Strategic Responses to Supply Chain Disruptions: How Trust and Dependence Influence Buffering and Bridging Strategies in Dyadic Supply Chain Relationships

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During the preparation of this work, the author used ChatGPT in order to verify the grammar in several parts. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.

Abstract
The increasing amount and impact of supply chain risks and disruptions make supply chain risk management practices ever more important (Hoffmann et al., 2013, p. 199; Ponomarov & Holcomb, 2009, pp. 125, 130). There are two types of strategies a company can implement to reduce the likelihood and/or impact of supply chain disruptions: buffering and bridging approaches (Bode et al., 2011, p. 834; Manhart et al., 2020, pp. 66-67). This study examines how buyer dependence, perceived supplier dependence, focal company's trust and relationship length in the dyadic supply chain relationship influence the focal company's decision to implement buffering and/or bridging strategies. Moreover, this study analyses how buffering and bridging strategies are interrelated. These relationships are examined using a policy-capturing experiment conducted at a case company in the Netherlands. The results show that buyer dependence and perceived supplier dependence positively influence the focal company's likelihood of implementing bridging approaches. Additionally, buyer dependence has a positive influence on the focal company's likelihood of implementing buffering strategies if perceived supplier dependence is low. To the contrary, buyer dependence has a negative influence on the focal company's likelihood of implementing buffering strategies if perceived supplier dependence is high. Furthermore, while focal company's trust has a positive influence on the focal company's likelihood of implementing bridging strategies, it is negatively related to the implementation of buffering strategies. These relationships are not influenced by the length of the partnership between the focal company and the supplier. Moreover, contrary to previous research, this study finds a negative correlation between the implementation of buffering and bridging strategies. Indeed, while part of the results corroborate the findings of previous research, some results contradict existing knowledge. This study thereby also highlights multiple interesting directions for future research. For instance, future research can examine the conditions under which buffering and bridging strategies are used as complements and when they serve as substitutes for one another. Additionally, future studies could refine the categorization of buffering strategies by distinguishing between operational and strategic buffering approaches. The results provide a guideline for managers regarding when buffering and bridging approaches are employed and which considerations are made when evaluating supply chain risk management strategies.

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1. Introduction

Nowadays, companies depend heavily on their supply chain to gain competitive advantage (Hoffmann et al., 2013, p. 199). Developments such as globalization, outsourcing and the adoption of lean and agile supply chain practices have led to the prominence of supply chain risk management in achieving a competitive advantage (Bustinza et al., 2010, p. 285; Hoffmann et al., 2013, p. 199; Lin et al., 2006, p. 285; Ponomarov & Holcomb, 2009, p. 130; Prasad & Sounderpandian, 2003, p. 241). These trends have also resulted in complex supply chains that are significantly more susceptible to risks and disruptions (Ellis et al., 2010, p. 34; Harland et al., 2003, p. 51; Hoffmann et al., 2013, p. 199). The situation is complicated by the rising uncertainty, risks and natural catastrophes firms have experienced over the past twenty years (Conz & Magnani, 2020, p. 400; Hamel & Välikangas, 2003, pp. 52-53; Ponomarov & Holcomb, 2009, p. 130). Moreover, due to the complex nature of the abovementioned global supply chains, the consequences of a supply chain disruption are likely to be more severe as the disruption cascades through the supply chain (Ponomarov & Holcomb, 2009, p. 125).

The increasing amount and impact of supply chain risks and disruptions make supply chain risk management practices ever more important (Hoffmann et al., 2013, p. 199; Ponomarov & Holcomb, 2009, pp. 125, 130). One valuable supply chain risk management instrument that is often discussed in this context is resilience (Adobor & McMullen, 2018, p. 1451). Indeed, over the past twenty years, companies have pivoted their strategic objectives away from solely pursuing profits and moved towards prioritizing resilience (Conz & Magnani, 2020, p. 400). Supply chain resilience is defined as "The adaptive capability of a supply chain to prepare for and/or respond to disruptions, to make a timely and cost effective recovery, and therefore progress to a post-disruption state of operations – ideally, a better state than prior to the disruption" (Tukamuhabwa et al., 2015, p. 5599). However, little research has examined the resilience of a company (Conz & Magnani, 2020, p. 400). Simultaneously, a company that is better equipped to diminish the impact of supply chain disruptions achieves an advantage compared to its competitors (Tukamuhabwa et al., 2015, p. 5592). Hence, it is valuable to further examine the approaches a company can implement to become more resilient. To that end, this study focuses on one part of a company's supply chain, namely the relationship between the focal company and a supplier.

There are multiple strategies supply chain risk managers can employ to reduce the likelihood and/or impact of supply chain disruptions. These strategies can be differentiated into two types: buffering and bridging strategies (Bode et al., 2011, p. 834; Manhart et al., 2020, pp. 66-67). These two types of strategies can therefore be seen as two distinct resilience strategies. Buffering strategies aim to shield the company from the impact of disruptions originating in the relationship with a supplier (Bode et al., 2011, pp. 834, 836). Therefore, buffering strategies are implemented outside the scope of the existing supply chain partnership (Bode et al., 2011, p. 836). Bridging strategies, on the other hand, are initiatives taken in collaboration with a current supplier to optimize the interfirm relationship, with the goal of increasing the focal company's control over the resources, thereby mitigating supply chain risks (Bode et al., 2011, pp. 834, 836).

Previous research has shown that buffering and bridging practices enhance supply chain risk management, which in turn improves the company's performance (Manhart et al., 2020, p. 66). However, little research has been done on when firms choose either bridging or buffering approaches or a combination of them. To the best of my knowledge, the only inter-firm and intra-firm level variables that are known to influence a company's decision to either buffer or bridge include dependence, trust and previous disruption experience (Bode et al., 2011, pp. 848-849; Mishra et al., 2016, p. 183). Dependence on a supply chain partner is an important reason for companies to respond to a supply chain disruption by implementing buffering and/or bridging approaches (Bode et al., 2011, pp. 836-837). Moreover, trust is seen as an essential requirement for all types of transactions, including the collaboration between supply chain partners (Brinkhoff et al., 2015, pp. 182, 184; McEvily et al., 2003, p. 99; Smith et al., 1995, pp. 10-11). Different studies, however, find different influences of dependence and trust on the decision of companies to pursue bridging and/or buffering.

Furthermore, it is not yet known how buffering and bridging approaches are interrelated with each other (Bode et al., 2011, p. 850; Manhart et al., 2020, p. 77). Whereas some previous research reveals no significant association between the implementation of buffering and bridging approaches (Bode et al., 2011, p. 850), other previous research finds that buffering and bridging approaches may be employed together in response to a supply chain disruption (Küffner et al., 2022, p. 2). Bode et al. (2011, p. 850) and Manhart et al. (2020, p. 77) advise future research to further examine the relationship between the implementation of buffering and bridging strategies.

Therefore, the goal of this study is to shed light on the intricate nature of buffering and bridging strategies, by studying when companies decide to buffer and/or bridge, and how buffering and bridging strategies are interrelated. More specifically, the focus of this study is threefold. Firstly, this study focuses on the dyadic relationship between a focal company and a supplier. To the contrary, much of the existing literature focuses either on resilience of the supply chain as a whole or only takes into account one side of the dyadic supply chain relationship. Secondly, this study examines the influence of buyer dependence and focal company's trust in the supplier on the focal company's decision to pursue buffering and/or bridging. Previous research has found contradictory results regarding the influence of these inter-firm level variables. Moreover, Casciaro and Piskorski (2005, p. 169) advise to include both sides of the dyadic supply chain partnership to develop a more comprehensive understanding. To that end, the level of supplier dependence as perceived by the focal company as well as relationship length between the supply chain partners are incorporated in this study. Hence, this study investigates how buyer dependence, perceived supplier dependence, focal company's trust and relationship length affect the focal company's decision to buffer and/or bridge when performing supply chain risk management. Thirdly, this study evaluates how buffering and bridging strategies are interrelated, by examining how the relationship between the implementation of buffering and bridging strategies can be characterized. In particular, the implementation of buffering and bridging strategies may complement each other or these strategies may serve as substitutes for one another.

This leads to the following central question:

To what extent do buyer dependence, perceived supplier dependence, focal company's trust and relationship length within the dyadic supply chain relationship influence the focal company's decision to implement buffering and/or bridging strategies, and how are buffering and bridging strategies interrelated?

This central question can be further subdivided into the following research questions:

- To what extent does buyer dependence affect the focal company's decision to implement buffering and/or bridging strategies, and how does perceived supplier dependence influence this relationship?
- To what extent does the focal company's trust in the supplier affect the focal company's decision to implement buffering and/or bridging strategies, and how does relationship length influence this relationship?
- How can the relationship between the implementation of buffering and bridging strategies be characterized?

These elements are analysed using resource dependence theory, which sees a company as an accessible system that is exposed to numerous uncertainties, while striving to secure a steady and consistent supply of resources (Bode et al., 2011, p. 835; Mishra et al., 2016, p. 185). Resource dependence theory provides an important framework for understanding firm responses to high-impact supply chain disruptions, and for understanding the ways in which companies mitigate supply chain risks by employing buffering and bridging approaches (Gebhardt et al., 2022, p. 60; Manhart et al., 2020, p. 73). It has been used by multiple studies in this context (e.g. Bode et al., 2011; Gebhardt et al., 2022; Manhart et al., 2020; Su et al., 2014).

Answering the central question also benefits practitioners. Supply chain risk management is ever more important for companies (Hoffmann et al., 2013, p. 199). Simultaneously, implementing risk management strategies such as buffering and/or bridging strategies is costly (Gebhardt et al., 2022, p. 69). This places growing demands on managers to make informed risk management decisions. Buffering and bridging are two types of resilience strategies a company can employ. This study further investigates the intricate nature of buffering and bridging strategies, and provides decision makers a guideline regarding when buffering and bridging approaches are employed, taking into account buyer dependence, perceived supplier dependence, focal company's trust and the relationship length of the dyadic supply chain relationship. Furthermore, this study provides valuable knowledge regarding the interaction between the implementation of buffering and bridging strategies, which supports managers in understanding the combined effects of buffering and bridging approaches.

The structure of this thesis is as follows. Chapter 2 provides general information on supply chain disruptions and resilience. It then explains resource dependence theory and the two types of resilience strategies a company can employ to mitigate supply risks: buffering and bridging. Subsequently, hypotheses are developed concerning the impact of buyer dependence, perceived supplier dependence, focal company's trust and relationship length on the focal company's decision to implement buffering and/or bridging strategies. Also, a hypotheses regarding the interaction between buffering and bridging strategies is formed. Thereafter, Chapter 3 explains

the method used for examining these hypotheses, namely a policy-capturing experiment conducted at a case company (focal company). The results of the data analyses are provided in Chapter 4. Subsequently, Chapter 5 discusses the results, thereby answering the research questions. It also elaborates on multiple implications of the findings for both literature and practice. Lastly, Chapter 6 discusses limitations of this study and provides possible directions for future research.

2. Theoretical Framework and Hypotheses

2.1 Supply Chain Disruptions Create a Need for Companies to Develop Resilience

A supply chain disruption occurs when an incident interferes with the standard resource flow throughout a supply network (Craighead et al., 2007, p. 132; Son et al., 2021, p. 783). According to Schiele et al. (2021, pp. 56-57) there are four different sources of risk which could result in a supply chain disruption:

- environmental risk, such as an earthquake
- financial risk, such as the liquidation of a supply chain partner
- operational risk, which occur if a supply chain partner cannot deliver the right quality or quantity of products on time, or
- strategic risk, which occur if a supply chain partner does not want to deliver the supplies but prefers to deliver them to another customer in case of a shortage

Supply chain disruptions can have significant consequences. They could greatly harm a company's operational efficiency and financial health (Son et al., 2021, p. 781). For example, when Ericsson's chip supplier did not supply the chips on time, Ericsson lost $400,000,000 (Craighead et al., 2007, p. 132). Because of the rising supply chain risks and the major consequences supply chain disruptions can have, there is an increasing interest in supply chain risk management practices, including developing resilience (Adobor & McMullen, 2018, p. 1451; Hoffmann et al., 2013, p. 199; Son et al., 2021, p. 783). Supply chain resilience is "The adaptive capability of a supply chain to prepare for and/or respond to disruptions, to make a timely and cost effective recovery, and therefore progress to a post-disruption state of operations – ideally, a better state than prior to the disruption" (Tukamuhabwa et al., 2015, p. 5599). This study focuses on one element of a supply chain, namely the dyadic relationship between a focal company and a supplier. It concentrates on the strategies the focal company implements to reduce the likelihood and/or impact of supply chain disruptions in this dyadic supply chain relationship.

The example shows that supply chain disruptions are problematic, because a company is dependent on its suppliers to achieve its organisational goals. Resource dependence theory is a theory that can be well-applied to this context, as is done by numerous articles (e.g. Bode et al., 2011; Gebhardt et al., 2022; Manhart et al., 2020; Su et al., 2014). Resource dependence theory provides an important framework for understanding firm responses to high-impact supply chain disruptions, and for understanding the ways in which companies mitigate supply chain risks by employing buffering and bridging approaches (Gebhardt et al., 2022, p. 60; Manhart et al., 2020, p. 73). This theory is further elaborated upon below.

2.2 Using Resource Dependence Theory to Understand a Company's Initiation of Risk Management Strategies

Resource dependence theory elaborates on why and how a company aims to ensure a steady supply of resources in the context of supply chain disruptions (Bode et al., 2011, pp. 833-834; Su et al., 2014, p. 254). In resource dependence theory, a company is seen as an accessible structure that is exposed to numerous uncertainties and risks, while striving to secure a steady and consistent supply of resources (Bode et al., 2011, p. 835; Mishra et al., 2016, p. 185). To

secure the required resources, companies have to trade with suppliers (Pfeffer & Salancik, 1978, p. 234; Su et al., 2014, p. 254). This results in a dependence on these suppliers (Bode et al., 2011, p. 835; Ellis et al., 2010, p. 37). Resource dependence theory thereby emphasizes the bilateral relationship between a company and its supplier (Casciaro & Piskorski, 2005, p. 169).

This dyadic relationship is influenced by the amount of power or dependence the company has on its supply chain partner and vice versa (Casciaro & Piskorski, 2005, p. 169; Su et al., 2014, p. 254). Dependence indicates how much a company relies on a specific supply chain partner due to the essential advantages the supply chain partner offers and the challenges involved in finding a substitute (Mishra et al., 2016, p. 185; Tellefsen & Thomas, 2005, p. 27). Hence, there are two sources of dependence: how important the resource is for the company, and whether there are any other suppliers for that resource (Casciaro & Piskorski, 2005, p. 170). The power a firm has over its supply chain partner is equivalent to the dependence of that supply chain partner on the company (Emerson, 1962, p. 33). Companies aim to diminish their dependence on supply chain partners and thereby the power of the supply chain partner over the company (Bode et al., 2011, p. 835; Hillman et al., 2009, p. 1404). Simultaneously, companies strive to increase the supply chain partner's dependence on the company, enhancing the company's power (Hillman et al., 2009, p. 1404; Ulrich & Barney, 1984, p. 472). Hence, power and dependence are not characteristics of a supply chain partner, but they are inherent to the relationship (Casciaro & Piskorski, 2005, p. 170; Emerson, 1962, p. 32). Therefore, the perspective of both sides of the dyadic relationship should be taken into account (Casciaro & Piskorski, 2005, p. 170).

If both supply chain partners are equally dependent on each other, there is no power imbalance (Casciaro & Piskorski, 2005, p. 171). To the contrary, if one supply chain partner is more dependent on the other than vice versa, there is a power imbalance (Casciaro & Piskorski, 2005, p. 171). The power imbalance is advantageous for the supply chain partner that is less dependent on the other party (Casciaro & Piskorski, 2005, pp. 170-171). If the power becomes more imbalanced, the disadvantaged supply chain partner encounters progressively worse trade circumstances and greater uncertainty (Casciaro & Piskorski, 2005, p. 172). The supply chain partner that is least dependent on the other – the higher-power partner – is unlikely to support the implementation of any strategies that increase their dependence on its supply chain partner, as it reduces the power imbalance (Casciaro & Piskorski, 2005, p. 174).

Resource dependence theory proposes two types of strategies that a company can employ to mitigate risks from supply chain disruptions: buffering and bridging strategies (Bode et al., 2011, p. 834; Gebhardt et al., 2022, p. 61). These strategies are explained in more detail below.

