply chain resilience. However, the value of SCRes has not been explored yet. To the best of our knowledge, this exploration represents the first study that delivers empirical insights into the relationship between SCRes and firm reputation. The results of this study clearly outline the structure and mechanism of SCRes that practitioners can use as a guiding framework to protect their firms from disruptions. Suggestions for protecting firm performance are also given.

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1. Introduction

Since the last decade, supply chain resilience (SCRes) promises to be a risk mitigation mechanism, and today, it become an important research topic that has aroused much attention in the literature [1-4]. The growing interest in SCRes can be attributed to a range of factors. In recent years, firms have become more vulnerable to disruption as their supply chains become longer (more tiers), larger (more depth), and more complex. This vulnerability is demonstrated in a number of historic events. For instance, in 2012, the earthquake in Japan disturbed not only the Japanese and Asian markets, but also led to shortages in the supply chains of related industries in Europe [5]. In the supply chain literature, resilience is related with supply chain risk and vulnerability with a belief that not all supply chain risks can be identified or avoided [6]. Among the different definitions of SCRes in the literature, the definition

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proposed by Ponomarov and Holcomb [7] is the most popular one. They define SCRes as “the adaptive capability of the supply chain to prepare for unexpected events, respond to disruptions, and recover from them by maintaining continuity of operations at desired level of connectedness and control over structure and function” [7].

While prior studies conceptualize that SCRes offers great opportunities to explore competitive advantage and good firm reputation [8-10], our research empirically investigates the relationship between SCRes and firm reputation and reveals the process by which the dimensions of SCRes influence firm reputation.

The paper is organized as follows: Firstly, the study will review the dynamic capability theory as theoretical lens to link SCRes to performance. Following this, the study will provide a literature review in relation to SCRes and firm reputation. Then, the methodology of our empirical study will lead to the research findings that we will present and discuss in relation to the existing body of the knowledge. Finally, conclusions will be drawn based on the contributions and limitations of our research, resulting in robust and substantiated recommendations for research and practice.

1.1. The concept of SCRes

Resilience is not only multidimensional, but it is also a multidisciplinary concept. It has emerged from a production of disciplinary ideas and concepts which started in materials science to describe the material ability to bounce back to its normal shape after any deformation [8]. As a development theory in social psychology, the study of the resilience concept began and is now emerging as a theory in itself. It entails the role of adapting, integrating, and reconfiguring resources to respond to external environmental threats. The significance of resilience is acknowledged in various literature domains, including ecological and social vulnerability, risk management and growing threats, and psychology adversities recovery [7]. Holling [11] was one of the first scholars who introduce the concept of resilience in the ecology discipline and differentiates it from the stability concept; resilience exhibits the system ability to absorb changes, and stability reveals the system ability to return to its equilibrium state after disruptions. In organizational context, resilience is often used to refer either to the system ability to absorb stresses and preserve functioning despite disruptions presence or the system ability to recover or bounce back from interrupted events [12].

Previous studies highlighted the importance of possessing the required capabilities to overcome disruptive events. Debating the status of a supply chain before a disruptive event falls within the proactive resilience dimension. Collaboration, visibility, velocity, and flexibility are popular elements of SCRes proactiveness, but also redundancy, robustness, alertness and the risk management culture are elements that scholars work with [13-18]. When disruptions occur, SCRes is demonstrated by its reactive dimension: responsiveness and recovery. While SCRes is sometimes viewed as the ability to recover alone Brandon-Jones, Squire, Autry and Petersen [19], it is also understood as a combination of both responsiveness and recovery [20]. Firms become interested in building resilience in their supply chains to cope with unstable business environments. In light of the literature assessment, there is a clear need to empirically validate the importance of SCRes. Our empirical study extends the existing body of knowledge by clarifying how SCRes can help to shape and manage a good firm reputation.

