

THE INFLUENCE OF SOCIAL CAPITAL ON SUPPLY CHAIN RESILIENCE

Faculty of Behavioral, Management and Social Sciences

Department of Purchasing and Supply Management

University of Twente, the Netherlands

Master Thesis

Author: Sarah Jörden

Student number: s1756680

First supervisor: Dr. ir. Niels Pulles

Second supervisor: Dr. Carolina Belotti Pedroso

Third supervisor: Dr. Vincent Delke

Acknowledgments

This thesis represents the final step towards my master's degree in business administration with a specialization in Purchasing and Supply Chain Management at the University of Twente.

I would like to thank everybody who supported me during the process. First of all, I would like to thank my supervisor Vincent Delke for his guidance and numerous feedback sessions. Then I would like to thank my supervisor Niels Pulles for his constructive feedback.

In particular, I would like to thank my boyfriend for his unconditional support during the entire process. Then I would like to thank my friends, in particular two of my closest friends as well as my family for their support.

Additionally, I would like to thank all the interviewees who were willing to dedicate their time to the interviewees. Without you, I would have not been able to finish the thesis.

Abstract

This research investigates how social capital and its respective dimensions aid in the generation of supply chain resilience in turbulent times like the COVID-19 pandemic. The external social capital was added to this research as well. The research problem was found to be of explanatory nature, seeking patterns between the dimensions requiring a qualitative research approach. To answer the research questions, twelve in-depth semi-structured interviews were conducted with experts within the field of purchasing and supply chain management from different industries. They were interviewed regarding their experiences during crises like the COVID-19 pandemic as well as how their social relations within the network are organized. Furthermore, experiences and strategies regarding what helped them cope with disruptions were discussed.

The findings indicate that all the dimensions of the social capital theory are highly interrelated to each other. Combining proactive and reactive resilience strategies with deriving the benefits out of the relationship to encounter disruptions proactively and reactively through actively solving problems arising. Additionally, several links between the different themes have been identified, for instance in a partnership characterized by long-term orientation, resources will be more easily deployed carefully selected strategic suppliers. Furthermore, several aspects were added to the model based on the interviews, those are top management involvement, partnership, information exchange as well as internal and external stakeholder alignment as well as communication and collaboration.

The results of this research help supply chain managers prioritize how important it is to have strategic partnerships with key suppliers and how important it is to invest in such relationships. Additionally, the results could be used for future crises situations as input on what to consider important. Future research could go into a quantitative direction and over a longer period of time and variables like risk could be added to this research.

Table of Content

1.0	Introduction	1
2.0	Theory section: Firm resilience in turbulent times and the characteristics of social capital	4
2.1	Supply chain management – an introduction	4
2.1.1	Supply chain management and disruptions.....	5
2.2	Supply chain resilience as ability to anticipate change and absorb disruptions.....	8
2.2.1	Resilience in supply chain management.....	9
2.2.2	Key characteristics of becoming resilient	10
2.2.3	Supply chain sustainability as a way to deal with turbulent situations.....	11
3.0	Social capital as a resource of achieving supply chain resilience.....	13
3.1	The relevant dimensions of social capital theory	14
3.2	Structural dimension	15
3.3	Cognitive dimension.....	15
3.4	Relational dimension.....	16
3.5	External social capital	17
3.6	Social capital as key enabler to achieve resilience.....	18
3.7	Resulting research framework.....	21
4.0	Methodology: Qualitative expert interviews to identify the effects of social capital to supply chain resilience	22
4.1	The setup of the study and justification of the method applied	22
4.2	Execution of the expert case study	23
4.3	Sampling and data collection.....	25
4.4	Data analysis of the interviews	27
5.0	Results and Analyses: Interview data on how social capital contributes to supply chain resilience	28
5.1	Turbulent situations forcing companies to react quickly	28
5.2	Quick reactions to the covid-19 pandemic.....	30
5.3	Obtaining structural social capital benefits through creating long-lasting partnerships with strategic suppliers fostering mutual exchanges	31
5.4	On the cognitive dimension, commitment towards the achievement of common goals and values between supplier and buyer may foster the business relationship.....	36
5.5	Linking internal and external social capital by means of internal and external stakeholder management are enablers for achieving resilience	38
5.6	Coping with turbulent situations	40
5.7	Resilience creation in turbulent times	42

6.0 Discussion of the main findings in relation to the research model, theoretical contributions as well as practical contributions.....	44
6.1 Description of the model.....	44
6.2 Research question in relation to propositions.....	46
6.3 Theoretical contributions: Findings and literature (expectations from literature have been confirmed based on interview findings)	48
6.4 Practical contributions.....	49
7.0 Limitations and Future research directions.....	51
References.....	52
Appendices.....	59
Appendix A Interview guideline.....	59
Appendix B Propositions in relation to research questions	61

List of tables

Table 1 Overview Definitions Resilience	8
Table 2 Overview of Discussion of Resilience in Relation to Social Capital.....	19
Table 3 Sample of Interview Partners.....	26
Table 4 Main Questions	27
Table 5 Supplier Characteristics & Network Description	32
Table 6 Values & Visions	36
Table 7 Stakeholder Management	38
Table 8 Coping with Turbulent Situations	40
Table 9 Resilience Creation	43
Table 10 Synthesis Table	46

List of figures

Figure 1 Relationship of social capital dimensions based on Nahapiet & Ghoshal, 1998, p.244	20
Figure 2 Resulting research framework	21
Figure 3 Case study research process (adapted from Yin, 2018, p.1).....	23
Figure 4 Extended model based on the Interviews and Theory.....	45

1.0 Introduction

There have always been crises in purchasing and supply management. However, recently there were multiple ones having an impact. In the last years, the world faced different kinds of crises causing disruptions within the supply chains of an organization (Roh et al., 2022, p.214). One of the most recent crisis situations causing disruptions and delays within the supply chains was the COVID-19 pandemic where it is still unclear whether organizations have fully recovered from that event. The COVID-19 pandemic was a unique situation with delayed impact in different regions and different political activities. Then there is the war in Ukraine, causing disruptions, in particular for the food industry, where products or components related to sunflower oil, or wheat flour caused significant increases in prices and availability. Another major disruption was the Suez Canal blockade causing substantial problems as it is a very important route for several industries which are dependent on it. The focus of this research is the COVID-19 pandemic, the reasons for selecting the COVID-19 pandemic are threefold, firstly, analyzing how organizations deal with a situation such as a pandemic helps in understanding their capability to deal with other crises such as other virus diseases, animal diseases as well as floods and earthquakes. Secondly, the COVID-19 pandemic also provides knowledge with regard to how organizations could handle scarcities and which strategies to follow then. Lastly, the COVID-19 pandemic provides insights into how to deal with other types of disruptions and the general approach may be followed irrespective of the respective risk.

In the past three years, starting in February 2020 and 2021/2022/2023, and up until now, 2024, many organizations are still suffering from the effects of the pandemic. Overall, the time frame considered is a period of three years. The COVID-19 pandemic caused a worldwide shutdown in order to avoid a further spread of the virus. As a result of the worldwide shutdown, resources have become rare and difficult to obtain and it could not be estimated how long it would take to get back to routine (Spieske et al., 2022,p.1).