2.3 Exploring Buffering and Bridging Strategies

2.3.1 Buffering Strategies to Improve a Company's Resilience

Buffering strategies are protective actions that aim to shield the company from the impact of possible disruptions originating in the relationship with a supplier (Bode et al., 2011, pp. 834, 836). Therefore, buffering strategies are implemented outside the scope of the existing supply chain partnership (Bode et al., 2011, p. 836). A company can thus implement buffering strategies without collaborating with current suppliers (Bode et al., 2014, p. 27). Following resource dependence theory, a company can diminish its dependence on current suppliers by

implementing such buffering strategies (Manhart et al., 2020, p. 67). Buffering strategies can take different forms; it includes, for example (Bode et al., 2014, p. 28; Bode et al., 2011, p. 836; Bourgeois, 1981, p. 33; Gebhardt et al., 2022, p. 61; Manhart et al., 2020, p. 68; Mishra et al., 2016, p. 184):

- seeking backup suppliers to lower the company's dependence on a single supplier
- seeking backup logistics providers to ensure the company can deliver its products
- pursuing standardization to increase the number of possible suppliers
- having redundant production resources and/or abundant time such that any unexpected events can be addressed
- building (work-in-progress) stock to mitigate the consequences of incomplete supply deliveries or sudden demand inclines

2.3.2 Bridging Strategies to Improve a Company's Resilience

Bridging strategies are initiatives taken in collaboration with a current supplier to optimize the inter-firm relationship with the goal of increasing the focal company's control over the resources, thereby mitigating supply chain risks (Bode et al., 2011, pp. 834, 836). Bridging strategies are thus formed within the partnership with the supplier (Bode et al., 2011, p. 836). Hence, bridging safeguards a company against supply chain risks and possible disturbances by building robust connections with suppliers (Mishra et al., 2016, p. 185). Following resource dependence theory, implementing bridging strategies diminishes the impact the ecosystem has on the company (Manhart et al., 2020, p. 68), as bridging strategies aim to increase the focal company's control over the resources (Bode et al., 2011, p. 836). The bridging initiatives a company implements can be both official and unofficial; it can differ from establishing important interpersonal relationships to acquisition (Bode et al., 2011, p. 836; Ulrich & Barney, 1984, p. 472). Other bridging approaches include (Gebhardt et al., 2022, pp. 61-62):

- improving supply chain visibility to gain more (real-time) information that could help to control the supply chain partner
- closely cooperating with suppliers on, amongst others, risk management policies to improve the supply chain partnership
- implementing rigid selection requirements to ensure that the company has all necessary information from a supplier to foresee and respond to possible disruptions

The implementation of bridging strategies necessitates collaborative efforts (Bode et al., 2011, p. 834). To the contrary, buffering strategies are implemented outside the scope of the existing supply chain relationship (Bode et al., 2011, p. 836). Virtually all researchers concur that trust is an important precursor of collaboration (Smith et al., 1995, pp. 10-11). Having trust in a supplier means that the company has confidence that the supplier fulfils their promises and that the supplier engages in the relationship with genuine and positive intentions (Bode et al., 2011, p. 838; Doney & Cannon, 1997, p. 36; Ganesan, 1994, pp. 2, 3). Also, relationship length could affect the collaborative nature of the partnership between the focal company and the supplier (Li et al., 2015, pp. 86, 89). Relationship length is the amount of time the focal company and their supplier have been in an exchange relationship (Cao & Lumineau, 2015, p. 21). Therefore,

these variables are also incorporated in this study. Figure 1 shows a visual representation of these elements in the context of this study.

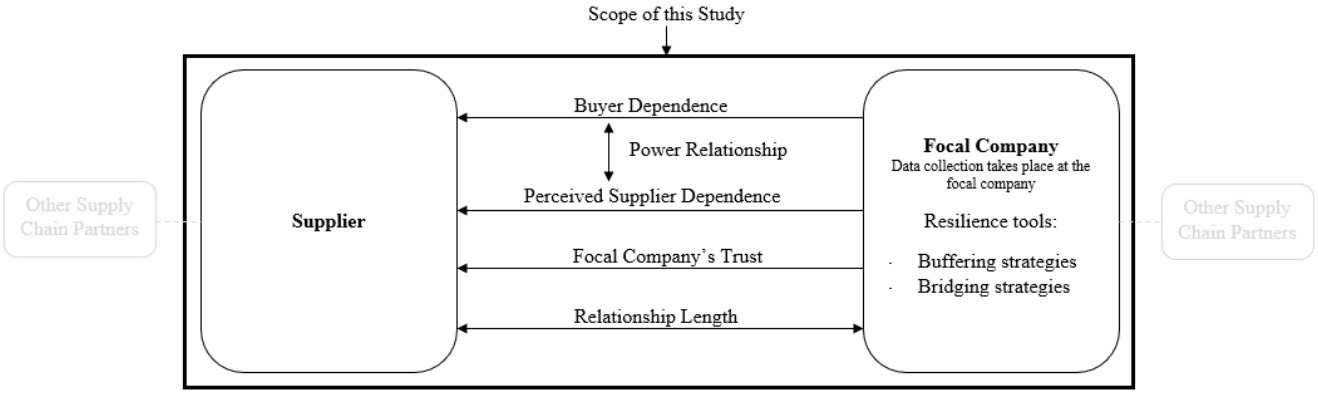


Figure 1: Visual Representation of the Core Focus of this Study

2.4 Hypotheses: The Influence of Multiple Inter-Firm Level Variables on the Focal Company's Decision to Implement Buffering and/or Bridging Strategies

Previous research has found contrasting results regarding the influence of dependence and trust on the decision of companies to pursue bridging and/or buffering. The following subchapters take a closer look at the diverging arguments and formulate hypotheses regarding the influence of buyer dependence, perceived supplier dependence, focal company's trust and relationship length on the focal company's decision to implement buffering and/or bridging approaches. Thereafter, a hypothesis is formulated regarding the interaction between buffering and bridging strategies.

2.4.1 The Impact of Dependence on the Decision to Implement Buffering and/or Bridging Strategies

Dependence indicates how much a company relies on a specific supply chain partner due to the essential advantages the supply chain partner offers and the challenges involved in finding a substitute (Mishra et al., 2016, p. 185; Tellefsen & Thomas, 2005, p. 27). Buyer dependence denotes how dependent the focal company, as a buyer, is on a supplier (Villena et al., 2019, p. 757). Buyer dependence is high when the focal company relies on the resources provided by the supplier to maintain operations and when it is difficult to find a substitute supplier (Mishra et al., 2016, p. 185; Tellefsen & Thomas, 2005, p. 27; Villena et al., 2019, p. 757). Likewise, supplier dependence denotes how dependent the supplier is on the focal company due to the focal company's share in the supplier's turnover (Elking et al., 2017, p. 25; Kim & Zhu, 2018, p. 7; Pulles et al., 2023, p. 1431). Supplier dependence is high when the focal company accounts for a large share of the supplier's turnover and when it is tough for this supplier to replace the focal company with comparable customers (Elking et al., 2017, p. 25; Mishra et al., 2016, p. 185; Tellefsen & Thomas, 2005, p. 27).

Previous studies have mainly focused on upstream supply chain disruptions and buyer dependence. A notable exception is the research of Su et al. (2014), who focus on downstream supply chain disruptions as well as both buyer dependence and supplier dependence. This study formulates hypotheses regarding the influence of both buyer dependence and perceived supplier dependence on a company's decision to buffer and/or bridge when performing supply

chain risk management to improve the company's resilience. Previous research has found contrasting results regarding the influence dependence has on a company's decision to implement buffering and/or bridging strategies. Table 1 shows an overview of these conflicting findings.

Table 1: The Influence of Dependence on the Decision to Implement Buffering and Bridging Strategies

	Bode et al. (2011, p. 848)	Mishra et al. (2016, p. 194)	Su et al. (2014, pp. 262-263)
Dependence and buffering	Inverted U-shaped relationship	Negative relationship	Supplier implements buffering at low supplier dependence
Dependence and bridging	Positive relationship	Positive relationship	Supplier implements bridging at high supplier dependence

Some previous research has shown that companies should employ buffering approaches if they experience low dependence (Mishra et al., 2016, p. 194; Su et al., 2014, p. 263). To the contrary, according to resource dependence theory, the probability of companies adopting buffering or bridging strategies in situations of low dependence is low (Bode et al., 2011, pp. 836-837). Based on resource dependence theory, a company must preserve its partnerships with a supplier on whom they are dependent if they want to reach their objectives (Bode et al., 2011, p. 836; Emerson, 1962, p. 32). Consequently, if a supply chain disruption occurs in such a dependence relationship, companies are encouraged to act by using buffering and bridging approaches (Bode et al., 2011, pp. 836-837; Milliken, 1990, p. 55). However, when a company is extremely dependent on a supply chain partner, the company's choices regarding buffering are limited, as the expenses associated with applying buffering approaches become excessively high (Bode et al., 2011, p. 837). For instance, BMW had to provide financial assistance to rescue a nearly insolvent supply chain partner that produced a customized type of sunroof (bridging strategy) (Bode et al., 2011, p. 837). The uniqueness of this component made buffering impossible in this situation (Bode et al., 2011, p. 837). Bode et al. (2011, pp. 837, 844) indeed found support for the hypothesis that there is an inverted U-shaped association between dependence and buffering. This result is in line with the predictions of resource dependence theory. Therefore, it is hypothesized that there is an inverted U-shaped relationship between buyer dependence and the implementation of buffering strategies, to see if the results can be replicated in the setting of this study.

Furthermore, the dyadic nature of the supply chain relationship should be considered, to study whether perceived supplier dependence changes the relationship between buyer dependence and the implementation of buffering strategies. If a supplier is not dependent on the focal company, they are unlikely to be willing to invest in strategies that increase their dependence on the focal company, as this reduces their power (Casciaro & Piskorski, 2005, p. 174). However, the implementation of buffering approaches does not require collaboration with the supply chain partner (Bode et al., 2014, p. 27). Hence, the focal company is able to implement buffering strategies even if the supplier is not willing to invest in the implementation of such strategies. Therefore, the focal company's decision to implement buffering strategies should not change if the focal company believes that the supplier is not dependent on them.

Moreover, if perceived supplier dependence is high, the hypothesized inverted U-shaped relationship between buyer dependence and the implementation of buffering strategies may be even more pronounced. Pulles et al. (2023, p. 1430) found that investing in the current supplier (bridging) is less beneficial for the distribution of supplier assets if the supplier relies on the focal company. The reasoning behind this finding is that the implementation of bridging approaches (supplier-specific investments) signals to the supply chain partner that the focal company is dedicated and locked into the partnership (Pulles et al., 2023, p. 1437). This enables the supply chain partner to assign resources to other partnerships, thereby reducing the supplier's dependence (Casciaro & Piskorski, 2005, p. 167; Pulles et al., 2023, p. 1437). Using this reasoning, the implementation of buffering strategies by the focal company could signal the exact opposite. According to resource dependence theory, the supplier should react to this action if they are dependent on the focal company to realize its organizational objectives (Bode et al., 2011, p. 836). The dependent supplier should then dedicate more resources to the focal company to salvage their important relationship. This mechanism renders the adoption of buffering strategies by the focal company particularly advantageous in this scenario.

Hence, if the focal company believes that the supplier is dependent on them, the focal company may be more inclined to implement buffering strategies. Employing buffering approaches is, however, still not possible if the focal company is highly dependent on the supplier because the focal company then faces critical implementation barriers (Bode et al., 2011, p. 837). Also, the focal company should still be at least somewhat dependent on the supplier to be stimulated to implement buffering strategies (Bode et al., 2011, pp. 836-837). Therefore, an inverted U-shaped relationship is expected between buyer dependence and the implementation of buffering strategies for both high and low levels of perceived supplier dependence. This results in the following hypothesis:

Hypothesis 1: There is an inverted U-shaped relationship between buyer dependence and the implementation of buffering strategies.

Contrary to buffering, a company's ability to implement bridging strategies is not constrained by the dependence on the supply chain partner (Bode et al., 2011, p. 837). More specifically, companies are even more likely to focus on bridging strategies that intensify the partnership with a supplier as there are little other options to manage uncertainty (Beckman et al., 2004, p. 263; Bode et al., 2011, p. 837). Previous studies indeed agree that companies should employ bridging approaches if they experience high dependence on a supply chain partner (Bode et al., 2011, pp. 837, 844; Mishra et al., 2016, p. 194; Su et al., 2014, p. 263). Therefore, this study hypothesizes that there is a positive relationship between buyer dependence and the implementation of bridging strategies, to see if the results can be replicated in the setting of this study.

Bridging strategies are initiatives taken in collaboration with a current supplier (Bode et al., 2014, p. 28; Bode et al., 2011, p. 834). As explained by the Dutch windmill model, the actions and type of collaboration the focal company can engage in with a supplier may depend on the relative importance of the focal company from the supplier's perspective (Van Weele, 2010, p. 200). Based on resource dependence theory, a company must preserve its partnerships with a supply chain partner on whom they are dependent if they want to reach their objectives (Bode

et al., 2011, p. 836; Emerson, 1962, p. 32). Hence, if the supplier is dependent on the focal company, it is likely that the supplier is willing to collaborate and invest in the implementation of bridging strategies. Indeed, Su et al. (2014, p. 263) find that a supplier employs bridging approaches if they are dependent on their buyer. If a buyer has a lot of power, the resources this buyer offers to the supplier are usually highly important (Su et al., 2014, p. 262). Companies typically allocate more resources to such important supply chain partners and aim to intensify the partnership with them (Su et al., 2014, p. 262; Wang & Hong, 2006, p. 716). To the contrary, if the supplier is not dependent on the focal company, the supplier is unlikely to support the implementation of strategies that increase their dependence on the focal company, according to resource dependence theory (Casciaro & Piskorski, 2005, p. 174). Hence, if the focal company perceives that the supplier is not dependent on them, they may refrain from initiating bridging initiatives. Therefore, the hypothesized positive relationship between buyer dependence and the implementation of bridging strategies only holds if the supplier is perceived to be dependent on the focal company. This results in the following hypotheses:

Hypothesis 2: If the supplier is perceived to be dependent on the focal company, there is a positive relationship between buyer dependence and the implementation of bridging strategies.

Hypothesis 3: If the supplier is not perceived to be dependent on the focal company, the positive relationship between buyer dependence and the implementation of bridging strategies does not hold.

2.4.2 The Impact of Trust on the Decision to Implement Buffering and/or Bridging Strategies

Having trust in a supplier means that the company has confidence that the supplier fulfils their promises and that the supplier engages in the relationship with genuine and positive intentions (Bode et al., 2011, p. 838; Doney & Cannon, 1997, p. 36; Ganesan, 1994, pp. 2, 3). Previous research has found contrasting results regarding the influence of trust on a company's decision to implement buffering and/or bridging strategies (see Table 2).

Table 2: The Influence of Trust on the Decision to Implement Buffering and Bridging Strategies

	Bode et al. (2011, pp. 845-846)	Mishra et al. (2016, pp. 187, 194)	Matas et al. (2024, pp. 2185, 2190-2191)
Trust and buffering	Negative relationship, buffering is preferred over bridging in low-trust situations	Negative relationship	Positive relationship
Trust and bridging	Positive relationship, bridging is preferred over buffering in high-trust situations	Positive relationship	Positive relationship

If a company does not trust a supply chain partner, the company is likely to have a tendency to insulate itself and reduce its vulnerability to actions of the supply chain partner (Bode et al., 2011, p. 838). If a supply chain disruption occurs involving this supplier, the company's previous beliefs about the partnership with the supplier are validated (Bode et al., 2011, p. 838). If such a situation occurs, managers experience confirmation bias, concentrating on data that validates existing opinions and neglecting to analyse the supply chain disruption (Bode et al., 2011, p. 838). Therefore, the company responds less to a supply chain disruption in terms of implementing buffering and bridging strategies (Bode et al., 2011, p. 838). If a company has to

choose between buffering and bridging in low-trust situations, buffering is preferred to meet the company's urge to protect itself (Bode et al., 2011, pp. 838, 849). Still, some bridging approaches may also be employed (Bode et al., 2011, pp. 838, 849).

To the contrary, if a company trusts a supply chain partner and a supply chain disruption occurs, the company's existing beliefs regarding that supply chain partner are invalidated (Bode et al., 2011, p. 838; Dirks et al., 2009, p. 78). This encourages companies to gather more information (Bode et al., 2011, p. 838; Ellis & Davidi, 2005, p. 857). Hence, the company focuses more on the supply chain disruption (Bode et al., 2011, p. 838). The focal company then expands the use of bridging strategies and, to a certain degree, buffering strategies to mitigate the consequences of the supply chain disruption (Bode et al., 2011, p. 838). In high-trust situations, a company trusts their current supplier to address issues and therefore directs their resource allocation to this partnership (Matas et al., 2024, p. 2192). Some buffering approaches may also be implemented to optimize the company's response to the supply chain disruption (Bode et al., 2011, p. 838; Matas et al., 2024, p. 2192).