1.2. Reputation

There are several reasons why firms should care about their reputations. It impacts valuable outcomes such as high profitability, positive word-of-mouth support, the ability to charge a price premium, exceptional levels of trust among customers, lower risk perceptions among clients, and hard entry for potential competitors [21-24]. While favorable reputation could help firms achieving better performance, unfavorable reputation can be harmful. For examples, Parmalat in Europe and Enron in USA are well-known organizations that suffered severely from reputational damage. In the UK, BP is another example of an organization that experienced very expensive reputation damage [25]. Firm reputation is formed through the stakeholders’ experiences and through the information they receive about the firm [26, 27]. Individuals develop their impressions of what a firm symbolises by how it protects its assets [28]. Typically, stakeholders compare the firm’s performance with some standard to evaluate whether the firm’s behaviors match their expectations [27]. If the firm fails to deliver on the expectations of its stakeholders, it will be perceived unfavorably. Thus, a reputation is concerned with how stakeholders perceive a firm’s ability to meet their expectations. The increasing interest in firm reputation has generated a variety of construct measures [29]. Delivering high-quality products, quality of marketing, community and environment responsibility, use of assets and a sound financial performance are some examples of such measure’s indicators.

SCRes plays an essential role in shaping a firm reputation. But what is the mechanism and what are the essential SCRes attributes that impact the reputation? For finding answers to our research questions, we devised an exploratory research design, which we will describe next.
2. Methodology

The exploratory nature of our research question necessitates a qualitative study that is able to clarify “what is happening; to seek new insights; to ask questions and assess phenomena in a new light” [30]. According to Blaxter, Hughes and Tight [31], interviews offer researchers the opportunity to uncover information that cannot be accessed using other qualitative research methods. This study aims not to statistically investigate the relationship between SCRes and firm reputation (which could be done by a quantitative study) but to understand the underlying mechanism by which the dimensions of SCRes can lead to a better reputation. This is an ongoing research project and is already generating interesting findings during our current data interpretation phase. We are excited to present the latest insights of our study at the conference, but will for now, will outline the data collection and initial findings below.

Based on the relevant literature reviewed, the researchers devised an interview protocol to explore the research questions. In an iterative process, all researchers refined the protocol in several rounds, ending with a version that could be piloted before carrying out the main exploratory study. Two pilot interviews took place; the first was with a manager of supply chain excellence (15 years of experience) and the second with a supply chain analyst (10 years). The aim of these interviews was to optimize the structure, flow, and understanding of the interview protocol. The findings of the two pilot interviews were solely used to improve the research instrument and are not reported here.

Interview analysis was conducted using the thematic analysis technique [32], following the three steps recommended by Miles and Huberman [33]: data reduction, data display, and data conclusion. We started the analysis by reducing the data to specific quotes (sentences or paragraphs) that were found relevant to SCRes elements and to reputation attributes. These quotes form first-order codes in our data analysis. Then, in order to explore the relationship between SCRes and firm reputation, the data were examined from two different perspectives, following Scholten and Schilder [34]: Firstly, the data was analyzed in relation to SCRes. All first order codes were coded into descriptive second-order code categories such as backup of raw materials, information sharing and sourcing flexibility. Secondly, the data were examined in relation to firm reputation. Similarly, first-order codes were coded into descriptive second-order code categories such as credibility, service quality, and financial performance. Furthermore, the two independent analyses were compared in relation to SCRes and firm reputation. As a result, this analysis allowed us to deduce the link between SCRes practices and different attributes of firm reputation. In order to safeguard the trustworthiness of this qualitative study and its analysis, multiple measures were undertaken. The study followed a recursive iterative process to relate the findings to the existing literature [35] and to rule out alternative interpretations [36].

Beginning with literature-informed definitions is a way to add insight to an existing knowledge base and to enhance intercoder reliability in a given study.Coder 1 and Coder 2 took this step and worked together to establish the initial version of the coding scheme. The two coders continued independently, working with the initial scheme through one full-length interview transcript, before comparing their results. The coding scheme was then updated, in light of the coding outcome, and a different full-length interview transcript was used and worked through with the updated scheme. This process resulted in an 89% intercoder reliability index, which demonstrates that the optimized coding scheme is meaningful, relevant, and robust.

3. Findings

In this study, the researchers were able to deliver specific details on how SCRes influences reputation attributes: financial performance, service quality, reliability, and business attractiveness. The identified mechanism between SCRes and different reputation attributes will be outlined in detail.

Financial performance

SCRes helps firms to sustain and attain a good financial performance. According to our findings, supply chain proactiveness enables firms to protect their financial performance. One of the managers explained how not having the required information (visibility) can affect their reactivity speed which in turn has a big influence on their financial performance. According to him: “If we took a long time we end up, with containers of goods arriving in our country and they can’t be moved because we haven’t got the documents. That affects our reputation and adds cost with our distributor and adds cost with our distributor. There’s costs there from the local port authorities. There’s costs there with the shipping line.”