An imbalance in demand and supply could be observed for example in the automotive sector, where semiconductors are a critical component for the car it could not be built since there are only a few suppliers in the world delivering semiconductors. This scarcity resulted in the fact that the few suppliers the industry relied on were unable to deliver to every customer and had

to make a selection to whom to deliver. As Attinasi et al. (2021) emphasize that “the revenues from the global sales of semiconductors doubled over the past decade, thus confirming the dominance and the consolidation of Asian economies in order to extent their market share”.

Due to this inability to deliver, some car manufacturers needed to pause their work since they were waiting for the critical component (Ramani et al., 2022,p.1). The critical component necessary for the assemblance of the product was not with the first-tier supplier instead it was with the third-tier supplier facing delivery problems due to the pandemic and this led to problems throughout the supply chain. Hence, not only the direct suppliers of materials and components are crucial but also the other members within the complex supply chain are exerting an impact. In addition, safety regulations as well as lockdown procedures slowed down at one plant and caused delays causing failed deliveries and increased lead times (Belhadi et al., 2021, p.3). Another crisis evolving was the war in Ukraine which led to uncertainty regarding resources since some raw materials are imported from there. The two situations emerged suddenly, and the risk could not be considered beforehand. The probability that these situations occur was relatively low but caused substantial costs throughout the supply chain and increased the risk (Li et al., 2017, p.261). Furthermore, these crises caused a ripple effect spreading downstream in the supply chain and a bullwhip effect spreading upstream (Scarpin et al., 2022, p.3). Literature addresses the topic around the COVID-19 pandemic, however, events like the COVID-19 pandemic ask for better strategies to be resilient. Especially in times of crisis and uncertainty, supply chain resilience is key, being “the firm’s ability to resist disruptions and recover operational capability after disruptions occur” (Melnyk et al., 2014, p.36). Furthermore, capabilities such as agility, alignment and adaptability are seen as fundamental for creating a resilient supply chain (Lee, 2021, p.174). Therefore, strategies for creating a more resilient supply chain are needed. In order to identify and evaluate supply chain strategies allowing it to create a more resilient supply chain, the fundamentals of social capital theory are used (Gölgeci & Kuivalainen, 2020, p.64). Social capital theory focuses on building social relations within the supply chain and how those relations could contribute to supply chain resilience and the generation of a competitive advantage.

The aim of this research is to investigate how social capital theory influences supply chain resilience. Furthermore, research is done on if and how social capital or if social capital aided companies in uncertain circumstances to perform better for instance in times of the COVID-19 pandemic.

This research should dive deeper into social capital theory and the respective dimensions, the structural dimension, cognitive dimension as well as the relational dimension. The respective dimensions could help in shedding light on how companies solved problems related to turbulent times such as the COVID-19 pandemic and how solving their problems contributed to supply chain resilience. External social capital is included in this model in order to find what external social capital adds in relation to internal social capital.

Based on concepts of supply chain resilience and social capital, the following research questions are formulated:

Main research question:

How does social capital affect supply chain resilience of firms in turbulent times?

Sub questions:

- 1) *How do the dimensions of social capital contribute to supply chain resilience strategies of a firm in turbulent times?*
- 2) *What kind of firm's capabilities enhance supply chain resilience?*

In order to answer the research questions, twelve semi-structured interviews have been conducted with experts from industries ranging from the food sector towards the electrical sector. The data collected during the interviews was transcribed and coded as well as analyzed by means of thematic analysis.

Based on the method applied, in terms of theoretical contributions, social capital theory is used and insights into the dimensions of social capital both internally as well as externally are provided within the scope of supply chain resilience. The usage of social capital theory resulted in the following three findings. The first finding is that maintaining good relations with suppliers, with good communication, as well as frequent, open discussions fosters relationships. Suppliers are willing to offer solutions to problems more probable when the relationship is like a partnership, based on trust, with opportunities for mutual development. In a partnership, the parties may be eager to help each other, and this contributes to supply chain resilience. In addition, capabilities such as robustness strengthen the supply chain resilience of a firm. The second finding is that internal stakeholders, which includes the employees working within the company, should work rather cross-functionally organized in order to best cope with issues arising. Regular meetings with the department as well as throughout other departments are suggested in order to enhance supply chain resilience through flexible reacting to upcoming

issues. The third finding involves that formulating common goals fosters the collaboration between the buyer and supplier as well as the supply chain resilience and can help in achieving these goals even in turbulent times.

There are four practical contributions resulting from this research which are suitable for supply chain managers who are taking care of supply chain resilience strategies. Firstly, communication both inside and outside the organization is considered important in order to deal with turbulent times. Secondly, cross-functional collaboration is important in order to deal best with disruptions and to remain robust during a crisis. Thirdly, having good relations to the supplier is essential since a supplier may help in getting through turbulent times, the better the relation the more willing is the supplier to help the buyer in difficult situations. Fourthly, organizations may combine proactive and reactive resilience strategies in order to best cope with disruptions.

This thesis is structured in the following manner. Chapter 2 deals with the theoretical background of the study where COVID-19 in relation to supply chain management and other disruptions are introduced. Next resiliency is introduced in the supply chain management context. In a next step, chapter 3 addresses social capital theory and the different dimensions, the structural, cognitive and relational dimensions resulting in the research framework. Chapter 4 describes how the semi-structured interviews will help in answering the research questions. Chapter 5 is concerned with the results of the interviews and what the interviewees consider important for achieving resiliency and setting up the management propositions. Chapter 6 deals with discussion of the model created out of the interviews and the theory, then the theoretical contributions are discussed followed by the practical contribution. Lastly, in chapter 7, the limitations and future research directions are discussed.

2.0 Theory section: Firm resilience in turbulent times and the characteristics of social capital

2.1 Supply chain management – an introduction

Supply chain management has its beginning in the 1980s (Hugos, 2018, p. 3). Beforehand the terms operations and logistics management were more common. Supply chain management is concerned with the flow of supplies ranging from raw materials towards the delivery of the product to the customer (Lotfi et al., 2023, p.5). Besides, supply chain management deals with planning and strategy formulation, sourcing, transformation processes, delivery as well as

handling customer complaints and excess stock. According to Mentzer et al. (2011, p.18) supply chain management (SCM) is defined as “the systematic, strategic coordination of the traditional business functions [...] to improve the long-term performance of the individual companies and the supply chain as a whole”. Furthermore, supply chain management is viewed as “ network of interconnected companies cooperatively functioning together” (Erboz et al., 2023, p.414-415). Therefore, various stages are passed from the raw material towards the final product to the customer involving different kind of suppliers locally or even globally.

2.1.1 Supply chain management and disruptions

Since supply chain management involves multiple stakeholders, there is the possibility of issues within the network causing major or minor disruptions (Scholten et al., 2014, p.211). Whenever an issue within the supply chain arises, there is a cascading effect up or downwards the supply chain (Burkhart, 2020, p.35). Supply chain management is dealing with disruptions as a result of a shift towards more economically and cost-optimized production schedules, thus generating pressure on the supply chain management to keep up to the performance standards (Passarelli et al., 2023, p.1305). Keeping inventory levels low through just-in-time is an example of economic and cost-optimized production schedules. These reduced inventory levels may increase the chance of a disruption.