Based on this reasoning, it is expected that there is a positive relationship between focal company's trust and the implementation of both buffering and bridging strategies. Simultaneously, buffering strategies are expected to be preferred in low-trust situations, whereas bridging strategies are expected to be preferred in high-trust situations. Therefore, the positive relationship between focal company's trust and the implementation of buffering and bridging strategies is expected to be stronger for the implementation of bridging strategies.

While this contrasts some of the findings of Bode et al. (2011, p. 845) and Mishra et al. (2016, pp. 187, 194), who have found a negative direct relationship between trust and buffering, it is in line with many other previous findings. Matas et al. (2024, pp. 2185, 2191) found a positive association between collective emotions (trust) and buffering. Even though collective emotion is not synonymous to trust, they are proxies (Matas et al., 2024, p. 2192). They explain this finding by, amongst others, referring to Bode et al. (2011, p. 836), who stated that, in case of a supply chain disruption, companies may reconsider their assessment of the current partnerships. The company may then manage any discovered uncertainty by implementing buffering approaches such as finding alternatives (Matas et al., 2024, p. 2192). Another reason for this positive relationship is that companies may decide to implement buffering approaches together with bridging approaches in an attempt to optimize their mitigation of a supply chain disruption, even if they trust the supplier (Matas et al., 2024, p. 2192).

Furthermore, Mishra et al. (2016, p. 194) found that companies should implement bridging approaches if they trust their suppliers. Bode et al. (2011, p. 845) also found a positive relationship between trust and the implementation of bridging strategies. Likewise, Matas et al. (2024, p. 2192) find that collective emotions (trust) increase the use of bridging strategies. The positive association between trust and bridging is stronger than the positive association between trust and buffering (Matas et al., 2024, pp. 2190-2191). Also, Bode et al. (2011, p. 846) and Mishra et al. (2016, p. 194) find that buffering is preferred in low-trust situations, while bridging is preferred in high-trust situations. This reasoning and these findings lead to the following hypotheses:

Hypothesis 4: If the focal company trusts the supplier, the focal company employs more buffering and bridging strategies overall, and prioritizes bridging strategies.

Hypothesis 5: If the focal company does not trust the supplier, the focal company prioritizes buffering strategies, but employs fewer buffering and bridging strategies overall.

The implementation of bridging strategies necessitates collaborative efforts (Bode et al., 2011, p. 834). To the contrary, buffering strategies are implemented outside the scope of the existing supply chain relationship (Bode et al., 2011, p. 836). Hence, a company can implement buffering approaches without collaborating with the supplier (Bode et al., 2014, p. 27). Relationship length could affect the collaborative nature of the partnership between the focal company and the supplier (Li et al., 2015, pp. 86, 89). Relationship length is the amount of time the focal company and their supplier have been in an exchange relationship (Cao & Lumineau, 2015, p. 21). As the amount of time the focal company and the supplier have been in an exchange relationship increases, it is more likely that the partners have developed different types of business standards (Li et al., 2015, p. 86). Governance and coordination mechanisms may then also be developed. Furthermore, the amount of trust may increase during a relationship between supply chain partners, albeit in an intricate manner (Vanneste et al., 2014, p. 1894). Virtually all researchers concur that trust is a particularly important precursor of collaboration (Smith et al., 1995, pp. 10-11).

Therefore, if the relationship length between the focal company and the supplier is long, the developed supplier's trust, governance and coordination mechanisms make a successful implementation of bridging strategies more likely. Hence, if the relationship length is long, the focal company can implement both buffering and bridging strategies. To the contrary, if the focal company and supplier have been in an exchange relationship for a relatively short period, the successful implementation of bridging strategies may be inhibited, as supplier's trust, governance and coordination mechanisms have not yet been developed. Consequently, relationship length may change the relationship between focal company's trust and the implementation of buffering and bridging strategies. This leads to the following hypothesis:

Hypothesis 6: If the relationship length between the focal company and the supplier is short, the relationship between the focal company's trust and the implementation of buffering and bridging strategies shifts, favouring the implementation of buffering strategies.

2.4.3 The Interaction between Buffering and Bridging Strategies

The seventh hypothesis concerns the interaction between the implementation of buffering and bridging strategies. While the analysis of Bode et al. (2011, p. 850) revealed no significant association between the implementation of buffering and bridging approaches, the authors acknowledge that an interaction between these two approaches can still exist. Indeed, previous research in the context of natural resource scarcity has shown that buffering approaches have a beneficial influence on bridging approaches (Kalaitzi et al., 2019, pp. 1333, 1341). Likewise, bridging approaches have a beneficial influence on buffering approaches (Kalaitzi et al., 2019, pp. 1333, 1341). Furthermore, another study has shown that companies that focus on measures external (bridging) and internal (buffering) to the company achieve the highest performance in

terms of supply chain risk management (Manhart et al., 2020, p. 77; Revilla & Saenz, 2017, p. 557).

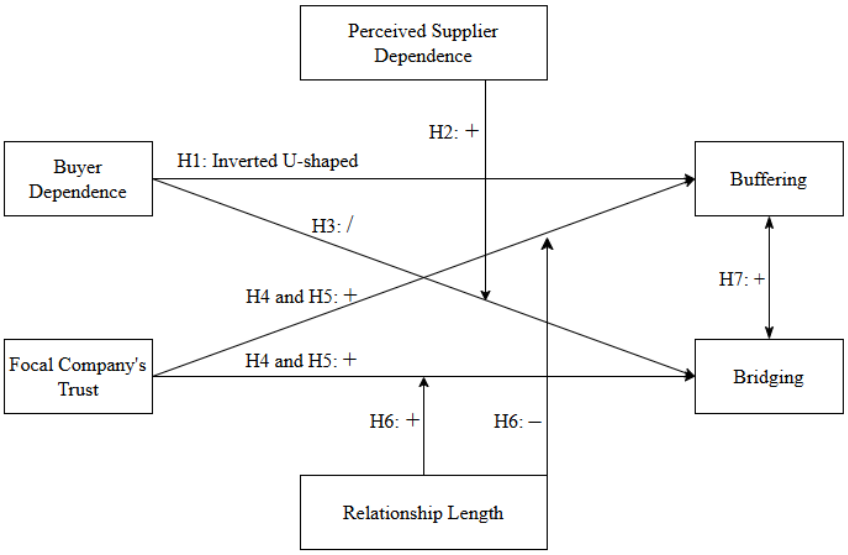
Moreover, Küffner et al. (2022, p. 2) find that companies employ both buffering and bridging approaches in response to a supply chain disruption. This also holds when responding to a large supply chain disruption; a company can react by applying both buffering and bridging approaches that support each other (Matas et al., 2024, p. 2192). More specifically, the implementation of bridging approaches is expected to be preferred to mitigate long-term risks of supply chain disruptions (Gebhardt et al., 2022, p. 68; Küffner et al., 2022, p. 9). On the other hand, there are contradictory findings regarding which strategy dominates in the aftermath of a supply chain disruption (Gebhardt et al., 2022, p. 68; Küffner et al., 2022, pp. 2, 9). Simultaneously, bridging capabilities may be needed to successfully employ buffering strategies and buffering capabilities may be needed to successfully employ bridging strategies (Kalaitzi et al., 2019, p. 1332; Manhart et al., 2020, p. 77). For example, Srinivasan and Swink (2015, p. 850) discovered that companies only achieve the foreseen advantages from dedicating resources to integration capacities (bridging) if they also dedicate resources to develop the capacity to promptly and efficiently execute the resulting strategies (buffering) (Manhart et al., 2020, p. 77).

The focus of this study is on supply chain risk management in general, which in turn reduces the probability and/or impact of supply chain disruptions, thereby improving the company's resilience. Therefore, based on these previous findings, it is expected that the implementation of bridging approaches is accompanied by an increase in the use of buffering strategies. Hence, the following hypothesis is formulated:

Hypothesis 7: The use of buffering strategies increases with the application of bridging strategies.

Figure 2 shows an overview of the hypotheses.

Figure 2: Hypotheses Overview



3. Method: A Policy-Capturing Experiment to Examine Risk Management Strategies

3.1 Research Design: A Policy-Capturing Experiment Conducted at a Case Company

A policy-capturing experiment is conducted at a case company to answer the research questions and test the formulated hypotheses. The case company is introduced in Section 3.2. A policy-capturing experiment is a type of vignette study that integrates experimental and survey techniques by presenting participants with hypothetical, yet believable and plausible cases and asking participants to make decisions in reaction to these cases (Aguinis & Bradley, 2014, p. 354; Connelly et al., 2016, p. 2141; Priem et al., 2011, p. 557). The cases are manipulated to gain information about the variables included in the hypotheses (Qian et al., 2021, p. 617). A policy-capturing experiment at a case company thus allows the researcher to manipulate the inter-firm variables that are expected to influence the focal company's decision to implement buffering and/or bridging strategies. It thereby allows the researcher to gain a better comprehension regarding which manipulated factors influence a person's implicit decision-making (Aguinis & Bradley, 2014, p. 354), and helps to pinpoint how different informational cues affect the choices made by supply chain managers (Qian et al., 2021, p. 617). Moreover, the researcher can decide what cues the participants get, giving the researcher a significant level of control (Mellewigt et al., 2017, p. 2357). Consequently, a policy-capturing experiment enables the researcher to examine whether the manipulations in the characteristics of the dyadic supply chain relationship impact the likelihood of the focal company to implement buffering and/or bridging strategies. As the cues are contextualized within the situational description of a policy-capturing experiment, it is more likely that participants can give accurate answers, contrary to when they would be questioned about the influence of the cues directly (Wang et al., 2015, p. 671). This quantitative data is used to test the formulated hypotheses and answer the research questions. Moreover, qualitative data can be collected in the survey to gather additional information. Thereby, this method allows the researcher to examine when companies decide to buffer and/or bridge, and how buffering and bridging strategies are interrelated. Hence, a policy-capturing experiment is a suitable method to answer the research questions.

3.2 Sample: Employees of the Case Company's Supply Chain Department

The experiment is conducted at a case company in the Netherlands. The case company allocates significant personnel and resources to strategic supply chain management. Therefore, it is a suitable case company to conduct the experiment. The company is active in an industry characterized by close cooperation with suppliers to manufacture the product. It is important that the sample is representative of the population the researcher is focused on, and that the case included in the vignette is recognizable for the participant (Aguinis & Bradley, 2014, p. 363; Aiman-Smith et al., 2002, p. 392; Wason et al., 2002, p. 53). The sample used in this study consists of employees of the supply chain department, making them representative of the population of interest. Moreover, two directors of the case company verified that the vignettes were clear, comprehensible and applicable to them. Table 3 presents an overview of the clusters and roles of respondents who completed the questionnaire.

Table 3: Amount of Respondents per Cluster and Function (N = 28)

	Amount of Respondents		Amount of Respondents
Cluster		Function	
E&MC	8	(S)AL	6
MM	8	GSM	4
MLP	4	QSM	1
NPR/Regional Sourcing	3	LSM	5
Z	4	CSM	3
Other	1	RM	1
		Other	8

In total, 28 respondents fully completed the questionnaire whereas 14 respondents partially completed the questionnaire. Table 4 presents a summary of the age, work experience, tenure, risk propensity, trust propensity, short-term orientation and disruption experience of the respondents who fully completed the questionnaire. In total, 288 vignettes were completed by male respondents, while 48 cases were completed by female respondents.

Table 4: Descriptive Statistics of the Respondents (N = 28)

	Age (in years)	Work Experience (in years)	Tenure (in years)	Risk-Taking (10-point scale)	Trust Propensity (7-point scale)	Short-Term Orientation (7-point scale)	Low-Impact SCD Experience (7-point scale)	High-Impact SCD Experience (7-point scale)
Mean	42.93	16.68	7.904	5.96	5.04	2.11	4.75	3.96
Standard Deviation	9.299	9.516	6.1632	1.844	1.151	0.861	1.355	1.241
Minimum	27	1	1.0	2	2	1	2	2
Maximum	58	35	30.0	9	7	5	6	6

Note. SCD = supply chain disruption.

3.3 Operationalization of Constructs: Complementing Academic Knowledge with Practical Expertise

This study includes two dependent variables (buffering and bridging), two independent variables (buyer dependence and focal company's trust) and two moderator variables (perceived supplier dependence and relationship length). The following paragraphs explain how these variables are operationalized.

The two dependent variables that are included in this study are buffering and bridging. To ensure that the definitions of buffering and bridging strategies as well as the distinction between these two concepts is as clear as possible, the definitions used by Bode et al. (2011, p. 836) were adapted. The complexity of the definitions used by Bode et al. (2011, p. 836) did not fit the case performed in this study. Hence, these definitions were modified to improve the comprehensibility of the information for practitioners and the fit with the case context examined. For example, in their definition of bridging, Bode et al. (2011, p. 836) include "to manage resource dependencies by enlarging a firm's influence over them". This part is replaced to avoid introducing bias into the definition of bridging, as "dependence" is a variable within the study. Furthermore, three examples of both buffering and bridging strategies were provided. These examples were derived from existing literature (Bode et al., 2014, p. 28; Bode et al., 2011, p. 836; Bourgeois, 1981, p. 33; Gebhardt et al., 2022, pp. 61-62; Manhart et al., 2020, p.

68; Mishra et al., 2016, p. 184) and validated in collaboration with the case company to ensure their realism and relevance for the participants. For example, it was decided to specify "developing backup suppliers" as the case company has already compiled a list of possible alternative suppliers, but these suppliers still have to be developed to the required standard. Also, "entering into a long-term contractual commitment with the supplier" was included based on information provided by the case company. This resulted in the following explanation of buffering and bridging strategies:

"**Buffering** strategies focus on adding redundancy outside the scope of the case company's relationship with a current supplier. Buffering strategies aim to reduce supply chain risks by securing alternative suppliers or resources that can mitigate the impact of disruptions from any one supplier. Examples of buffering strategies include:

- Developing backup suppliers
- Increasing the number of possible alternative suppliers (e.g. by pursuing standardization)
- Acquiring additional production resources (e.g. by increasing supply chain stock levels)

Bridging strategies focus on strengthening the existing relationship of the case company with a current supplier. Bridging strategies aim to reduce supply chain risks by leveraging a strong relationship with the current supplier and mitigate negative impacts from disruptions within this relationship. Examples of bridging strategies include:

- Closely cooperating with a supplier on, amongst others, risk management policies
- Entering into a long-term contractual commitment with the supplier
- Improving information exchange with the supplier to improve supply chain visibility".

Drawing on these definitions, two statements were formulated concerning the implementation of buffering strategies, and two statements were developed regarding the implementation of bridging strategies. The statements that address the implementation of buffering strategies suggest to mitigate risks by (1) investing in alternatives outside the current relationship (e.g. building stock or capacity) and/or by (2) developing new suppliers. The statements that address the implementation of bridging strategies suggest to mitigate risks by (1) strengthening the cooperation and/or information exchange with the current supplier and/or by (2) investing in the relationship with the current supplier. As these statements were derived from the definitions used for buffering and bridging strategies, participants are also immediately reminded of the meaning of buffering and bridging strategies. For each statement, respondents indicate on a 7-point Likert scale how likely it is that they implement the strategies mentioned in the statements. As participants respond to hypothetical scenarios, no statements can be made regarding whether they actually implement the indicated strategy in each hypothetical scenario. Instead, their likelihood of implementing buffering and bridging strategies is measured. Therefore, if statements are made regarding the implementation of buffering and bridging strategies, it actually concerns the likelihood of implementing buffering and bridging strategies.