Service quality

Our findings indicate that SCRes also leads to improvement in service quality reputation. Although supply chain disruptions pose a threat to all firms, the degree of their impact on their service quality varies depending on the level of resiliency in their supply chain. One of the respondents explained how they ensure they provide a good service in the face of disruptions: “The majority of people within a supply chain context understand that things go wrong and that most systems are set up to deliver 99 percent levels of service and quality, so thing can go wrong. I think that back to your reputation and disruptive events, the thing that actually is important is basically how you address and put right what is going wrong.”
Reliability

Our findings highlight the importance of SCRes in improving organization reliability. To be seen as a reliable provider, firms need to focus on both proactiveness and reactiveness capabilities. Firms know that they work in unstable and unpredictable business environments and in order to be seen a reliable partner, they need to show that they will do everything to ensure they deliver what they have promised. One manager explained that disruptions can occur unexpected and they can harm their reputation if they are not prepared. According to him, holding extra inventory helped them to be prepared for this disruption and be able to deliver their promise: “For make-to-order item, it’s much more about having commitment to a promise delivery or a promised delivery date. […]. Again, that’s all pretty much about […] having enough stock and knowing that you’ve got a comfortable level of stock in place.”

Business attractiveness

In addition to financial, service, reliability reputation, SCRes plays an important role in improving business attractiveness. Firms like to do business with a supply chain partner that can cope with disruptions and the following supply chain manager made this very clear: “Our partners do like to do business with us. We have dual source on everything so we can switch over from one supply to another. When we do have an issue, like I described before, we would switch to alternative supply products. We can recover usually a disruption within 48 hours.”

The role of learning

Although firms cannot avoid all supply chain disruptions, they should be less disrupted by the ones they experienced before. Customers value a firm that can recover very quickly from disruptions, but they also expect that a firm should learn from past incidents and be in a better position when a similar disruption reoccurs. One manager emphasized: “It also potentially would affect the end customer, if they come into for their product and it’s not available. These things can lead to problems and bad service. How much the impact really depends on how often disruptions are happening.”

4. Discussion

Disruptions go beyond short-term losses – decreasing revenue, increased machine downtime, or delivery delays – and could damage firms in the long-term [37, 38]. Unmet expectations, due to supply chain disruptions, can change customers’ belief in the firm’s ability, benevolence, and integrity, leading to damages in trust and reputation [39]. Managing supply chain risk requires more than preventing disruption at a firm facility [40]; it requires a comprehensive understanding of the overall structure of a firm’s supply chain network. According to Lemke and Petersen [41], “although the risk mitigating practices of the company have minimized disruptions, the risks to their reputation, as a result of their supply chain, were ignored”.

Our study makes valuable contribution in relation to the importance of SCRes in attaining and sustaining a good firm reputation. Similar to the work of Hopkin [42] that emphasizes the importance of the resilience in protecting firm performance, we found that SCRes can improve firm reputation. Moreover, our findings reveal the process by which the dimensions of SCRes influence firm reputation. Our study shows that the reactive resilience does not always lead to better reputation. According to the findings, when a firm has experienced repeated disruptions, its customers and supply chain partners will not favour the constantly disrupted firm. This finding is in line with the crisis literature. According to Coombs [43], the more the firm is responsible for the crisis, the more negative is the impact on the firm’s reputation. We are learning more as we see how our data reveals new insight in this area. Unfortunately, we are in the middle of data interpretation and are looking forward to presenting the full study outcomes at ICPR.

5. Conclusion

In unreliable and unstable environments, firms are vulnerable to supply chain disruptions. Since the last decade, SCRes promises to be a risk mitigation mechanism, and today, it is a theoretical concept with a pedigree of discussion, writing, and research. Yet, it remains unclear what specific advantages firms could gain from supply chain resilience. The findings of this paper contribute to the SCRes literature by throwing a light on how SCRes helps firms to attain and sustain good reputation. At ICPR, we will clearly point out the underlying mechanism of SCRes that leads to a superior firm reputation. We will also highlight the vital lessons for theory builders and practitioners, with a clear guidance on how to cope with uninspected supply chain events in today’s disruptive business environments.
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