In the literature, four reasons why organizations are vulnerable to disruptions can be found. One reason is the globalization which also affects supply chains, as operations are spread throughout the entire world (Handfield et al., 2020, p.1651). Whenever an issue occurs somewhere in the world at one of the suppliers there may be impacts on the supply chain of the organization as well. Additionally, sourcing from low-cost countries in order to remain competitive poses challenges to the supply chain as tasks and responsibilities are shifted to another location outside the direct control of the respective company (Katsaliaki et al., 2022,p.966). The fact that members within the supply chain are geographically dispersed throughout the world adds complexity to the supply chain, providing the second reason. When an organization produces products with various components and sources from suppliers all over the world and follows a single sourcing strategy, then organizations are more vulnerable to possible disruptions when no strategies or alternative options are in place (Guntuka et al., 2024, p.2). The third reason are issues such as an “uncertain economic cycle, changing demands of customers, advancements in technology, logistics improvements as well as shorter product life cycles” (Huma et al., 2020, p.1770). The fourth reason is that supply chains of companies are leaner and more globalized in terms of their structures thus increasing the chance of a disruption. Members within the

supply chain are forced to deliver within the standards of the other supply chain members (Khan et al., 2023, p.6).

In addition, there are reasons beyond the organizations control impacting supply chains and causing disruptions as well as turbulences from time to time. Turbulences relate to fluctuations within the supply chain environment (Kalubanga & Gudergan, 2022, p.154). Turbulent times are the case when a company faces severe disruptions within the supply chain such as earthquakes, strikes, floods, explosions or fires or technical problems at a plant of a company causing delays. Additionally, turbulent times could be caused through dependencies upon suppliers for certain components which are critical for the production of the products and the supplier in turn is in a powerful position allowing to allocate components based on their standards and requirements (Wissuwa et al., 2022, p.1). In the last years, several kinds of disruptions and turbulent times occurred. First of all, a flood in central China once caused a temporarily closure of a Nissan plant. Additionally, the car manufacturers Subaru and Toyota were forced to shut down their assembly lines due to an earthquake (Yuzawa & Tanabe, 2019). Furthermore, there was a tsunami in Japan causing problems for Honda, Toyota, Nissan as well as Fuji. The fire at a supplier of Ericsson caused substantial damage for the company and forced them to retreat from the mobile phone market as the damage was more dramatic than expected (Bier et al., 2020, p.1835). Supply chain disruptions caused by natural disasters such as earthquakes and tsunamis have long-term effects on organizations and 40-60% of small businesses never recover nor survive such a disruption (Aslam et al., 2022, p.1). Explosions such as e.g. the one that occurred at the BASF headquarters in Ludwigshafen are causing substantial troubles for the plant (Wadle, 2016). Moreover, there was the disruption on the Suez Canal causing substantial problems since this route is highly frequented and important for several industries. According to Aslam et al. (2022, p.1), the “Japanese ship blocking the Suez Canal costs 12% of global trade and help up trade valued at over 54 billion USD”. Roh et al. (2022, p.214) adds that the Suez Canal disruption costed “\$ 400 million per hour in global trade and created tremendous costs due to delayed shipments port congestion and rerouting of shipments”. Amazon for instance, made investments in their own cargo containers as a result of the container blockage in the US in order to enhance resilience (Faruquee et al., 2023, p.1). While the previous paragraph had a focus on general disruptions and their impact, two other major recent disruptions, the COVID-19 (focus of this research) as well as the Ukraine war and their consequences for the supply chain and its resilience are summarized below.

Those two events caused substantial problems and turbulences in terms of business continuity as well as scarcity of components. Similar to the COVID-19 pandemic, the war in Ukraine caused high levels of uncertainty as materials coming from the Ukraine such as wheat, sunflower oil were scarce and expensive as well as difficult to obtain (Filho et al., 2023, p.1). The increase in prices of those products were caused by increasing demand as organizations tried to build up their stock. The COVID-19 pandemic is described as a black swan event due to the high impact but low probability of occurrence (Weber, 2021, p.2). The COVID-19 pandemic especially influenced global supply chains, causing serious as well as long-term problems, 94% of the Fortune 1000 faced supply chain disruptions due to the pandemic (Fortune, 2020).

Khan et al. (2023, p.5) mentioned three characteristics of COVID-19 as supply chain disruption, firstly “long-term disruption existence with unpredictable scaling”, secondly “simultaneous disruption propagation in the supply chain (SC) and simultaneous disruption on supply, demand and logistics”. According to Alexander et al. (2022, p.1063), the COVID-19 pandemic caused effects in the areas of retail through panic buying of the people, an increasing demand for protective equipment, increased demand for ventilators in order to filter the air, as well as the effects on the workforce itself causing more recorded illnesses.

The pandemic mainly exerted influence upon three main sides, the supply side, the demand as well as the logistical side (Raj et al., 2022,p.1125). On the supply side, there are for instance, disruptions at the production facility of the supplier due to labor and material scarcities. To provide an example, companies with a strong relationship towards China, for instance, faced severe delays or no deliveries at all.

On the demand side, there are disruptions related to order cancellations by first-tier customers (Gurbuz et al., 2023, p.5). Additionally, logistics and supply chain management faced problems due to obligatory quarantine rules for the drivers and the control of the transport itself (Khodoomi et al., 2023, p.1). Furthermore, there was an increase in response time due to barriers within the countries of the supply chain members. According to Choudhury et al. (2022, p.483), COVID-19 caused substantial problems since supply and demand and every kind of stability created beforehand was hit at the same time. Therefore, organizations were forced to rethink their strategies, starting with the identification of vulnerabilities, diversification of supply bases, holding intermediate inventory or safety stocks as well to benefit from process innovations (Shih, 2020, p.85-86). Rethinking strategies was done by fostering “resilience through building capabilities which help organizations to prepare for disruptions, withstand

disruptions and to recover from disruptions quicker”(Duong & Chong, 2020, p.3489). According to Paul et al. (2023, p.1), organizations need to leave traditional methods behind and follow more resilient approaches in order to effectively cope with disruptions caused by covid-19 pandemic. Therefore, the topic resilience needs to be addressed, which is introduced in the next section.

2.2 Supply chain resilience as ability to anticipate change and absorb disruptions

Resilience has its origin in ecology and psychology (Reyers et al., 2022, p.657). The term resilience is quite often found in the literature and is a well-researched topic, therefore various definitions as well as conceptualizations are available on resilience. An overview of these definitions is provided in Table 1.