Buyer dependence is an independent variable that is manipulated in the experiment. In order to be able to identify a possible inverted U-shaped pattern, at least three levels of buyer dependence must be included in the experiment (low/medium/high). It is advised to construct

the manipulations as believable and plausible as they can be (Eckerd et al., 2021, p. 264). Therefore, rather than just stating whether the focal company is only slightly/medium/highly dependent on a supplier, it is better to include more information regarding the dependence relationship. There are two sources of dependence: how important the resource is for the company, and whether there are any other suppliers for that resource (Casciaro & Piskorski, 2005, p. 170). Both should be included in the vignette to make the intervention as clear as possible. This results in the following options for manipulation of the buyer dependence variable:

- low buyer dependence: the resources provided by the supplier are not very important for your company and it is relatively easy to find an alternative supplier for this resource
- medium buyer dependence: the resources provided by this supplier are somewhat important for your company and you might be able to find an alternative supplier if you invest resources to search for an alternative supplier
- high buyer dependence: the resources provided by this supplier are crucial for your company and it is practically impossible to find another supplier for this resource

The second independent variable that is manipulated in the experiment is the level of trust the focal company has in the supplier. In the experiment, trust is low, medium or high, similar to the other independent variable included in this study. Previous studies of Bode et al. (2011), Mishra et al. (2016) and Matas et al. (2024) have found contradictory results regarding the relationship between trust and a company's decision to buffer and/or bridge. This study includes three levels of trust, such that any relationship between trust and buffering/bridging that is more intricate than a linear relationship may also potentially be found. Trust comprises of two elements: confidence that the supplier will keep their promises and that the supplier approaches the relationship with well-meant motives (Bode et al., 2011, p. 838; Doney & Cannon, 1997, p. 36; Ganesan, 1994, pp. 2, 3). Formulating trust by using both elements enhances reliability (Delbufalo, 2012, p. 389). Hence, both elements should be included in the situational description on the vignette. This results in the following options:

- low trust: you do not believe that your supplier will keep their promises and you are worried that your supplier might take advantage of you
- medium trust: you doubt whether your supplier will keep their promises and you are not sure whether the supplier has your best interest at heart
- high trust: you believe that your supplier will keep their promises and you are confident that your supplier has your best interest at heart

Supplier dependence denotes how dependent the supplier is on the focal company due to the focal company's share in the supplier's turnover (Elking et al., 2017, p. 25; Kim & Zhu, 2018, p. 7; Pulles et al., 2023, p. 1431). Perceived supplier dependence is included as a moderator and can be either high or low. It is decided to include only two levels of perceived supplier dependence to make the distinction for employees filling out the questionnaire more clear-cut. Hence, the following manipulations are possible for this moderator variable:

- low perceived supplier dependence: your company generates a small share of the supplier's turnover and it is relatively easy for your supplier to replace your company with a similar customer
- high perceived supplier dependence: your company generates a very large share of the supplier's turnover and it would be nearly impossible for the supplier to replace your company with a similar customer

The second moderator included in this study is relationship length. Relationship length is the amount of time the focal company and their supplier have been in an exchange relationship (Cao & Lumineau, 2015, p. 21). To make the distinction as clear-cut as possible for the participants, relationship length is either high (long relationship) or low (short relationship). This results in the following options to be included in the vignettes:

- low relationship length: you have only known this supplier for a relatively short period
- high relationship length: you have already known this supplier for a relatively long period

This study also incorporates multiple control variables, including the participant's age, gender, job function, experience in this type of job function and tenure at the case company. Furthermore, participants are asked to indicate how prone they are to trust people and how prone they are to take risks. The implementation of bridging strategies requires collaboration (Bode et al., 2014, p. 28). Therefore, participants who easily trust people may be more inclined to implement a bridging strategy, compared to participants who do not easily trust other people. Likewise, participants who are risk-taking might not be inclined to mitigate supply risks by investing in buffering or bridging measures. Therefore, trust propensity and risk propensity are included as control variables. Risk propensity is measured using the scale developed by Dohmen et al. (2011, p. 525). Trust propensity is measured by asking participants to what extent they agree with the statement "I easily trust other people". Respondents answer on a 7-point Likert scale. Likewise, participants are asked to indicate the extent to which they agree with the statement "I primarily considered the short-term consequences of my decisions and not the long-term consequences". Respondents again answer on a 7-point Likert scale to what extent they disagree/agree with this statement. This statement is included because there could be a difference between a company's short-term and long-term response to supply chain disruptions in terms of implementing buffering and bridging strategies (Bode et al., 2011, p. 850; Gebhardt et al., 2022, p. 68; Küffner et al., 2022, p. 2). This study controls for this influence by including it as a control variable. Furthermore, previous research has shown that experience gained from supply chain disruptions that occurred in the past can help companies to respond better to new supply chain disruptions (Alvarenga et al., 2023, p. 3; Roh et al., 2022, p. 231). Therefore, experience with low-impact and high-impact disruptions is also included as control variable.

3.4 Data Collection: Using a Policy-Capturing Experiment With Incomplete Block Design to Collect Quantitative and Qualitative Data

3.4.1 Design of the Policy-Capturing Experiment: An Incomplete Block Design

The two independent variables both have three levels, whereas the two moderating variables both have two levels. This leads to a 3^2x2^2 factorial design, resulting in 36 experimental conditions. Having participants read and answer questions regarding all 36 experimental

conditions can influence the results, as it leads to decreased interest and reduced active participation (Qian et al., 2021, p. 617; Wang et al., 2015, p. 672). Hence, an incomplete block design is used. Using an incomplete block design means that the total amount of 36 experimental conditions is split into different blocks (Graham & Cable, 2001, p. 28; Mellewigt et al., 2017, p. 2359). Participants are exposed to the experimental conditions allocated to one block only (Graham & Cable, 2001, p. 28; Mellewigt et al., 2017, p. 2359). Still, overall, all 36 experimental conditions are included in the experiment (Graham & Cable, 2001, p. 28; Mellewigt et al., 2017, p. 2359).

To ensure there are no block effects, each block should incorporate all variable levels with equal frequency (Cochran & Cox, 1957, p. 203; Mellewigt et al., 2017, p. 2359). Therefore, the amount of experimental conditions each block contains has to be a multiple of the variable levels included in the study (Mellewigt et al., 2017, p. 2359). This way, an incomplete block design allows the researcher to decrease the amount of experimental conditions shown to each participant while preserving the validity of the analysis (Graham & Cable, 2001, pp. 28-29; Mellewigt et al., 2017, p. 2359). As this study includes variables with two and variables with three levels, at least six experimental conditions should be included in each block, or a product of six (Mellewigt et al., 2017, p. 2359). It is deemed reasonable to assign each participant to 12 experimental conditions. In other words, each participant is shown 12 vignettes. Therefore, block size is set to 12, resulting in three blocks.

To ensure that the expected moderation effect of perceived supplier dependence on the influence of buyer dependence can be properly tested, all possible combinations of these variables have to occur within one block. Likewise, to accurately test the expected moderation effect of relationship length on the influence of focal company's trust, all possible combinations of these two variables need to be included within a single block. The resulting incomplete block design is shown in Table 5. For buyer dependence and focal company's trust, a value of zero represents a low level, one indicates a medium level, and two corresponds to a high level. For perceived supplier dependence a value of zero indicates a low level, while a value of one represents a high level. Likewise, for relationship length, a value of zero indicates a short relationship while a value of one represents a long relationship.

Table 5: Incomplete Block Design

Block 1				Block 2				Block 3			
BD	PSD	TR	RL	BD	PSD	TR	RL	BD	PSD	TR	RL
0	0	0	0	0	0	0	1	0	1	0	0
0	0	1	1	1	1	0	1	0	0	1	0
0	1	1	0	1	0	0	0	0	1	2	1
0	1	0	1	2	0	0	0	1	1	0	0
1	0	2	0	0	1	1	1	1	0	1	1
1	0	0	1	2	1	1	1	1	0	2	1
1	1	1	0	1	0	1	0	2	1	0	1
1	1	2	1	2	1	1	0	2	0	1	0
2	0	1	1	1	1	2	0	2	1	2	0
2	0	2	0	0	1	2	0	1	1	1	1
2	1	2	1	2	0	2	1	0	0	2	0
2	1	0	0	0	0	2	1	2	0	0	1

Note. BD = buyer dependence; PSD = perceived supplier dependence; TR = trust; RL = relationship length.

3.4.2 Experimental Procedure: Questionnaire Validated and Distributed by Two Directors of the Case Company

The questionnaire is pretested by three university professors and two directors of the case company. Based on their feedback and comments, several adaptations were made to make the vignettes as clear, realistic and complete as possible. Rungtusanatham et al. (2011, p. 12) as well as Wason et al. (2002, p. 54) advise researchers to ensure that participants can easily recognize the manipulations. Therefore, this study explicitly includes the manipulations in the vignette. Hence, a manipulation check is not deemed necessary. Qualtrics is used as online survey tool. Before the start of the data collection, an informed consent form was signed by the director risk of the case company.

The questionnaire is distributed by two directors of the case company: one director purchasing and one director risk. This distribution method was decided on together with the case company to optimize the response rate. Participants receive an email containing general information along with a link to the online questionnaire. The research questions and hypotheses are not disclosed to the employees participating in the study. This reduces demand effects (Eckerd et al., 2021, p. 265). Furthermore, it is emphasized that respondents remain anonymous, which reduces the influence of social desirability on their responses (Mellewigt et al., 2017, p. 2358). Moreover, it is emphasized that participation is voluntary and that participants can withdraw at any time.

The questionnaire can be subdivided into four main parts. The first part provides general information. It is explained that the case company aims to reduce the probability and impact of supply chain disruptions. Participants are tasked with evaluating various suppliers and indicating the likelihood of implementing buffering and bridging strategies to support the company in achieving this goal. Thereafter, the concepts of buffering and bridging are briefly explained and some examples are given. The four main relationship attributes that are being manipulated – buyer dependence, perceived supplier dependence, focal company's trust and relationship length – are also defined. Furthermore, it is explained that respondents can make three assumptions while completing the questionnaire. Firstly, they have the authority to independently determine which strategies are implemented. Secondly, the outcome of each implemented strategy is immediately observable, without a time lag. Thirdly, they do not have to take the investment costs associated with implementing a strategy into account. These assumptions were agreed upon with the case company to ensure that participants feel empowered and motivated to mitigate supply chain risks.

After reading this general information, participants are randomly assigned to one of the three blocks. During this second part of the questionnaire, respondents are presented with the hypothetical suppliers belonging to their block. The relationship with each hypothetical supplier is characterized by varying levels of buyer dependence, perceived supplier dependence, focal company's trust and relationship length. In each vignette, participants answer four statements on a 7-point Likert scale to indicate how likely it is that they implement buffering and/or bridging strategies. The vignettes the participants are presented with are also randomized within each block. Appendix A presents an example of a vignette, from the participants' point of view. Thereafter, in the third part of the questionnaire, participants answer

multiple open-ended questions. Respondents are asked which buffering and bridging strategies they consider to be most appropriate for implementation in the case company. They may select from a range of predefined bridging and/or buffering strategies and/or provide a description of the strategy they consider to be most appropriate for the case company. The options provided in the questions were agreed upon with the case company to make the answer options as realistic and applicable as possible. Participants are also asked in which situations they consider the implementation of the chosen strategies to be most suitable for the case company. Finally, in the fourth part, additional questions are asked to collect data for the control variables.

The expected time necessary to complete the questionnaire was approximately fifteen minutes. Indeed, when excluding one respondent who completed the questionnaire over multiple days, the average time respondents required to complete the questionnaire was 18 minutes and 40 seconds. Therefore, the workload placed on respondents who completed the questionnaire is considered reasonable and not overly demanding.

3.4.3 Type of Data Collected: Quantitative and Qualitative Data

This study gathers both quantitative and qualitative data. In the second part of the questionnaire, quantitative data is gathered. In this part, respondents indicate how likely it is that they implement buffering and bridging strategies on a 7-point Likert scale. The quantitative data is used to examine the influence of the independent and moderator variables on the implementation of buffering and bridging strategies. Moreover, this data is used to examine the interaction between the implementation of buffering and bridging approaches.

In the third part of the questionnaire, qualitative data is gathered regarding the situation in which respondents consider the implementation of buffering and bridging strategies to be most suitable. Also, information is gathered on which buffering and bridging strategies respondents consider most applicable to the case company. Gathering this data serves multiple purposes. Firstly, the qualitative data can be compared to the quantitative data, to assess the alignment of the data. Moreover, possible other influencing variables can be identified, if multiple participants use variables not included in this study in their situational description. It could then be interesting for future research to further examine the influence of these variables. Figure 3 provides an overview of the type of data gathered at each part of the questionnaire and their purpose.

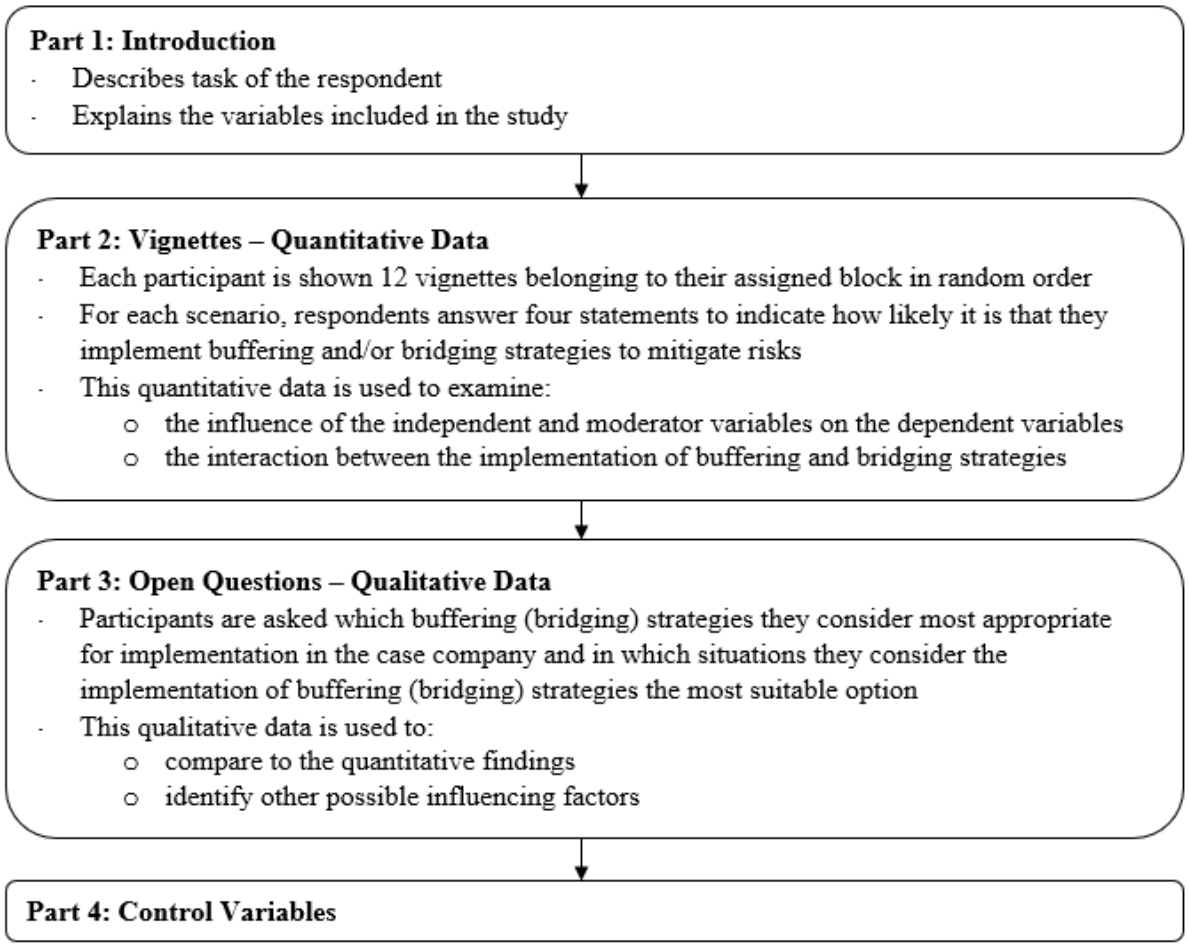


Figure 3: Overview of the Questionnaire and the Type of Data Gathered

3.5 Evaluating the Validity and Reliability of the Data

Vignette studies provide a means to approach the conflict between experimental studies, which tend to secure strong internal validity but struggle with external validity, and nonexperimental studies, which generally achieve better external validity but lack clarity in establishing causality (Aguinis & Bradley, 2014, p. 351; Atzmüller & Steiner, 2010, p. 128). The vignettes used in the study should contain a plausible description of a situation and enable researchers to systematically manipulate the variables of interest (Aguinis & Bradley, 2014, pp. 351, 352). This improves external and internal validity (Aguinis & Bradley, 2014, pp. 351, 352). The only information that differs between vignettes are the different levels for the variables of interests. This prevents confounds (Eckerd et al., 2021, p. 269; Rungtusanatham et al., 2011, p. 12) and thereby improves internal validity. Moreover, the research questions and hypotheses are not disclosed to the employees participating in the study, which reduces demand effects (Eckerd et al., 2021, p. 265). Also, participants are assured that they remain anonymous, which reduces the influence of social desirability on their responses (Mellewigt et al., 2017, p. 2358). Additionally, the randomization process improves internal validity (Tokar, 2010, p. 91). Furthermore, the sample used in this study consists of employees working in supply chain management, which makes them highly representative for the population of interest. This enhances external validity (Aguinis & Bradley, 2014, p. 363).

Cronbach's alpha is generated to assess the reliability of the items used to measure the implementation of buffering and bridging strategies. Cronbach's alpha is 0.789 for the two items that measured the implementation of buffering strategies, while Cronbach's alpha is 0.951 for the two items that measured the implementation of bridging strategies. As the Cronbach's alpha figures are larger than 0.7, no reliability issues appear to be present (Field, 2009, pp. 674, 675). The average of the two items that measured the implementation of buffering strategies is calculated and used to determine the value for the dependent variable "Buffering". Likewise, the average of the two items that measured the implementation of bridging approaches is calculated and used as value for the dependent variable "Bridging".

3.6 Data Preparation: Cleaning and Organizing the Data for Further Analysis

The gathered data was exported from Qualtrics to Excel. All questions that participants answered using a 7-point Likert scale were recoded from text to their corresponding numerical values ranging from one (extremely unlikely/never/strongly disagree) to seven (extremely likely/always/strongly agree). Thereafter, the data was organized into the appropriate format, with each row in the Excel spreadsheet representing a single case. Thus, if a respondent completed all 12 vignettes in their questionnaire, their data is represented by 12 rows in the final dataset. Each step of this process was double-checked to ensure accuracy. The dataset was then further examined to identify and exclude any obvious data errors from the analysis. All Likert-scale responses fell within the prescribed range and no impossible responses were observed for the variables age, tenure, or work experience. Additionally, all respondents indicated their gender as either male or female. Hence, these responses could be recoded numerically as 0 (male) and 1 (female). Furthermore, all questionnaires were reviewed to detect any responses deemed insincere or unserious, based on the scores assigned to each case and the time taken to complete the questionnaire. No apparent errors were identified.

The progress bar in Qualtrics did not accurately reflect the number of vignettes completed by respondents. Consequently, all questionnaires were thoroughly reviewed to ensure that no completed cases were overlooked. Moreover, not all respondents completed the questionnaire in its entirety. Therefore, the information on control variables was missing for several participants. In total, 28 respondents fully completed the questionnaire, resulting in 336 complete observations. In the completed vignettes, all variable levels occurred with equal frequency. In total, 14 respondents completed the vignettes from Block 1, while 6 and 8 respondents completed the vignettes from Blocks 2 and 3, respectively. Equal randomization is implemented at the start of the questionnaire and does not account for whether participants complete the questionnaire. Since multiple respondents started but did not complete the questionnaire, the equal randomization process was not fully effective. Additionally, 2 respondents completed all cases, but did not provide information on one or two control variables. Hence, 24 observations only contain partial information on the control variables. Furthermore, 12 respondents started the questionnaire but did not complete all vignettes. As a result, a total of 35 incomplete observations were recorded, as no data on the control variables were gathered in the partially completed questionnaires. The analyses performed in this study use the dataset containing only complete observations (N = 336). The statistical analyses in this study were performed using SPSS software.

4. Results: Buyer Dependence, Perceived Supplier Dependence and Focal Company's Trust Influence the Implementation of Buffering and Bridging Strategies Differently

4.1 Graphical Representation of the Quantitative Data

Multiple figures were generated to gain insights into the relationships between the independent and dependent variables, as visualized in Figure 4 and Figure 5. There does not appear to be an inverted-U shaped relationship between buyer dependence and the implementation of buffering strategies. Instead, a linear relation may better fit the data. Moreover, Figure 4 shows a positive linear relationship between buyer dependence and the implementation of bridging strategies.

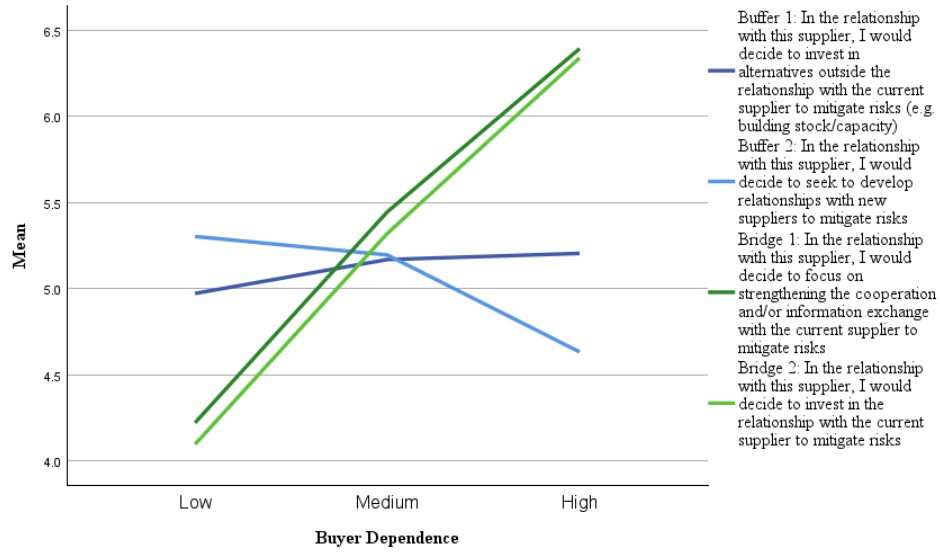


Figure 4: Relationship between Buyer Dependence and the Mean of the Dependent Variables' Items

Figure 5 shows a positive relationship between focal company's trust and the implementation of bridging strategies. In contrast, a negative relationship is visible between focal company's trust and the implementation of buffering strategies. These relationships, along with potential moderators, are further examined in the regression analyses in the subsequent subchapter.

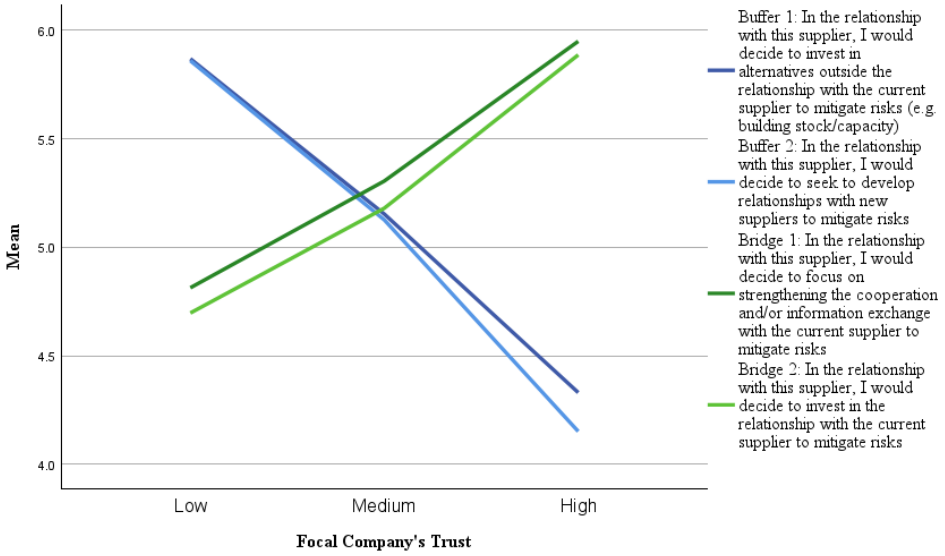


Figure 5: Relationship between Focal Company's Trust and the Mean of the Dependent Variables' Items

4.2 Quantitative Data: Regression Analyses

4.2.1 Asessing the Assumptions of Regression Analysis

To test the formulated hypotheses, multiple regression analyses are performed on the quantitative data collected in the policy-capturing experiment. For each regression analysis performed, it should be examined whether the data fulfils multiple assumptions. This assessment indicates whether it is appropriate to generalize the results of the regression analysis to the broader population of interest (Field, 2009, p. 220). Firstly, the independent variable(s) and moderator(s) should be metric variables or dummy variables, while the dependent variable(s) should be metric (Field, 2009, p. 220). The dependent variables "Buffering" and "Bridging" are measured on a 7-point Likert scale. Hence, the dependent variables are metric. The independent variables are "Buyer Dependence" and "Focal Company's Trust". These variables have 3-point scales (low/medium/high) which cannot be negative and follow a natural order – medium is higher than low and high is higher than medium. In the description of each level of the variables, it was ensured that the difference between the low level and the medium level was equivalent to the difference between the medium level and the high level. Moreover, the moderators "Perceived Supplier Dependence" and "Relationship Length" are dummy variables. Hence, the first assumption is fulfilled.

Secondly, the relationship between the independent and dependent variables should be linear (Field, 2009, p. 221). Figure 4 and Figure 5 provide an indication that most relationships are linear. This is less clear for the relationship between buyer dependence and the implementation of buffering strategies. When discussing the relevant model, it is explained how this potentially quadratic relationship was treated. Thirdly, the errors should not correlate with each other, which can be examined using the Durbin-Watson statistic (Field, 2009, p. 220). If the Durbin-Watson statistic is lower than one, or higher than three, it is likely that the error terms are correlated with each other (Field, 2009, p. 221). All Durbin-Watson statistics fell within the prescribed range. Fourthly, the data should show homoscedasticity (Field, 2009, p. 220). Homoscedasticity of the residual is assessed by creating a graph plotting the standardized residual against the standardized predicted values (Field, 2009, p. 229). There might be a heteroscedasticity problem in Model 2b and Model 2c. The relevant graphs are reported in Appendix B. In both figures, a funnel is visible. Therefore, there are heteroscedasticity concerns (Field, 2009, p. 247). If the data is indeed subject to heteroscedasticity, the significance levels provided could be inaccurate (Long & Ervin, 2000, p. 217). The coefficients calculated are not affected by heteroscedasticity problems (Long & Ervin, 2000, p. 217). Fifthly, the error terms should follow a normal distribution (Field, 2009, p. 221). According to Central Limit Theorem, this assumption is not violated if the sample size is sufficiently large (Field, 2013, p. 172). As the sample size used in the regression analyses performed below is 335, it is assumed that there are no issues regarding the normality of the error terms.

Sixthly, there should not be perfect multicollinearity (Field, 2009, p. 220). Multicollinearity is examined by using the variance inflation factor (VIF) and tolerance levels. If a variance inflation factor is above ten or if the tolerance level is lower than 0.2, there could be a multicollinearity issue (Field, 2009, pp. 241-242). A multicollinearity problem occurs when both "Work Experience" and "Age" are included in the models. Work experience is deemed more relevant information in the context of this study. Therefore, "Age" was excluded from

the analyses to solve the multicollinearity issue. Lastly, outliers should be identified, as these could potentially influence the results of the regression analyses performed (Field, 2009, p. 215). To this end, casewise diagnostics were assessed for each analysis conducted (Field, 2009, p. 244). If the standardized residual is above three – the default limit in SPSS –, the observation was highlighted (Field, 2009, p. 229). One outlier was identified in one model. All analyses were rerun without the outlier. There were no major changes in the results. Hence, it was decided to exclude the observation from the regression analyses performed in this study. The final sample size used in the analyses is therefore 335.

Based on this assessment of the assumptions, it is deemed reasonable to perform regression analyses to test the formulated hypotheses.

4.2.2 Conducting Regression Analyses: Resulting Models

To test the formulated hypotheses, six regression models were constructed: three regression models examine the influence of the independent and moderator variables on the implementation of buffering strategies (Models 1a, 1b and 1c), and three regression models assess the impact of the independent and moderator variables on the implementation of bridging strategies (Models 2a, 2b and 2c). Model 1a and Model 2a only include control variables as independent variables to assess their impact on the dependent variables. Model 1b and Model 2b add the independent variables "Buyer Dependence" and "Focal Company's Trust" to the models, to provide first insights into the main relationships. Lastly, Model 1c and Model 2c add the moderator variables "Perceived Supplier Dependence" and "Relationship Length", to generate a holistic model of the variables included in this study. To include perceived supplier dependence in the regression analysis as a moderator, a new variable was created which multiplied the value of "Buyer Dependence" with the value of "Perceived Supplier Dependence". Likewise, to include relationship length in the regression analysis as a moderator, a new variable, which multiplies the value of "Focal Company's Trust" with the value of "Relationship Length" was used in the analysis. This method of incorporating moderators in regression analysis has been well-established (Aguinis, 2004, p. 18). The results of the regression analyses are visible in Table 6.

Variables are considered to be significant if their significance level is 5% or lower, as advised by Field (2009, p. 50). The control variable "Gender" is significant in Model 2b and Model 2c. This finding means that females are more likely to implement bridging strategies than males, all else equal. The other control variables are not significant at the 5% significance level.

Table 6: Results of the Regression Analyses for the Implementation of Buffering and Bridging Strategies (N = 335)

	Buffering Strategies			Bridging Strategies		
	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c
Constant	**4.933**	**5.794**	**5.618**	**5.687**	**4.135**	**3.868**
	(0.651;	(0.605;	(0.616;	(0.673;	(0.546;	(0.567;
	<0.001)	<0.001)	<0.001)	<0.001)	<0.001)	<0.001)
Gender	-0.380	-0.380	-0.380	0.518	**0.519**	**0.519**
	(0.277;	(0.251;	(0.246;	(0.286;	(0.227;	(0.227;
	0.170)	0.131)	0.123)	0.071)	0.023)	0.023)
Work Experience	0.001	0.001	0.001	-0.016	-0.016	-0.016
	(0.011;	(0.010;	(0.010;	(0.012;	(0.009;	(0.009;
	0.903)	0.894)	0.893)	0.180)	0.093)	0.092)
Tenure	-0.004	-0.004	-0.004	0.001	0.002	0.002
	(0.019;	(0.017;	(0.017;	(0.020;	(0.016;	(0.016;
	0.853)	0.837)	0.826)	0.958)	0.918)	0.922
Risk-Taking	-0.029	-0.029	-0.029	-0.019	-0.019	-0.019
	(0.059;	(0.054;	(0.053;	(0.061;	(0.049;	(0.049;
	0.621)	0.586)	0.578)	0.759)	0.697)	0.697)
Trust Propensity	-0.062	-0.062	-0.061	0.014	0.013	0.013
	(0.096;	(0.087;	(0.085;	(0.099;	(0.078;	(0.078;
	0.518)	0.477)	0.470)	0.887)	0.869)	0.867)
Short-Term Orientation	-0.016	-0.016	-0.016	-0.068	-0.070	-0.070
	(0.130;	(0.118;	(0.115;	(0.134;	(0.106;	(0.106;
	0.901)	0.891)	0.892)	0.613)	0.512)	0.513)
Low-Impact SCD	0.039	0.039	0.039	-0.037	-0.039	-0.038
Experience	(0.070;	(0.064;	(0.062;	(0.072;	(0.057;	(0.057;
	0.579)	0.540)	0.528)	0.607)	0.503)	0.504)
High-Impact SCD	0.140	0.140	0.139	0.040	0.042	0.042
Experience	(0.084;	(0.076;	(0.074;	(0.086;	(0.068;	(0.068;
	0.095)	0.066)	0.061)	0.642)	0.540)	0.542)
Buyer Dependence		-0.056	**0.281**		**1.067**	**1.137**
		(0.097;	(0.134;		(0.087;	(0.124;
		0.565)	0.037)		<0.001)	<0.001)
Focal Company's Trust		**-0.805**	**-0.743**		**0.485**	**0.494**
		(0.096;	(0.135;		(0.087;	(0.124;
		<0.001)	<0.001)		<0.001)	<0.001)
Perceived Supplier			0.396			0.414
Dependence			(0.244;			(0.225;
			0.105)			0.066)
Buyer Dependence*			**-0.672**			-0.143
Perceived Supplier			(0.190;			(0.176;
Dependence			<0.001)			0.417)
Relationship Length			-0.029			0.122
			(0.246;			(0.227;
			0.907)			0.591)
Focal Company's			-0.141			-0.014
Trust*Relationship			(0.192;			(0.177;
Length			0.462)			0.936)
R^2	0.019	0.197	0.241	0.032	0.395	0.404
Adjusted R^2	-0.005	0.172	0.208	0.008	0.376	0.378
F-statistic	0.810	**7.930**	**7.261**	1.356	**21.155**	**15.505**
Durbin-Watson	1.636	1.536	1.499	1.377	1.520	1.511
Highest VIF	1.869	1.869	3.632	1.869	1.869	3.632

Note. The figures provided in brackets represent the standard errors and significance levels of the coefficients; the figures displayed in bold are significant at the 5% significance level; SCD = supply chain disruption.