TABLE 1 OVERVIEW DEFINITIONS RESILIENCE

Author	Definition	Journal
Holling (1973, p.246)	Resilience is the ability of a system to absorb change	Adapted from the book The future of nature
(Brandon-Jones et al., 2014, p.55; Christopher & Peck, 2004, p.2; T. J. Pettit, 2010, p.1; Sheffi & Rice, 2005, p.44)	Resilience is the ability and speed of the supply chain to return to its original state and move to a more desirable state afterwards	The International Journal of Logistics Management; MIT Sloan Management Review; Journal of Business Logistics; Journal of Supply chain management
(Mc Manus et al., 2008, p.82)	Organizational resilience is defined as a function of an organization’s overall situation awareness, management of vulnerabilities, and adaptive capacity in a complex, interconnected and dynamic environment	Natural Hazards Review
(Ponomarov & Holcomb, 2009, p.131)	the adaptive capability of the supply chain to prepare for unexpected events, recover from them by maintaining continuity of operations at the desired level of connectedness and control over structure and function	International Journal of Logistics Management
(Petit, 2010, p.1)	the capacity for an enterprise to survive, adapt and grow in the face of turbulent change	Journal of Business Logistics
(Ates & Bititci, 2011, p.5601)	The capacity of an organization to survive, adapt, and sustain the business in the face of turbulences	International Journal of Production Research
(Melnik et al., 2014, p.36)	Is the firm’s ability to resist disruptions and recover operational capability after disruptions occur Comprises the proactive component of resistance -the ability to avoid a disruption and the reactive component of recovery – the ability to restore operations post disruptions	Supply Chain Management Review

(Martinelli et al., 2018,1222-1223)	resilience is rather a multifaceted construct consisting of three main organizational components, cognitive (sensemaking and ideological identity), behavioral (varied action inventory, functional habits) as well as contextual capabilities (social capital, network of external resources).	International Journal of Entrepreneurial Behavior & Research
(Ivanov, 2018, p.3507)	Supply chain resilience is the ability to maintain, execute and recover from (adapt) planned execution along with the achievement of the planned (or adapted, but yet still acceptable) performance	International Journal of Production Research
(Välakangas, 2018)	Strategic supply chain resilience is defined as “ the capacity to turn threats into opportunities and the ability to take advantage of those opportunities”	Palgrave Encyclopedia of Strategic Management
(Hosseini et al., 2019, p.291)	Supply chain resilience is the firm’s capability to withstand, adapt and recover from disruptions to meet customer demand, ensure target performance, and maintain operations in a vulnerable environment	Logistics & Transportation review
(Conz & Magnani, 2020, p.400)	resilience should be viewed as a process in time	European Management Journal
(Novak et al., 2021, p.323)	supply chain resilience is seen as complex adaptive system that is not in a constant equilibrium and includes the importance of scale in the concept	Journal of Business Logistics
(Wieland & Durach, 2021, p.316)	Ability to adapt and transform in the face of changes	Journal of Business Logistics

2.2.1 Resilience in supply chain management

The concept resilience within the field of supply chain management first appeared in the 1990s and became more important in the 2000s due to a paper by (Christopher & Peck, 2004) who provided clarifications on the concepts of supply management (T. J. Pettit et al., 2019, p.56-57). The origin of supply chain studies was in United Kingdom where “transportations disruptions, fuel protests in 2000 as well as the foot and mouth disease occurred” (T. J. Pettit, 2010, p.4). A study by the World Economic Forum and Accenture found that 80% of the firms considered supply chain resilience as their top priority (Ambulkar et al., 2015, p.111; Forum, 2013).

For this research, the following definition will be used, supply chain resilience is “the firm’s ability to resist disruptions and recover operational capability after disruptions occur” (Melnyk et al., 2014, p.36). The concept supply chain resilience will be used in this context as strategy for overcoming turbulent times. The reason for using the concept supply chain resilience is that resilience helps to recover from disruptions and transform to the changing circumstances. Being

able to withstand disruptions and to develop respective capabilities may help an organization with their performance. Melnyk et al. (2014, p.36) distinguishes between a “proactive component of resilience (avoiding a disruption) and a reactive element, restoring operations after occurrence of a disruption.” Anyway, “resilience is not something an organization possess or not, it is merely a result of the processes that help an organization to maintain resources at a level in order to react to changing circumstances” (M. Chowdhury et al., 2018, p.1211). After the introduction to the concept of resilience within the supply chain management context, key characteristics of becoming resilient are introduced.

2.2.2 Key characteristics of becoming resilient

As already mentioned in the previous section, there are two types of resilience strategies, a proactive resilience strategy as well as a reactive resilience strategy, proactive resilience strategy deals with the prevention of a disruption whereas the reactive resilience strategy deals with reducing the impact of a disruption. A proactive resilience strategy could be viewed as a defense systems against potential disruptions (Faruquee et al., 2023, p.4). The reactive strategy consists of two elements, the during disruption and post-disruption element, taking care of responding to a disruption during the disruption and after the disruption. According to Das et al. (2022, p.251-252), characteristics such as contingency plans, coordination and financial support, human resource management, using IT, trust and satisfaction are seen to contribute to resilience. Furthermore, for a supply chain to become resilient, process automation and AI(artificial intelligence), inventory management, outsourcing of business operations are viewed among others as strategies aiding in contributing to supply chain resilience (Modgil et al., 2022, p.1248-1249). Besides, characteristics such as flexibility, agility as well as responsiveness are seen as contributing to building supply chain resilience (Pimenta et al., 2022, p.651). Apart from that, adapting quickly to changing circumstances also aids in building supply chain resilience. Moreover, being able to overcome supply chain disruptions through being robust i.e. being able to recover quickly whenever a disruption occurs also helps in building resilience. In order to strengthen the robustness, the capacity strategy could be increased, for instance through adding suppliers, increasing production or inventory levels as well as distribution centers (Alvim et al., 2022, p.86). Also, for being able to quickly respond to a disruption, having excess inventory helps to get through turbulent times at least as a short to middle-time horizon solution. Technology may also aid in generating supply chain resilience since being connected to suppliers throughout the supply chain also helps in discovering problems early on, thus contributing to supply chain resilience (Katsaliaki et al., 2022, p.982).

Additionally, when information is shared throughout the supply chain, problems may be discovered early on, thus contributing to resilience.

The strategy diversification and dual sourcing involves finding different supply chain partners for the respective components and materials, for instance when a company is dependent upon components from China, looking for suppliers elsewhere in the world. Then close collaboration with the existing suppliers could be intensified in order to ensure delivery of components (Stek et al., 2022, p.4).

Another strategy is vertical integration which entails taking ownership of parts of the production, however, this strategy also brings risks with it since through realizing the production of components the complete processes are the responsibility of the company and this strategy is also not a short-term solution towards resilience as this bureaucratic burdens and setting up everything for a production requires some time (Stek et al., 2022). Then decentralization strategies may be followed involving it to localize production capacity, foster automation and reduce the batches produced in order to reduce complexity and thus contribute to resilience (Magableh, 2021, p.367). Another strategy is supply chain visibility where companies know their supply chain well including sharing of inventory information for instance in order to discover issues arising early on and thus contribute to supply chain resilience. Furthermore, a localization strategy in terms of the supply chain could be followed in order to be able to react quickly in terms of a disruption occurring through having suppliers closer by (Zhu et al., 2020, p.5). After being introduced to the key attributes of becoming resilient, supply chain sustainability is introduced in order to cope with turbulent situations.

2.2.3 Supply chain sustainability as a way to deal with turbulent situations

As already mentioned in section 2.2.2 there are key characteristics aiding in becoming more resilient. The respective capabilities will be elaborated on in this section. First of all, when bearing in mind the proactive and the reactive strategies the capabilities could also be attributed to the respective strategies. For instance, redundancy represents a more reactive strategy since it is still possible to react through means of safety stock in order to get through the disruption. Visibility is a rather proactive strategy because through creating insights into the supply chain, potential problems may be discovered early on and may be solved immediately (Faruquee et al., 2023, p.4). Furthermore, flexibility could also be classified as a reactive strategy since an organization reacts to changing circumstances. Agility also represents a reactive strategy as it entails a speedy reaction towards a changing situation. Adapting to a situation is also considered

to be a reactive strategy contributing to supply chain resilience because resources are quickly rearranged to the new environment.

Collaboration is considered as an important factor for generating supply chain resilience as benefits are derived throughout the social network (Wu et al., 2023, p.3). Through fostering the collaboration of the members of the supply chain, problems may be discovered earlier and responses could be delivered earlier. Better collaboration leads to shorter ways of communication, clear communication, avoidance of incongruencies between departments within the company, specifically on the cognitive dimension where goals are shared and a commitment is made towards achieving the goal, there is an eagerness to achieve the goals together. Collaboration also fosters a relationship when going through difficult times as information is shared throughout the supply chain network and this contributes to supply chain resilience as through sharing information, uncertainty will be reduced (Christopher & Peck, 2004, p.9). This collaboration may also include financial matters for instance helping out suppliers in difficult times in order to be able to continue business operations (Pimenta et al., 2022, p.655).

Social capital specifically the collaboration throughout the supply chain is considered important for achieving supply chain sustainability (M. M. H. Chowdhury et al., 2023, p.2623). Focusing on long-term relationships with the suppliers is also seen as important factor for building supply chain sustainability. Through combined efforts, sustainability goals could be accomplished where every partner contributes towards achieving the goals. While focusing on sustainability goals, supply chain resilience is interrelated since through contributing towards sustainability, firms may be better able to cope with disruptions in the supply chain.

Sauer et al. (2022, p.1113) state that supply chain sustainability is viewed as constant learning process “shaping the sustainability over time”. Hence organizations react to turbulent situations based on prior knowledge and exert influence on the development of the supply chain over the years and could either enhance or limit supply chain sustainability (Sauer et al., 2022, p.1113). An example of this integration of sustainability into the supply in connection with artificial intelligence is Audi where artificial intelligence is used as monitoring device taking care of the adherence to sustainability requirements which in turn provides instant information when rules are violated. Similarly, according to a report from Ernst & Young advisor Hamish (2022, p.16), a race to zero campaign was launched by the United Nations where companies could also participate in order to foster the sustainability issue.

Another way towards achieving sustainability goals is through the obligatory ESG policies where companies are forced to show that their company and their supply chain partners perform in accordance with environmental, social as well as governance policies. The UE directive 2022/2464 obliges companies starting 2024, to provide information on their social as well as their environmental impact, therefore reinforcing transparency on these issues and preventing greenwashing (Truant et al., 2024, p.1-2). This new regulation encourages companies to think about their sustainability. In this relation, social capital is also seen as contributing to supply chain resilience through putting an emphasis on working and health conditions by means of trainings, incentives as well as investments (Eggert & Hartmann, 2023, p.490).

After the concepts of supply chain resilience have been shown, the construct social capital will be introduced in the next section as well as the respective dimensions of social capital.

3.0 Social capital as a resource of achieving supply chain resilience

Social capital theory has its roots in the eighteenth and nineteenth century. One of the first definitions of social capital theory was provided by Bordieu (1985, p.286) who defined social capital theory “ as the aggregate of the actual or potential resources which are linked to the possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition”. Bordieus definition is influenced by the theories of Marx on capital. Moreover, Bordieu also introduced two other types of capital, economic capital and cultural capital. The term economic capital involves resources such as cash and other types of property (Häuberer, 2011, p.35). Cultural capital refers to characteristics such as knowledge or skills of an individual (Bordieu, 1985, p.282). Irrespective of Bordieu, Coleman (1988, p.105) defined social capital but more with the attention towards the public good meaning the actions of individuals exerting benefits to the whole. Coleman assumes that social capital is a result of the social structure and takes a rational choice theory approach. Coleman divides social capital in relations of mutual trust, authority relations, information potential, mutual trust, effective norms and appropriable social organizations (Coleman, 1988, p.101-108). Bordieu approaches social capital from an individualistic perspective of power and status and the respective uneven distribution between individuals and summarizes collective attributes under the term cultural capital. Nahapiet and Ghoshal (1998, p.243) define social capital as “the sum of the actual and potential resources embedded within, available through, and derived from the relationships possessed by an individual or social unit”.

Overall, the social capital theory views social relationships as resources which lead to human capital and thus generating or increasing competitive advantage (Bohnenkamp, 2018, p.78; Malachek & Martin, 2015, p.897). In other words, social capital creates value to firms operating in the same domain through providing access to domains resources. One key assumption is that interpersonal relationships seem to create value for individuals as they “provide resources which can be used for achieving desired outcomes” according to Adler and Kwon (2002, p.17). Furthermore, they postulate that social capital is “the goodwill available to individuals or groups” where the sources could be traced back to the structure and content of the actor’s social relations (Adler & Kwon, 2002, p.17). Different members are connected through social ties and relations (Bohnenkamp, 2018, p.48; Coleman, 1988, p.102; Portes, 1998, p.4). Actors outside the relationship on the contrary, will not benefit from it (Nahapiet & Ghoshal, 1998, p.245). Interpersonal relationships are assumed to be based on the exchange of favors. Putnam argues that social networks should contain value for individuals. The relations between individuals form social networks, norms of reciprocity and trustworthiness (Putnam, 1995, p.665). Putnam also viewed social capital rather as a public good described through the amount of participatory potential, civic orientation and trust in others available to cities, states or nations (Häuberer, 2011, p.54). Putnam (1995, p.665) defines social capital as “features of social organizations, such as networks, norms and trusts that facilitate action and cooperation for mutual benefit.” Putnam agrees with Coleman on the fact that social capital could foster interpersonal cooperation (Putnam, 1995, p.664). However, in a similar vein, social capital could also harm business relations when behavior or relations are fostered that do not contribute to economic growth which then act as a barrier to social inclusion and mobility, dividing communities instead of uniting them (Häuberer, 2011, p.56). Next to an overall description of social capital, the different dimensions of social capital, the structural dimension, the cognitive dimension as well as the relational dimension are introduced.

3.1 The relevant dimensions of social capital theory

In essence, there are three core dimensions which constitute the social capital theory (Nahapiet & Ghoshal, 1998, p.244). Those dimensions are the structural dimension bearing in mind the overall pattern of connections between actors, the cognitive dimension considering the shared meanings and understanding among network parties as well as the relational dimension of social capital considering the kind of relationships people have within the network. The dimensions are related to each other.