It was suspected that a linear relationship between buyer dependence and the implementation of buffering strategies may fit the data better than a quadratic relationship. To verify this visual observation a new variable "Buyer Dependence Squared" was created by multiplying "Buyer Dependence" with itself. The new variable "Buyer Dependence Squared" was included in Model 1b and Model 1c as independent variable instead of "Buyer Dependence". The results of these analyses are visible in Appendix C. "Buyer Dependence Squared" is not significant. Hence, no evidence was found to support an inverted-U shaped relationship between buyer dependence and the implementation of buffering approaches. Therefore, Hypothesis 1 is not supported. Instead, in the linear regression analysis in Model 1c, the coefficient of "Buyer Dependence" is significantly positive at the 5% significance level. Moreover, the coefficient of the moderator variable "Buyer Dependence*Perceived Supplier Dependence" is significantly negative. The relatively large change in the significance level of "Buyer Dependence" between Model 1b and Model 1c was cause for further examination of this variable. The sample was split into one subset where "Perceived Supplier Dependence" is low, and one subset where "Perceived Supplier Dependence" is high. Model 1b was rerun twice, using each of the subsets of the sample. The results are visible in Appendix C. The results show that buyer dependence has a positive influence on the implementation of buffering strategies if perceived supplier dependence is low, all else equal. To the contrary, if perceived supplier dependence is high, buyer dependence has a negative impact on the implementation of buffering approaches, all else equal. This confirms the results of Model 1c.

Furthermore, buyer dependence has a significant positive influence on the implementation of bridging strategies, as hypothesized. Unlike expected, perceived supplier dependence does not moderate the relationship between buyer dependence and the implementation of bridging strategies. Thus, Hypothesis 2 and Hypothesis 3 are partially supported. To the contrary, perceived supplier dependence appears to have a direct influence on the implementation of bridging strategies, as it is nearing significance in Model 2c. Model 2c was rerun using the entire sample (N = 394), to examine whether the significance of "Perceived Supplier Dependence" changed. Control variables were not included in the analysis, since the observations added to the sample do not contain information on the control variables. The result of this analysis is visible in Appendix C. When examining the entire sample, the influence of perceived supplier dependence on the implementation of bridging strategies is significantly positive. Therefore, if the supplier is perceived to be dependent on the focal company, the focal company is more likely to implement bridging strategies, all else equal.

Unlike expected, focal company's trust has a significant negative impact on the implementation of buffering strategies. Therefore, if the focal company trusts their supplier, the focal company is less likely to implement buffering strategies, all else equal. To the contrary, focal company's trust has a significant positive influence on the implementation of bridging strategies. Furthermore, a paired-samples t-test was performed to examine whether the implementation of buffering strategies is preferred in low-trust situations, whereas the implementation of bridging strategies is preferred in high-trust situations. This analysis is reported in Appendix D. The results confirm that buffering is preferred in low-trust situations, whereas bridging is preferred in high-trust situations. Therefore, Hypothesis 4 and Hypothesis 5 are partially supported. Moreover, relationship length does not influence the relationship between focal company's

trust and the implementation of buffering or bridging strategies, nor does relationship length directly influence the implementation of these approaches. Therefore, Hypothesis 6 is not supported.

Lastly, to assess the interaction between the implementation of buffering and bridging strategies, Pearson correlations were generated. The results are visible in Table 7. There is a weak negative correlation between the implementation of buffering and bridging strategies. Therefore, no evidence was found to support Hypothesis 7.

Table 7: Pearson Correlation Between the Implementation of Buffering and Bridging Strategies (N = 335)

		Buffering Strategies	Bridging Strategies
Buffering Strategies	Pearson Correlation	1	-0.147
	Sig. (2-tailed)		0.007
Bridging Strategies	Pearson Correlation	-0.147	1
	Sig. (2-tailed)	0.007	

An overview of all findings is visualized in Figure 6.

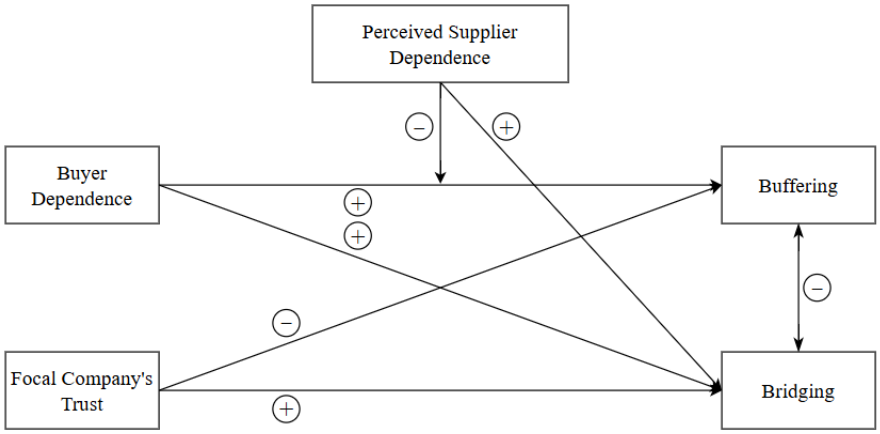


Figure 6: Overview of the Findings

4.3 Qualitative Data: Thematic Analysis With Occurrence

In the third part of the questionnaire, participants were asked how they apply buffering and bridging strategies in their daily activities at the case company. Firstly, participants indicated which buffering and bridging strategies they consider to be most appropriate. Participants could select the examples provided in the explanation of buffering and bridging strategies, which were based on existing literature and validated in collaboration with the case company. Participants could also indicate another buffering or bridging strategy they apply in their daily activities. An overview of their answers is provided in Table 8. Three participants indicated other buffering strategies, while two participants indicated other bridging strategies:

- "n-tier management" (buffering)
- "helping the supplier to cover some of the risks at their suppliers" (buffering)
- "developing alternative products or services (change specification to widen the supplier market potential)" (buffering)
- "4M exercise" (bridging)
- "acquiring the supplier/share capital/QLTC roadmaps" (bridging)

Table 8: Buffering and Bridging Strategies Considered Most Applicable to the Case Company (N = 30)

Buffering Strategy	Frequency	Bridging Strategy	Frequency
Developing backup suppliers	21	Closely cooperating with a supplier on, amongst others, risk management policies	24
Increasing the number of possible alternative suppliers (e.g. by pursuing standardization)	19	Entering into a long-term contractual commitment with the supplier	20
Acquiring additional production resources (e.g. by increasing supply chain stock levels)	16	Improving information exchange with the supplier to improve supply chain visibility	27
Other, namely	3	Other, namely	2

Note. The example strategies are derived from Bode et al. (2014, p. 28), Bode et al. (2011, p. 836), Bourgeois (1981, p. 33), Gebhardt et al. (2022, pp. 61-62), Manhart et al. (2020, p. 68), and Mishra et al. (2016, p. 184) and adapted in collaboration with the case company.

Furthermore, participants were asked in which situations they consider buffering and bridging strategies to be the most suitable option for the case company. This was an open-ended question. An overview of the responses is provided in Table 9. Four times, respondents indicated "high dependency" without specifying whether this concerns buyer or supplier dependence. Those responses were not taken into consideration. If the answer did not contain the variable name or (part of) the variable definition, it was not included in the count of the variable levels, but is instead mentioned separately in the overview.

Table 9: Situations in Which the Implementation of Buffering and Bridging Strategies is Most Suitable for the Case Company (N = 30)

Buffering Situation	Frequency	Bridging Situation	Frequency
Low buyer dependence	2	Medium buyer dependence	3
Medium buyer dependence	2	High buyer dependence	11
High buyer dependence	5	Medium supplier dependence	1
To avoid vendor lock in/case company not much power	2	High supplier dependence	2
Low supplier dependence	2	Low trust	1
High supplier dependence	2	High trust	6
Low trust	11	Long relationship	1
Medium trust	2	Good relationship	1
Short/bad relationship	2	To build long term relationship	1
Long relationships	1	Supplier characteristics (medium complexity, strategic supplier, IP, innovation, want to keep supplier)	6
Supplier characteristics (cost competitive, uncooperative, quality/quantity problems, acquisition risk)	4	Switch time/costs high	4
Lead time of service/product compared to switch time and costs	2	Material characteristics (complex, expensive, competitive advantage)	4
Material characteristics (low complexity, critical parts with large redesign time)	3	Perceived risks are too high	1
High structural risk/technology risk/geopolitical risk/material risk	5	Daily operations for logistics	1
Scarcity/market cyclicality/short-term uncertainty that is not supplier dependent	3		
Disruption impact matters	1		
NPI carrier for buffering strategy exists	1		

Note. While summarizing the qualitative data, the phrasing of the respondents was adhered to as closely as possible.

5. Discussion

5.1 Discussion of the Findings: Answering the Research Questions

The central question discussed in this study is:

To what extent do buyer dependence, perceived supplier dependence, focal company's trust and relationship length within the dyadic supply chain relationship influence the focal company's decision to implement buffering and/or bridging strategies, and how are buffering and bridging strategies interrelated?

The central question is further subdivided into three research questions. The first research question focuses on the relationship between buyer dependence, perceived supplier dependence and the implementation of buffering and bridging strategies. If a supply chain disruption occurs in a dependence relationship, companies are encouraged to act by using buffering and/or bridging approaches (Bode et al., 2011, pp. 836-837; Milliken, 1990, p. 55). The results indeed show that perceived supplier dependence and buyer dependence both have a positive influence on the implementation of bridging strategies, all else equal. However, the findings of this study also reveal that the focal company is less likely to implement buffering strategies if buyer dependence and perceived supplier dependence are both high. Bridging strategies are initiatives taken in collaboration with a current supplier (Bode et al., 2014, p. 28; Bode et al., 2011, p. 834). If there is mutual dependence between the focal company and the supplier, both partners are encouraged to invest in the implementation of strategies to mitigate risks (Bode et al., 2011, pp. 836-837; Casciaro & Piskorski, 2005, p. 174; Milliken, 1990, p. 55). It is therefore more likely that the implementation of bridging strategies succeeds. The focal company may then feel less need to buffer, because risks can be mitigated using bridging strategies. The results show that the focal company may then optimize the use of limited resources by only investing in the implementation of bridging strategies. The risks imposed by medium or high levels of buyer dependence are then less mitigated by using buffering strategies when perceived supplier dependence is high. This could explain why this study found a negative relationship between buyer dependence and the implementation of buffering strategies if perceived supplier dependence is high.

To the contrary, the results show that the relationship between buyer dependence and the implementation of buffering strategies is positive when perceived supplier dependence is low. If a supplier is not dependent on the focal company, the supplier is unlikely to support the implementation of strategies that increase its dependence on the focal company, according to resource dependence theory (Casciaro & Piskorski, 2005, p. 174). Based on the results, the focal company still initiates the implementation of bridging strategies to mitigate risks, irrespective of whether they believe the supplier is dependent on them or not. The efforts might, however, be unsuccessful, if the supplier is not willing to cooperate. The results show that the focal company then simultaneously implements buffering strategies to mitigate supply chain risks if buyer dependence is medium or high. Buffering approaches range from seeking backup suppliers to increasing stock (Bode et al., 2011, p. 836). Even though the focal company cannot implement buffering strategies such as finding a new supplier at high levels of buyer dependence – because by definition, there are no viable alternatives – the focal company can

still implement buffering strategies such as building stock or additional capacity to mitigate risks.

The qualitative data largely support these results. Eleven respondents indicated that they believe the implementation of bridging strategies is appropriate at high levels of buyer dependence, whereas no respondent answered that they deem the implementation of bridging strategies to be appropriate at low levels of buyer dependence. However, the qualitative data does not show a pronounced preference for buffering in either low, medium or high buyer dependence situations. This could be due to the intricate nature of the relationships between buyer dependence, perceived supplier dependence and the implementation of buffering strategies.

The second research question focused on the relationship between focal company's trust, relationship length and the implementation of buffering and bridging strategies. A negative relationship was found between the amount of trust the focal company has in the supplier and the implementation of buffering strategies, while focal company's trust has a positive influence on the implementation of bridging strategies, all else equal. Again, the qualitative data is in line with these quantitative findings. Eleven respondents indicated they believe buffering is suitable if the case company does not trust the supplier, whereas no respondent answered that they believe buffering is suitable in high-trust situations. Moreover, six respondents indicated they believe bridging is suitable if the focal company trusts their supplier. Only one respondent indicated they believe bridging is appropriate in low-trust situations, when the relationship is long and buyer dependence is high. These results imply that companies carefully evaluate their options and invest in the strategy they consider most effective for mitigating supply chain risks in their specific situation. After all, companies have limited resources. Additionally, as hypothesized, buffering is preferred in low-trust situations whereas bridging is preferred in high-trust situations.

Relationship length did not influence the relationship between focal company's trust and the implementation of buffering and bridging strategies. There could be a statistical reason why no significant influence of relationship length was found. The vignettes included in Block 2 focused on the interaction effect between focal company's trust and relationship length. Overall, only 6 respondents completed all vignettes in Block 2, yielding 72 complete observations in this block. It is possible that significant results could be found when a larger complete sample size is analysed. However, in the qualitative data, relationship length was only mentioned five times by respondents, often in combination with other characteristics, such as: "When relation is short or not ok". Therefore, this study provides initial evidence that relationship length may not have an influence on a company's decision to implement buffering and/or bridging strategies.

The final research question focused on the interaction between the implementation of buffering and bridging strategies. Unlike hypothesized, the results showed a negative correlation between the implementation of buffering and bridging strategies. Thereby, this study provides initial evidence that companies choose between the implementation of buffering and bridging strategies, instead of implementing both types of strategies. One explanation for this finding is that companies have limited resources and therefore deliberately consider their risk

management options and strategy. The independent variables examined in this study influence this decision. For example, in high-trust situations, the company is more likely to implement bridging strategies than buffering strategies. The opposite holds in low-trust situations.

5.2 Implications for the Literature: The Findings Challenge, Confirm, and Refine Existing Research While Revealing Important Contextual Factors

The findings of this study also have multiple implications for the literature. Firstly, contrary to existing research, which found that the implementation of buffering and bridging approaches complements each other (e.g. Küffner et al., 2022, p. 2), the results of this study show that there is a negative correlation between the implementation of buffering and bridging strategies. These findings thereby provide initial evidence that buffering and bridging strategies act as substitutes instead of complements. One possible reason for this result is that companies have limited resources. Due to these resource constraints, it might not always be realistic to implement buffering and bridging strategies to mitigate supply chain risks. When a supply chain disruption occurs, it is likely that other considerations than costs take priority. Under those special circumstances, it might be possible for supply chain risk managers to implement multiple buffering and bridging strategies that support each other. In those instances, the implementation of buffering and bridging strategies may complement each other.

Furthermore, this study does not find support for the finding of Bode et al. (2011, p. 844) that there is an inverted-U shaped relationship between buyer dependence and the implementation of buffering strategies. This discrepancy may partially be traced back to the broad definition of buffering. Buffering approaches range from seeking backup suppliers to increasing stock (Bode et al., 2011, p. 836). Thereby, buffering strategies include both strategic and operational approaches. In instances of high buyer dependence, it is by definition not possible to find backup suppliers. It is then still possible to implement other buffering strategies such as building stock. In their survey items Bode et al. (2011, p. 855) included only one concrete example of buffering, namely to find backup suppliers. This could potentially explain the differences in findings. These results thereby reveal inconsistencies in the definitions of buffering employed, emphasizing the need to consider the scope and definitions used when interpreting previous research. It also underscores the importance of defining the scope of future studies; it should, for example, be defined whether the study focuses only on strategic buffering approaches or whether operational buffering approaches are also included.

Moreover, the results of this study propose an important caveat to the findings of Mishra et al. (2016, p. 194) who found that a company adopts buffering approaches if their dependence is low. The findings of this study suggest that there is only a negative relationship between buyer dependence and the implementation of buffering strategies if the supplier is perceived to be dependent on the focal company. Thereby, the findings of this study propose that it is valuable to adopt a dyadic view when analysing supply chain dynamics.

Additionally, the data revealed several findings that contradict resource dependence theory. Although resource dependence theory suggests that companies aim to reduce their dependence on supply chain partners (Bode et al., 2011, p. 835), the results of this study indicate that companies employ more bridging approaches if they believe that the supplier is reliant on the focal company, challenging theoretical predictions. According to resource dependence theory,

it is expected that the focal company is unlikely to support the implementation of any strategies that increase its dependence on the supplier (Casciaro & Piskorski, 2005, p. 174). Moreover, Pulles et al. (2023, p. 1430) found that investing in the current supplier (bridging) is less beneficial for the distribution of supplier assets if the supplier relies on the focal company. However, the results of this study suggest that there is a positive relationship between perceived supplier dependence and the implementation of bridging strategies. The results even reveal that the focal company implements less buffering strategies to mitigate risks originating from high buyer dependence if the supplier is perceived to be dependent on the focal company. In other words, the focal company still initiates more bridging strategies if the supplier is perceived to be dependent on them, even though it could negatively affect the power position of the focal company and the amount of resources allocated to the focal company by the supplier.

This apparent inconsistency could stem from the industry in which the case company is active. This industry is characterized by close cooperation with suppliers to manufacture the product. It takes a substantial amount of time and resources to develop other suppliers to the required level. Therefore, the case company could decide to invest in the implementation of bridging strategies, despite multiple negative consequences. Thereby, the study demonstrates that strategic decision-making is influenced by industry-specific factors and underscores the limitations of applying theoretical models uniformly across varying contexts and industries.