3.2 Structural dimension

The structural dimension deals with the properties of the social system and of the network of relations as a whole and describes the invisible structure of relationships between people or units (Claridge, 2018, p.2). Moreover, the structural dimension includes the structure and the type of connections between people and consists of roles, rules, precedents as well as procedures which are exemplary for this type of configuration. According to Nahapiet and Ghoshal (1998, p.244) the structural dimension involves network ties, network structures as well as the suitable organization. Specifically for the structural dimension to consider are the number of ties a person has, and with whom and how strong that tie is. Therefore, the structural dimension is considered tangible and easy to observe. According to Granovetter (1983, p.202) as well as Jackson (2016, p.149), both strong and weak ties are needed in order to be resilient since strong ties are associated with the generation of unique capabilities and a balanced relationship within the network. Weak ties, on the other hand, require it to take distant networking actors into account and therefore activate the exchange among the dispersed network partners. A key benefit of structural social capital is that it eases the accessibility for various parties to exchange and transfer knowledge and thus foster interdisciplinary exchange among the parties involved (Aslam et al., 2022, p.5). Network structures or also called network configuration involves the degree of connectedness among parties involved and the better the connectedness within the network is, the better the outcome for the individuals operating within the network is, Burt and Soda (2021, p.1701). The ties facilitate information exchange among the network and through density, connectivity and hierarchy simplifies overall relationships (Nahapiet & Ghoshal, 1998, p.252). The suitable (appropriable) organization is concerned with the transfer of social capital from one situation to another, meaning that organizations which were originally designed for one purpose, shift towards another purpose (Nahapiet & Ghoshal, 1998,p.253).

Structural social capital includes the type and configuration of social ties among actors in a network resting on the existence of connections and how they are configured within a social structure. Connections or social ties in the network create the potential for actors to gain access to valuable tangible and intangible resources (Claridge, 2018, p.3).

3.3 Cognitive dimension

The cognitive dimension entails to providing shared representations, interpretations and systems of meaning among the parties involved in the social relationship as well as the sharing of codes and ethics as well as narratives (Nahapiet & Ghoshal, 1998, p.244). The sharing of languages and codes thus serves as the basis for communication and supports the social system

(Jääskeläinen et al., 2020, p.3). When languages are shared, the access to information and people is gained whereas when language and codes are different it is difficult to obtain access to these resources. Moreover, languages seem to influence perceptions, codes organize data into categories and serve as a frame of referencing of observing and interpreting the environment. Furthermore, through sharing information throughout the chain, a basis is formed for collaboration and the respective alignment of goals and visions, thus, fostering business relationships between the parties involved (Jääskeläinen et al., 2022, p.388). Aslam et al. (2022, p.4) adds that cognitive social capital is developed over a longer period of time, hence communication and collaboration is stimulated. Narratives include metaphors, myths and stories creating, exchanging and preserving meanings. There are two types of cognition, the information or paradigmatic mode and narrative mode (Nahapiet & Ghoshal, 1998, p.254). The information (paradigmatic) mode involves knowledge creation through rational analysis and arguments whereas the narrative mode involves synthetic narratives like fairy tales, myths, legends, good stories and metaphors. In contrast to the structural dimension, “the cognitive dimension is intangible since it relates to the interpretation of a shared reality”(Claridge, 2018, p.3). Outside the organization the shared codes have no meaning as it is only applicable to the internal organization and the respective parties involved in the relationship (Ansari et al., 2012, p.823). The common understanding of shared values provides a set of norms of acceptable behavior regarding conducting business with each other.

3.4 Relational dimension

The relational dimension refers to characteristics and qualities of personal relationships such as trust, obligations, respect and friendship (Nahapiet & Ghoshal, 1998, p.244). In general, where trust is high, the willingness of people to engage socially as well as cooperative is higher. Trust implies also being vulnerable to some extent, the willingness to being vulnerable is based on the confidence that exchange partners have good intentions, belief in their competencies and capabilities, reliabilities and openness. Norms exist when “the socially defined right to control an action is not held by the actor but by others” according to Coleman (1990, p.296). Thus, partners within the network actively agree to the predefined norms. Obligations “represent a commitment or duty to undertake some action in the future”(Coleman, 1990, p.296). Identification is “the process whereby individuals see themselves as one with another person or group of people”(Coleman, 1990, p.296). The focus of the relational dimension is rather on the nature and quality of relationships that have developed over time in trust, norms, obligations and expectations as well as identification. Moreover, the relational dimension fosters relationships based on trust, reciprocity, obligations and expectations and demand and to first

consider the collective goals and then the individual goals (Lazarova & Taylor, 2009, p.124). High relational social capital implies open communication, transparent behavior, mutual support and sharing of sensitive and important resources between partners which can help companies in finding creative solutions to arising problems (Ozanne et al., 2022, p.118). While this section had a focus on the relational dimension of social, the next section deals with external social capital.

3.5 External social capital

After having introduced to the internal social capital and the respective dimensions, the external social capital will be introduced shortly. External social capital is also considered in this research since the relations to other firms are also important for the generation of social capital. In this case, the external social capital provides linkages to other firms and takes into account employees working together with external collaborators with its primary function to bridge or link the firm to the external environment (Ozanne et al., 2022, p.117). Mainly, external social capital provides the access to up-to-date and valuable information from outside the firm. This includes external factors such as cooperation, relational behavior as well as partnership. (Jia et al., 2020, p.2). Furthermore, external social capital views industry relationships within the industry and apart from the industry which foster the generation of knowledge obtained through the environment (Duodu & Rowlinson, 2019, p.656). Additionally, relationships to external parties stimulate sharing of knowledge through the use of platforms. These platforms in turn then may contribute to innovation processes of firms. External social capital is more oriented towards weak ties in order to research new knowledge opportunities which means that firms seek new sources of ideas, methods or technologies. Moreover, external social capital could contribute to the generation of external knowledge and resources by means of networking, external social capital could improve the financial performance of a firm, foster corporate growth, enhance research productivity, innovation as well as internationalization (Cisneros et al., 2022, p.2). Furthermore, external social capital may aid in the development of an external network which then eases the way for obtaining resources. According to Parra-Requena et al. (2015, p.151) three elements of external social capital are identified, those are density, trust and cognitive proximity. Similarly, to internal social capital, external social capital consists of dimensions such as structural, relational and cognitive dimension with the extension of the three elements density, trust and cognitive proximity. Essentially the elements of external social capital extend the dimensions of internal social capital for the external social capital (Cai et al., 2021, p.4). In this case, density is seen as the level of connectedness to other companies as well as the degree of interconnectedness between the companies. The element density describes the

extent to which a firm is connected to other companies in such a way that that their network structure is well equipped in terms of their position within the network in relation to other companies (Parra-Requena et al., 2015, p.151). The term density in particular extends the structural dimension of social capital. Another element is trust which is defined as “ a set of positive expectations from others and or their actions allowing uncertainty about the behavior of other agents to be resolved”(Parra-Requena et al., 2015, p.151). Trust is seen to be developed over a period of time. The term trust extends the relational social capital. Cognitive proximity deals with the extent of similarities in routines, culture habits and common values between organizations. The term cognitive proximity extends the cognitive social capital dimension.

Internal social capital on the other hand, is the collection of actual and potential resources obtained through the internal network of relationships within the firm. Additionally, internal social capital could be characterized through “its web of cooperative relationships between employees within the firm which can in turn facilitate organizational trust, collaboration and teamwork” (Ozanne et al., 2022, p.120). While this section had a focus on external social capital, the next section covers how social capital could aid in developing supply chain resilience.

3.6 Social capital as key enabler to achieve resilience

This section deals with the social characteristics which serve as a key enabler to achieve supply chain resilience drawing on social capital theory. The different dimensions of social capital will be described in relation to their capabilities. Besides, this section elaborates on how social capital may help in achieving resilience. Table 2 shows how social capital relates to resilience. Johnson (2013, p.325) relates the dimensions of social capital (cognitive, structural and relational) to four formative capabilities (velocity, flexibility, visibility and collaboration). It is postulated that long-term supply chain effectiveness requires trust, shared values and long-term relationships to reduce risk and costs. The concept of social capital requires on the structural dimension network ties and network configuration, the cognitive dimension includes shared values and beliefs, and the relational dimension includes trust (Nahapiet & Ghoshal, 1998, p.251). Strong network ties are needed for the exchange of coded information whereas weak ties are required when knowledge is tacit in order to foster system adaptation. Shared values and beliefs facilitate communication and collaboration among the members of the supply chain. Trust is considered important for the relationship as without trust collaboration is rather difficult and information sharing impossible. Although the concept of social capital can contribute towards the development of an effective supply chain there are some negative outcomes of a

focus on social capital. Gölgeci and Kuivalainen (2020, p.64) found that social capital could also exert negative impacts on an organization when an “identification process is dysfunctional, restricting the processing of information, generating overcommitment to established relationship leading to postponement of structural adjustment and thus cause disruptions”. Furthermore, additional negative consequences are identified, ranging from “disregarding parties outside the network, inequality of power within the relationship as well as restriction in freedom of choice towards harsh compliance norms” (Portes, 1998, p.15; Strindlund & Dahlgren, 2022, p.2). Overall, supply chains seems to be improved by the reduction of uncertainties between supply chain members through increased cooperation and trust (Kähkönen et al., 2021, p.6). Involvement of the supplier and fostering the relationships impact the resilience of a firm (Durach, 2018, p.1868; Johnson, 2013, p.331).

The following sections deal with the relation between the constructs of social capital and supply chain resilience.

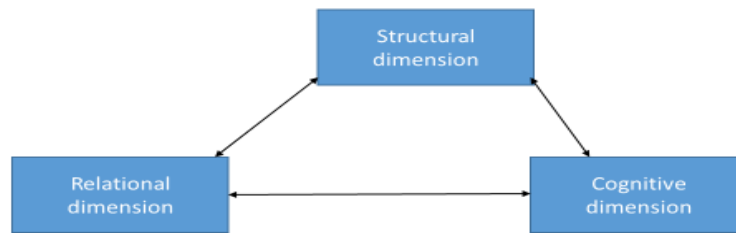
TABLE 2 OVERVIEW OF DISCUSSION OF RESILIENCE IN RELATION TO SOCIAL CAPITAL

Author	Social capital	Structural social capital	Cognitive social capital	Relational social capital	Resilience
Nahapiet and Ghoshal (1998, p.253)	“Networks of relationships constitute a valuable resource for the conduct of social affairs [...]”	Network ties provide access to resources Network configuration of ties constitute important facet of social capital Appropriable organization, transferring social capital from one information context to another	For meaningful communication, sharing common understandings in contexts is required	Strong connection between relational and structural dimension Characteristics of relationship, what is important Where parties trust each other, the willingness to engage in a cooperative activity is higher	Use dimensions to explore how the social capital dimensions help in building resilience in this study
Johnson (2013, p.325)	Collecting data from three tiers within the supply chain on a railway crash Evaluating effects of social capital	Time and frequent interactions were found to be building social relationships and trust	Giving ownership to construction to extend dedication towards accomplishment of goals	Using supplier development program to create trust and to foster relationship	Assessing the categories based on Jüttner & Maklan framework based on velocity, flexibility, collaboration and visibility by means of a case study

Asamoah et al. (2020, p.1794)	Finding how social relations could contribute to supply chain resilience	Invest in strategic partnership to derive benefits from it Creating a structure with dense interactions and multiple connection facilitating information exchange Through dense interactions, information is more readily available	Sharing information throughout the supply chain	Invest in relationship	Information obtained through the network can be used as part of an early warning system => part of a proactive strategy towards supply chain resilience
Kähkönen et al. (2021, p.6)	Increased levels of cooperation and trust	Working together throughout supply chain	Work together towards the accomplishment of goals	Fostering cooperation and collaboration	Improved supply chain resilience through reduction of uncertainties
Aslam et al. (2022, p.5-9)	Study on how social capital contributes to supply chain resilience	Higher level of structural social capital fosters cooperation between members within the organization and let them use synergies to encounter a situation	Sharing values create a link to facilitate communication and collaboration	relational capital networks where trust and cooperation are fostered, goal conflict is reduced	Accumulated social capital through the strength of ties between members within the supply, mutual trust and communication transform into useful capabilities
Zhang et al. (2023, p.4)	How social capital contributes to supply chain agility	High levels mean more frequent interactions => knowledge exchange	Common goals avoid misunderstanding, contributes to better collaboration	High level of relational social capital, leading to open communication, improved planning, goal-setting and problem-solving to react to the market	Through being more agile and flexible, better reactions to disruptions are possible, leading to supply chain resilience

This figure shows the relationship between the dimensions of social capital, cognitive social capital, structural social capital as well as relational social capital.

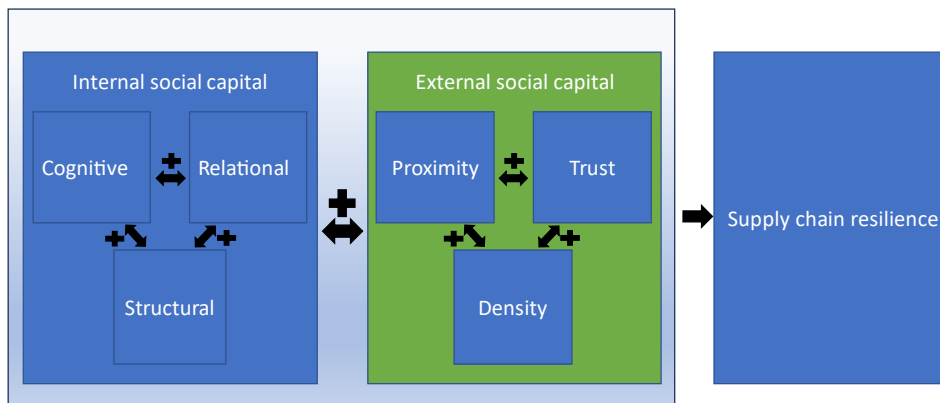
FIGURE 1 RELATIONSHIP OF SOCIAL CAPITAL DIMENSIONS BASED ON NAHAPIET & GHOSHAL, 1998, P.244



3.7 Resulting research framework

Based upon the literature and the research objective, the following model was developed in the research proposal based on the theoretical framework. This resulting research framework serves as basis for the further research and will be examined through the interviews.