Despite these unexpected decisions, the results of this study also support the applicability of resource dependence theory to the context of supply chain risk management. Based on resource dependence theory, a company must preserve its partnerships with a supplier on whom they are dependent if they want to reach their objectives (Bode et al., 2011, p. 836; Emerson, 1962, p. 32). Simultaneously, in case there is a power imbalance between two supply chain partners, the supply chain partner that is least dependent on the other – the higher-power partner – is unlikely to support the implementation of any strategies that increase their dependence on its supply chain partner, as it reduces the power imbalance (Casciaro & Piskorski, 2005, p. 174). This study indeed finds a positive relationship between buyer dependence and the implementation of bridging strategies, irrespective of the level of perceived supplier dependence. In other words, the focal company attempts to strengthen the current relationship with the supplier if they are dependent on this supplier, irrespective of the likelihood that this attempt succeeds.

Moreover, the study highlights that companies engaged in high-trust relationships are more likely to adopt bridging approaches, whereas companies operating in low-trust relationships are more likely to implement buffering strategies, thereby confirming the well-documented connection between trust and collaboration (e.g. Smith et al., 1995, pp. 10-11). In low-trust situations, the results revealed a preference for buffering approaches, which do not require collaboration with the supply chain partner (Bode et al., 2014, p. 27). To the contrary, in high-trust situations the results displayed a preference for bridging strategies, which necessitate collaborative efforts (Bode et al., 2011, p. 834). Also, the positive relationship that was found between the amount of trust the focal company has in the supplier and the implementation of bridging strategies confirms the findings of Bode et al. (2011, pp. 845-846), Mishra et al. (2016, pp. 187, 194) and Matas et al. (2024, pp. 2190-2191). Furthermore, even though the finding that there is a negative relationship between focal company's trust and the implementation of

buffering strategies contradicts the results of Matas et al. (2024, pp. 2190-2191), it is in line with the results of Bode et al. (2011, pp. 845-846) and Mishra et al. (2016, pp. 187, 194). A possible explanation for this inconsistency is that Matas et al. (2024, p. 2192) incorporate collective emotions as variable instead of trust. Matas et al. (2024, p. 2192) state that trust can be seen as proxy for collective emotions. However, the alignment in results between this study, Bode et al. (2011, pp. 845-846) and Mishra et al. (2016, pp. 187, 194) and the misalignment with the results of Matas et al. (2024, pp. 2190-2191) provide initial evidence that this may not be valid.

Lastly, the results of this study provide initial evidence that relationship length does not affect the relationship between focal company's trust and the implementation of buffering and bridging strategies. Relationship length may not accurately indicate whether governance and coordination mechanisms have been developed. Therefore, relationship length may not be an appropriate measure to indicate such relationship characteristics in supply chain research.

5.3 Implications for Practice: Managers Choose Between Buffering and Bridging Strategies Based on the Trust and Dependence Levels in the Dyadic Supply Chain Relationship

Supply chain risk management is ever more important for companies (Hoffmann et al., 2013, p. 199). Buffering and bridging are two types of resilience strategies a company can employ to mitigate risks of supply chain disruptions. The results of this study indicate under which conditions companies are most likely to implement buffering and bridging strategies, based on varying levels of buyer dependence, perceived supplier dependence and focal company's trust in the dyadic supply chain relationship. If it is decided that a buffering strategy best fits the situation, the results show that "developing backup suppliers" is predominantly chosen. If it is decided to implement a bridging strategy, the results show that "improving information exchange with the supplier to improve supply chain visibility" is most frequently selected as approach. No statements can be made regarding the effectiveness of these decisions.

Managers explicitly consider whether implementing either buffering or bridging approaches sufficiently mitigates their supply chain risks, due to resource constraints. Even though previous research found that the implementation of buffering and bridging approaches complements each other (e.g. Küffner et al., 2022, p. 2), companies have limited resources. Instead, this study provides initial evidence that buffering and bridging strategies are used as substitutes. Thus, managers specifically assess whether adopting either buffering or bridging strategies is adequate for managing their risk of supply chain disruptions. Then, managers have to decide which approach best fits their situation. This consideration depends on multiple factors, including the manager's assessment of the trust and dependence levels in the dyadic supply chain relationship.

If the focal company is dependent on the supplier, the focal company adopts bridging approaches if they perceive suppliers to be similarly reliant. However, if suppliers lack dependence, bridging attempts may be ineffective, necessitating a shift to buffering approaches. More elaborately, if the focal company is dependent on the supplier, the focal company is especially driven to mitigate the risk of a supply chain disruption (Bode et al., 2011, pp. 836-837). The company can mitigate supply chain risks by implementing buffering or bridging strategies. To decide which strategy to implement, the manager should assess the dependence

of the supplier on the focal company and the willingness of the supplier to collaborate. The supplier is also encouraged to mitigate the risk of a supply chain disruption if they experience dependence (Bode et al., 2011, pp. 836-837). Therefore, if the supplier depends on the focal company, the supplier is more likely to be willing to invest in the implementation of risk mitigation strategies. After their assessment of the supplier's dependence level, the manager should still explicitly verify whether the supplier is indeed willing to invest in the implementation of bridging strategies. As bridging strategies are initiatives taken in collaboration with a current supplier (Bode et al., 2014, p. 28; Bode et al., 2011, p. 834), a successful implementation of bridging strategies then becomes more likely.

To the contrary, managers should be aware that the implementation of bridging strategies might not be successful if the supplier is not dependent on the focal company. If a supplier is not dependent on the focal company, they are unlikely to invest in strategies that increase their dependence on the focal company (Casciaro & Piskorski, 2005, p. 174). Then, the implementation of bridging strategies is unlikely to succeed. In this scenario, the focal company can mitigate risks by implementing buffering strategies. Therefore, based on an assessment of the dependence levels of the focal company and the supplier, managers decide whether it is worthwhile to invest in the implementation of bridging strategies, or whether they should direct their resources to the implementation of buffering strategies to mitigate supply chain risks.

Managers making strategic risk management decisions also evaluate whether or not a supplier is trusted. Based on this assessment, the manager prefers the implementation of buffering approaches if the supplier is not trusted and bridging approaches if the supplier is trusted. To the contrary, the length of the relationship with a supply chain partner is neglected. A long relationship does not automatically imply that governance and coordination mechanism have been developed. In other words, when a manager considers the implementation of risk management strategies, the manager assesses whether they trust the supplier, not whether they have known the supplier for a long time. This also has consequences for suppliers. Suppliers that want to mitigate risks by implementing bridging strategies can increase the likelihood that the focal company is willing to invest in these strategies by engaging in trust-building activities.

Lastly, managers adapt strategic risk management decisions to industry-specific characteristics. It takes the case company a substantial amount of time and resources to develop new suppliers to the required level as their industry is characterized by close cooperation with suppliers to manufacture the product. In such special circumstances, the implementation of bridging strategies might be a more feasible decision to mitigate supply chain risks despite possible negative side effects, such as changing power dynamics.

6. Limitations and Future Research Directions

6.1 Limitations: Generalizability, Omitted Variables, Measuring Effectiveness and Measuring Decisions

This study has several limitations. Firstly, the generalizability of the findings might be limited to industries that have similar characteristics as the industry the case company is active in. The industry of the case company is characterized by cooperation to manufacture the products. Therefore, there might be less implementation barriers for bridging strategies compared to industries which are not characterized by such cooperation. Moreover, Model 2b and Model 2c possibly suffer a heteroscedasticity problem. If the data is indeed subject to heteroscedasticity, the significance levels provided could be inaccurate, which could result in a misinterpretation of the findings (Long & Ervin, 2000, p. 217). This could also negatively affect the generalizability of the findings (Field, 2009, p. 220). The coefficients calculated are not affected by heteroscedasticity problems (Long & Ervin, 2000, p. 217). Apart from these limitations to generalizability, the sample used in this study is highly representative for the population. This improves generalizability (Aguinis & Bradley, 2014, p. 363). Furthermore, the sample exhibited a wide distribution of personal characteristics, with varying years of age, tenure and work experience, further enhancing the generalizability of the results.

Another limitation of this study is that other factors that could influence the likelihood of implementing buffering and/or bridging strategies may have been omitted. For example, the technology capability of suppliers is not accounted for in this study. However, this characteristic potentially reduces the barriers for improving information exchange between supply chain partners. It could thereby influence the likelihood of implementing buffering and bridging strategies. Also, when examining the qualitative data gathered in this study, it becomes apparent that supplier characteristics and material characteristics are regularly used to describe a situation in which the respondent would implement buffering and/or bridging strategies. However, to the best of my knowledge, no study has been conducted that examines the influence of these elements on the decision to implement buffering and bridging strategies. It is intriguing for future research to further examine these possible relationships.

Furthermore, this study focuses solely on inter-firm level characteristics. Previous research has studied the impact of inter-firm level variables, intra-firm level variables and individual-level variables on the implementation of buffering and bridging strategies. For example, Mishra et al. (2016, p. 183) incorporate business strategy in their study, whereas Bode et al. (2011, p. 834) include a company's previous disruption experience. Additionally, Timmer and Kaufmann (2019, p. 67) incorporate the influence of individual-level variables in their research. This study only manipulates inter-firm level variables. Even though these results are valuable, it is interesting for future research to generate a holistic model that incorporates the influence of inter-firm level variables as well as intra-firm level variables and individual-level variables on the decision to implement buffering and/or bridging strategies. The focus should not be only on the focal company, but on the dyadic relationship between the focal company and a supplier, as shown by the significant influence of perceived supplier dependence. This implies that company characteristics of both the buyer and supplier, as well as individual characteristics of the responsible managers at the buyer and supplier and relationship characteristics should be included in the study.

Moreover, the results showcase in which situations supply chain employees are most likely to implement buffering and/or bridging approaches to mitigate supply chain risks. It is outside the scope of this research to examine whether these risk management decisions are effective. It is interesting for future research to examine this aspect. Then, statements can be made regarding which type of strategy is most effective in which situation, and when buffering and bridging strategies should be used as complements or as substitutes. It is, however, difficult to measure effectiveness. Talluri et al. (2013, p. 253) propose that the most effective risk management approach depends on the company's circumstances. It is then difficult to measure an intricate concept such as effectiveness if one is not aware of the circumstances and reasons behind the implementation of a certain strategy. The results of this study deepen the knowledge of the underlying reasons for adopting buffering and/or bridging strategies. It could thereby help to specify how to measure the effectiveness of a strategy. For example, the focal company may decide to mitigate risks originating from buyer dependence by implementing buffering strategies. The company could decide to build extra inventory or pursue standardization in order to increase the amount of possible suppliers (Gebhardt et al., 2022, p. 61). Pursuing standardization to increase the amount of possible suppliers could change the power balance between the focal company and the initial supplier. This extra effect should be taken into consideration when assessing the effectiveness of each strategy. However, this consequence might be omitted if the effectiveness assessment focuses on financial measures only and neglects the reason for initiating the implementation of risk mitigation strategies.

Lastly, this study examines the decisions made by respondents using a policy-capturing experiment. One drawback of this method is that, even though participants make decisions in realistic contexts, their real-life actions are not examined (Connelly et al., 2016, p. 2141). There can potentially be a difference between a respondent's decision to implement a specific strategy and their real-life behaviour (Sheeran, 2002, p. 1; Vos, 2017, p. 33). Nevertheless, a respondent's decision or intention to implement a specific risk management strategy is a major precursor to real-life behaviour (Sheeran, 2002, p. 13; Vos, 2017, p. 34). It could be interesting for future research to examine whether companies indeed implement buffering and bridging strategies in congruence with the results of this study.

6.2 Future Research: Examining Supply Chain Dynamics, the Interaction Between Buffering and Bridging Strategies, and Differences Between Short-Term and Long-Term Risk Management Approaches

There are multiple interesting directions future research can explore. Firstly, it is interesting to further examine dynamics between supply chain partners. This study was unable to gather data at the supplying company and therefore incorporated perceived supplier dependence. Future research could attempt to incorporate the dyadic view by gathering data at both the buyer and supplier. This research could then also include supplier's trust, instead of only focal company's trust. If future research is able to gather data regarding the influence of trust and dependence on risk management decisions at both the buying and supplying company, it could provide a more holistic model. Then, it is interesting, for instance, to further examine the strength of the influences of trust and dependence on the implementation of buffering and bridging strategies. For example, if buyer dependence is high and supplier dependence is low, the results of this study show that the buying company engages in both buffering and bridging. The results of Su

et al. (2014, p. 262) show that, in this situation, a supplier implements buffering strategies. It is intriguing to examine whether the buying company is able to convince the supplier to engage in bridging strategies by building trust. This also changes the power dynamics between the supply chain partners and could therefore be an interesting strategic option for the buying company.

Furthermore, future research can further examine the correlation between the implementation of buffering and bridging strategies. It is interesting to examine possible factors that could influence when buffering and bridging strategies are used as complements and when these strategies substitute each other. One possible influencing factor discussed in this study is the amount of resources available to supply chain risk managers. In general, supply chain risk managers have limited resources which could explain why they are forced to make a decision between the implementation of buffering and bridging strategies. In some situations, such as after a damaging supply chain disruption, supply chain managers may be allocated more resources, which could enable them to implement both buffering and bridging strategies, if wished. If such influencing factors are found, future research could take this into account when constructing their hypotheses, devising their method, and analysing the data.

Another possibility is that the correlation between the implementation of buffering and bridging strategies depends on the definition used for these strategies. The definition of buffering strategies is relatively broad. Buffering approaches range from seeking backup suppliers to increasing stock (Bode et al., 2011, p. 836). One distinction that could be made is the distinction between operational buffering approaches and strategic buffering approaches. It is intriguing to examine whether this distinction changes the results of this study, and whether an explanation can be found for a possible deviation. Future research may also identify other factors influencing the relationship between the implementation of buffering and bridging strategies.

An additional promising avenue for future research is to further examine the relationship between the implementation of buffering and bridging strategies by differentiating a company's short-term and long-term risk management approaches. The control variable "Short-Term Orientation" is not significant in this study. However, the respondents included in this study did not differ considerably in their orientation horizon (long-term versus short-term orientation). Moreover, while the implementation of bridging approaches is expected to be preferred to mitigate long-term risks of supply chain disruptions (Gebhardt et al., 2022, p. 68; Küffner et al., 2022, p. 9), previous research has not found conclusive results regarding which strategy is preferred in different time horizons. Whereas Küffner et al. (2022, p. 2) find that the use of buffering approaches dominates in the aftermath of a supply chain disruption, Gebhardt et al. (2022, p. 68) find that the use of bridging approaches is preferred to react to a high-impact supply chain disruption. It is interesting to examine whether companies prioritize different risk management approaches in their short-term and long-term strategies to mitigate risks of supply chain disruptions. It is also intriguing to study whether different factors influence the risk management decision in the company's short-term and long-term risk management approaches.

In this respect, a distinction of buffering strategies into operational and strategic buffering approaches may again prove intriguing. Multiple respondents indicated that buffering strategies

could be used as short-term solution. Buffering approaches range from seeking backup suppliers to increasing stock (Bode et al., 2011, p. 836). Building stock can be interpreted as an operational buffering strategy. This strategy can be implemented relatively quickly and therefore may be suitable to be employed as a temporary measure. Developing backup suppliers can be interpreted as a strategic buffering approach. The case company indicated that it takes a substantial amount of time for them to develop a new supplier to the required level. Likewise, improving information exchange to improve supply chain visibility, an example of a bridging strategy (Gebhardt et al., 2022, pp. 61-62) is not successfully implemented easily on the short-term. Extra stock could potentially serve as a temporary risk mitigation strategy, while the resource-intensive, long-term strategy is implemented. As a consequence, classifying buffering strategies into operational and strategic buffering approaches may prove useful when examining a company's short-term and long-term response to supply chain disruptions. If such a relationship is found, it implies that there is a different correlation between the implementation of bridging approaches, strategic buffering approaches and operational buffering approaches. Table 10 provides an overview of the discussed possible future research directions.

Table 10: Overview of Potential Future Research Directions

#	Research Area	Identified Limitation	Future Research Direction
1	Buffering and Bridging Strategies as Substitutes or Complements	The negative correlation between the implementation of buffering and bridging strategies challenges the results of previous studies.	Examine the situations in which companies adopt both approaches and evaluate whether resource limitations influence this decision.
2	Differentiate a Company's Short-Term and Long-Term Response to a Supply Chain Disruption	It is not yet known whether companies employ different types of strategies in their short-term and long-term responses to supply chain disruptions.	Examine whether companies implement different types of strategies in their short-term and long-term response to a supply chain disruption and whether this decision is influenced by different factors in different time horizons.
3	Conceptualization and Differentiation of Buffering Approaches	The broad conceptualization of buffering approaches, which includes strategic and operational approaches, could influence the results.	Differentiate between operational and strategic buffering approaches to create a more detailed model.
4	Dynamics between Supply Chain Partners	Data is only collected at the focal company in the study.	Gather data at both the focal company and the supplier to enable an analysis of the dynamics between these supply chain partners and further refine the model.
5	Influence of Supplier and Material Characteristics	Supplier characteristics and material characteristics are not incorporated in the study. However, they may affect strategic decision-making.	Assess whether and how supplier characteristics and material characteristics influence the decision to implement buffering and/or bridging approaches.
6	Variables at Other Levels	The study incorporates solely inter-firm level variables, while intra-firm level and individual-level variables may also be relevant.	Generate a holistic model incorporating the influence of inter-firm level, intra-firm level and individual-level variables on the decision to implement buffering and/or bridging strategies. Adopt a dyadic perspective in the process.
7	Effectiveness of Buffering and Bridging Strategies	The study investigates in which situations companies employ buffering and/or bridging approaches but does not evaluate the effectiveness of these strategic decisions.	Measure the effectiveness of strategic risk management decisions to gain knowledge regarding which strategies are most effective in enhancing the company's resilience under various circumstances.
8	Generalizability to Other Industries	The study is conducted in an industry characterized by close cooperation. This potentially influences the decision between buffering and bridging strategies.	Perform comparable research in different industries with varying characteristics to determine if the results are applicable to non-cooperative settings.
9	Heteroscedasticity Problems	Model 2b and Model 2c possibly suffer a heteroscedasticity problem, which could result in a misinterpretation of the findings (Long & Ervin, 2000, p. 217).	Employ advanced regression methods to validate the results and enhance statistical reliability.
10	Decisions versus Real-Life Behaviour	Policy-capturing experiments examine the decisions made by respondents, but their real-life actions are not examined (Connelly et al., 2016, p. 2141).	Perform field experiments to examine whether companies implement buffering and bridging strategies in congruence with the results of this study.

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Appendix A: Example of a Vignette in the Questionnaire

Your key responsibility is to reduce the probability and impact of supply chain disruptions. The relationship with your supplier is defined by the following characteristics:

- **Buyer dependence: low**
  The resources provided by the supplier are not very important for your company and it is relatively easy to find an alternative supplier for this resource.
- **Supplier dependence: low**
  Your company generates a small share of the supplier's turnover and it is relatively easy for your supplier to replace your company with a similar customer
- **Trust: low**
  You do not believe that your supplier will keep their promises and you are worried that your supplier might take advantage of you.
- **Relationship length: short**
  You have only known this supplier for a relatively short period.

*In this situation, how likely is it that you implement the following **buffering** strategies? In the relationship with this supplier, I would decide to ...

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
... invest in **alternatives** outside the relationship with the current supplier to mitigate risks (e.g. building stock/capacity)	○	○	○	○	○	○	○
... seek to develop relationships with **new suppliers** to mitigate risks	○	○	○	○	○	○	○

*In this situation, how likely is it that you implement the following **bridging** strategies? In the relationship with this supplier, I would decide to ...

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
... focus on strengthening the **cooperation and/or information exchange with the current supplier** to mitigate risks	○	○	○	○	○	○	○
... invest in the relationship with **the current supplier** to mitigate risks	○	○	○	○	○	○	○

Appendix B: Plots to Examine Heteroscedasticity Concerns for Model 2b and Model 2c

Homoscedasticity of the residual is assessed by creating a graph plotting the standardized residual against the standardized predicted values (Field, 2009, p. 229). Figure 7 shows the plot generated to examine homoscedasticity in Model 2b. In this figure, a funnel is visible. Therefore, there are heteroscedasticity concerns (Field, 2009, p. 247).

Figure 7: Plot to Examine Homoscedasticity in Model 2b

Figure 8 shows the plot generated to examine homoscedasticity in Model 2c. In this figure, a funnel is also visible. Therefore, there are heteroscedasticity concerns (Field, 2009, p. 247). If the data is indeed subject to heteroscedasticity, the significance levels provided could be inaccurate (Long & Ervin, 2000, p. 217). The coefficients calculated are not affected by heteroscedasticity problems (Long & Ervin, 2000, p. 217). This is a limitation of this study.

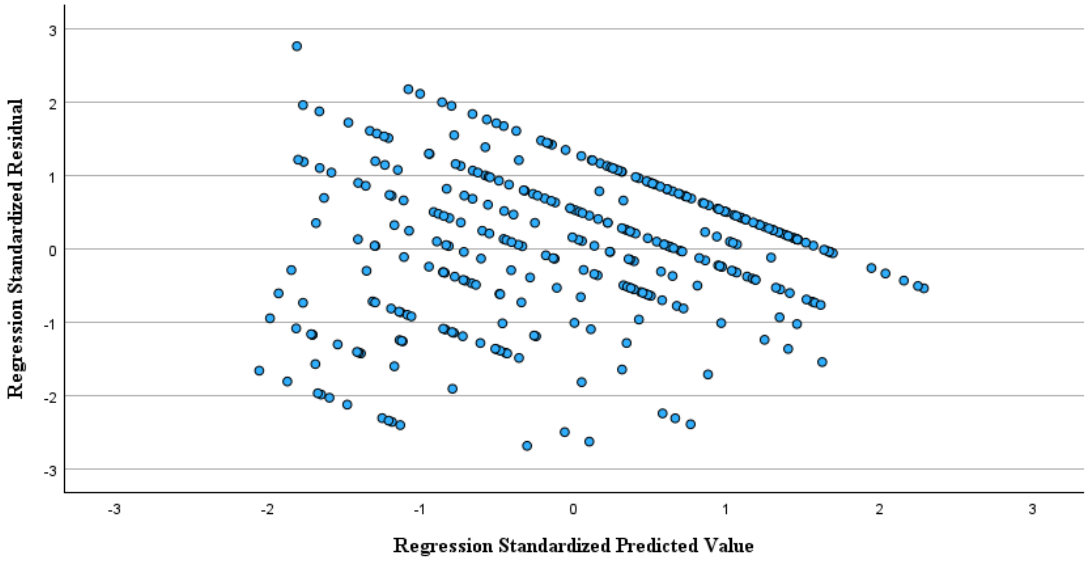

Figure 8: Plot to Examine Homoscedasticity in Model 2c

Appendix C: Additional Regression Analyses to Verify the Results

Multiple regression analyses are performed to verify the findings. It is examined whether the data fulfils the assumption of linear regression as discussed in Section 4.2.1. The regression analysis using the subset of the data where "Perceived Supplier Dependence" is low potentially suffers from heteroscedasticity issues. The relevant plot is visualized in Figure 9. A funnel is visible. Therefore, there are heteroscedasticity concerns (Field, 2009, p. 247).

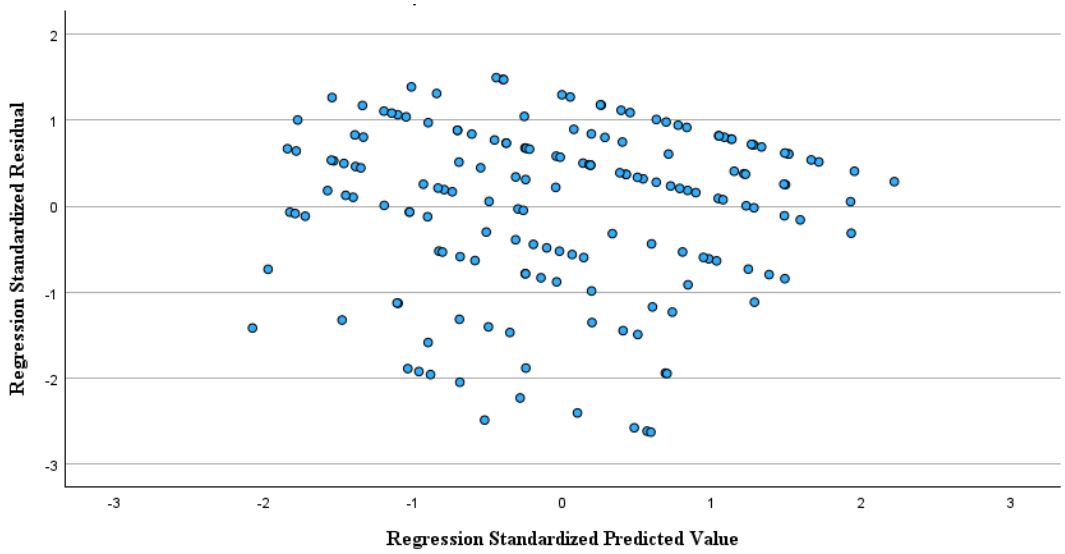

Figure 9: Plot to Examine Homoscedasticity in Model 1b with Low Perceived Supplier Dependence

The regression analysis of Model 2c using the entire sample also shows heteroscedasticity concerns. The relevant plot is visualized in Figure 10. Again, a funnel is visible. Therefore, there are heteroscedasticity concerns (Field, 2009, p. 247). If the data is indeed subject to heteroscedasticity, the significance levels provided could be inaccurate (Long & Ervin, 2000, p. 217). The coefficients calculated are not affected by heteroscedasticity problems (Long & Ervin, 2000, p. 217).

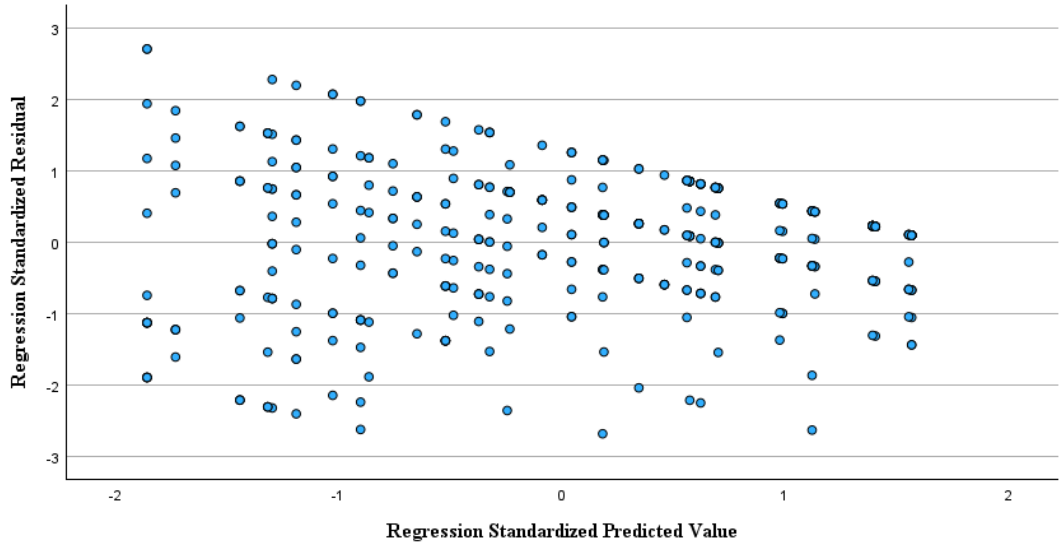

Figure 10: Plot to Examine Homoscedasticity in Model 2c using the Entire Sample

The other assumptions are not violated. The results of the additional regression analyses are included in Table 11.

Table 11: Results of the Extra Regression Analyses for the Implementation of Buffering and Bridging Strategies

	Model 1b with BD Squared	Model 1c with BD Squared	Model 1b with PSD low	Model 1b with PSD high	Model 2c with Entire Sample
Constant	**5.808** (0.602; <0.001)	**5.731** (0.614; <0.001)	**5.854** (0.811; <0.001)	**5.785** (0.866; <0.001)	**3.467** (0.191; <0.001)
Gender	-0.380 (0.251; 0.131)	-0.381 (0.247; 0.124)	-0.178 (0.338; 0.598)	-0.579 (0.359; 0.109)	
Work Experience	0.001 (0.010; 0.894)	0.001 (0.010; 0.894)	0.000 (0.014; 0.979)	0.003 (0.015; 0.816)	
Tenure	-0.004 (0.017; 0.836)	-0.004 (0.017; 0.826)	-0.008 (0.023; 0.726)	-0.002 (0.025; 0.951)	
Risk-Taking	-0.029 (0.054; 0.585)	-0.029 (0.053; 0.579)	-0.080 (0.072; 0.270)	0.022 (0.077; 0.779)	
Trust Propensity	-0.062 (0.087; 0.477)	-0.061 (0.085; 0.471)	-0.042 (0.117; 0.720)	-0.085 (0.124; 0.494)	
Short-Term Orientation	-0.016 (0.118; 0.891)	-0.016 (0.116; 0.893)	-0.071 (0.158; 0.653)	0.036 (0.168; 0.830)	
Low-Impact SCD Experience	0.039 (0.064; 0.540)	0.039 (0.062; 0.529)	0.074 (0.086; 0.388)	-0.004 (0.091; 0.967)	
High-Impact SCD Experience	0.140 (0.076; 0.066)	0.139 (0.074; 0.062)	0.090 (0.102; 0.377)	0.197 (0.108; 0.071)	
Buyer Dependence			**0.273** (0.130; 0.037)	**-0.389** (0.138; 0.005)	**1.202** (0.112; <0.001)
Buyer Dependence Squared	-0.043 (0.046; 0.355)	0.088 (0.062; 0.157)			
Focal Company's Trust	**-0.804** (0.096; <0.001)	**-0.725** (0.135; <0.001)	**-0.676** (0.132; <0.001)	**-0.953** (0.137; <0.001)	**0.413** (0.113; <0.001)
Perceived Supplier Dependence		0.292 (0.239; 0.223)			**0.537** (0.210; 0.011)
Buyer Dependence* Perceived Supplier Dependence		**-0.566** (0.184; 0.002)			-0.262 (0.160; 0.101)
Relationship Length		-0.006 (0.246; 0.982)			0.127 (0.206; 0.539)
Focal Company's Trust*Relationship Length		-0.160 (0.192; 0.406)			0.017 (0.160; 0.915)
R^2	0.198	0.235	0.180	0.301	0.372
Adjusted R^2	0.173	0.202	0.128	0.257	0.362
F-statistic	**7.996**	**7.039**	**3.452**	**6.733**	**38.160**
N	335	335	168	167	394
Durbin-Watson	1.541	1.502	1.903	1.493	1.461
Highest VIF	1.869	3.619	1.877	1.870	3.562

Note. The figures provided in brackets represent the standard errors and significance levels of the coefficients; the figures displayed in bold are significant at the 5% significance level; BD = buyer dependence; PSD = perceived supplier dependence; SCD = supply chain disruption.

Appendix D: Additional Paired-Samples T-Tests to Study Which Strategy Is Preferred in High-Trust and Low-Trust Situations

The results show that there is a negative relationship between focal company's trust and the implementation of buffering strategies, while there is a positive relationship between focal company's trust and the implementation of bridging strategies. Another analysis has to be performed to examine whether the implementation of buffering strategies is preferred in low-trust situations, and whether the implementation of bridging strategies is preferred in high-trust situations. To this end, multiple paired-samples t-tests were performed. One t-test analysed the subset of the data where focal company's trust is low, a second t-test analysed the subset of the data where focal company's trust is medium and a third t-test examined the subset of data where focal company's trust is high. The paired-samples t-test assumes normality of the data, which occurs in big sample sizes (Field, 2009, p. 329). As the sample size used in the t-tests performed is 112 or 111, this assumption is met. Table 12 shows the mean scores for the implementation of buffering and bridging strategies for each level of focal company's trust.

Table 12: Mean Scores for the Implementation of Buffering and Bridging Strategies for Each Level of Focal Company's Trust

	Focal Company's Trust		
	Low	Medium	High
Buffering Strategies	5.8616	5.1757	4.2411
Bridging Strategies	4.7545	5.2342	5.9152
N	112	111	112

The results of the paired-samples t-tests are shown in Table 13. As it is hypothesized that the likelihood of implementing buffering strategies is higher in low-trust situations, whereas the likelihood of implementing bridging strategies is higher in high-trust situations, one-sided significance levels are reported (Field, 2009, p. 331). The results show that, on average, buffering is preferred in low-trust situations, whereas bridging is preferred in high-trust situations.

Table 13: Results of the Paired-Samples T-Tests for the Difference Between the Implementation of Buffering and Bridging Strategies

Trust	Mean Difference (Buffering – Bridging)	Standard Deviation	Standard Error Mean	Significance	N
Low	1.10714	2.31858	0.21909	<0.001	112
Medium	-0.05856	1.95604	0.18566	0.377	111
High	-1.67411	2.20024	0.20790	<0.001	112