FIGURE 2 RESULTING RESEARCH FRAMEWORK



On the left-hand side, there are the constructs of social capital, comprised of structural social capital, cognitive social capital and relational social capital. The structural social capital dimension depicts the network ties and relations and the network structure. According to Nahapiet and Ghoshal (1998, p.244) there seems to be a connection between the dimensions of social capital and these dimensions also seem to be rather strongly related, for instance having a relationship characterized as a partnership also brings trust with it, thus relating to the relational dimension of social capital. Additionally, one has to distinguish between external social capital and internal social capital. External social capital focuses on issues outside the organization with a strong focus on weak ties whereas internal social capital is mainly concerned with internal issues inside the company. Then on the right-hand side, there is concept supply chain resilience. There are other types of resilience but for this research, supply chain resilience is chosen as supply chain resilience is supposed to be suitable in this context or revolve around other types of resilience or are not suitable in this situation. Structural social

capital might also relate to supply chain resilience since through a combination of strong and weak ties within a supply chain network, collaboration between members of the supply chain may be fostered and thus lead to higher levels of resilience. Additionally, benefits may be derived throughout the network structure by means of receiving information earlier and thus be able to react earlier. Cognitive social capital may also contribute to supply chain resilience because through a shared course of action with the supplier supply chain resilience could be enhanced as everyone in the network knows what to do as through shared representations high levels of transparency within the relationship are required. Besides, through committing towards achieving common goals, the relationship between the parties within the supply chain network may be fostered, hence contributing to supply chain resilience. Relational social capital may also connect to supply chain resilience as through a relationship characterized through trust, obligation as well as friendship and reciprocity, collaboration is fostered among the supply chain and integrates possibilities for crisis cases as in such a relationship, a close partner is preferred to be served in case of a crisis.

After describing the model, the method for exploring the topic is explained in order to answer the research question.

4.0 Methodology: Qualitative expert interviews to identify the effects of social capital to supply chain resilience

4.1 The setup of the study and justification of the method applied

The research method was of qualitative and explanatory nature. Qualitative research was done because with the qualitative research it is possible to understand how social capital influences resilience and to provide reasonings for the relations between the different categories of this research through literature as well as through the interviews being conducted. Based on the literature, Figure 2 was set up. Besides, Figure 2 was used as input to the interviews and the propositions. Furthermore, through qualitative research it is possible to develop a theory, in this case, propositions based on the theoretical framework as well as the interviews (Bryman & Bell, 2007). Additionally with qualitative research, an in-depth understanding of how social capital affects supply chain resilience could be gained. Then potential links between the dimensions of social capital could be identified.

A case study research is regarded the most suitable research method because a real-world case is studied, and better understanding should be derived and the understanding of this case

revolves around contextual conditions important for the case (Yin, 2018, p.2). Semi-structured interviews are selected as method for data collection since it is possible to react dynamically towards situations and ask follow-up questions and this fits best with the semi-structured, in-depth interview approach (Bryman & Bell, 2007, p.467).

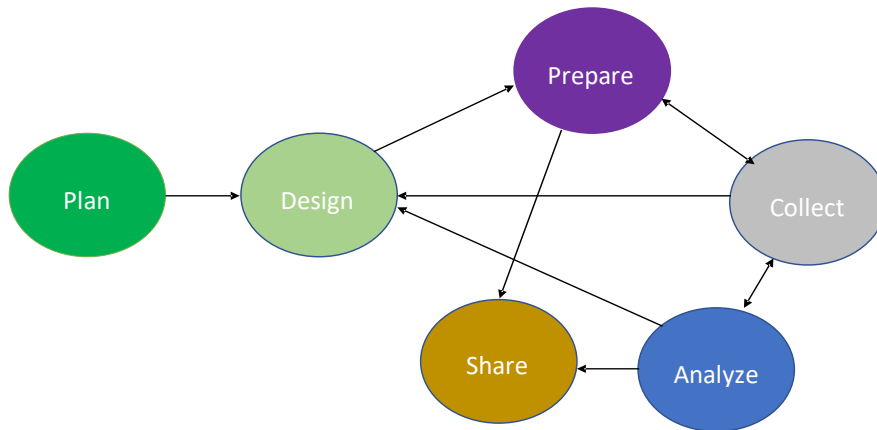
Why expert interviews? Expert interviews are selected as research tool as the interviews provide an efficient and focused way of obtaining access to data. Additionally, expert interviews are an effective and easy way of getting results in a fast way. The expert may facilitate access to insider knowledge which could be representative for a broader audience (Bogner et al., 2009, p.2). Furthermore, the expert may help in getting access to other interviewees within the organization and this could lead to more interviews following the snowball principle. Another reason for choosing expert interviews are that a common background between the interviewer and the interviewee creates a better exchange and understanding during the interview and thus supports the flow of the interview. Besides, the expert might be curious about talking to an external interviewer and values the exchange and this could serve as motivational factor for the expert. An expert is considered as someone who has specific expertise or knowledge in a certain branch and who can contribute experience to specific topic areas (Meuser & Nagel, 1991, p.443). Therefore, in this context an expert is considered as someone who worked for several years in the purchasing profession and has hence obtained in-depth knowledge over the years.

Twelve in-depth interviews were conducted in order to obtain profound knowledge of the situation, opinions and specifics of the respective company. Semi-structured interviews were preferred because the interviewee is more open about answering questions whereas structured interviews would provide only little room for answering questions freely (Bryman & Bell, 2007, p.205). Potential drawbacks of the semi-structured interviews are the observer-interviewee bias where the interviewer influences the direction of the interviewee's answers in a certain way.

4.2 Execution of the expert case study

Several steps in a process must be followed in order to set up a case study, first plan, then design, prepare, collect and analyze as well as share (see figure 2 Case study research process).

FIGURE 3 CASE STUDY RESEARCH PROCESS (ADAPTED FROM YIN, 2018, P.1)



Plan: This stage involves identifying whether case study research is appropriate for this research, bearing in mind systematic procedures to ensure rigor of the study. A way of ensuring rigor is to stick to four types of criteria, credibility, transferability, dependability, and confirmability (Guba, 1981, p.83). The first criterion credibility ensures that the study measures what it is intended to measure and does reflect the social reality for instance through member checks whereas the second criterion transferability relates to whether findings could be applied to a different context. The third criterion dependability deals with the description of the process in such a detail that the research could be replicated by another researcher. The fourth criterion confirmability deals with checking and rechecking results throughout data collection and analysis in order to ensure objectivity.

Design: In this study, the topic resilience was explored by means of the social capital theory. A model was constructed, where assumptions regarding the relationships between the different concepts were made. This study is concerned with deriving propositions based on the interview as well as in connection to the literature. In this study, multiple cases were involved with different persons from different industries and different levels of experience as well as functions.

Prepare: For this research, the preparation stage entailed setting up the interview guideline which provides direction during the semi-structured interviews with the experts, obtaining ethical approval in order to be able to start with the interviews. The arrow pointing both directions between prepare and collect establishes that while preparing for the interviews, a test run could be done which serves as the basis for the further data collection phase. Experts will be recruited for the interviews through LinkedIn as well as the personal network and then the

circle of interviewees will be extended further through snowball sampling. However, in fact snowball sampling was only partly done since some interviewees mentioned some persons which could be contacted whereas others did not mention further persons which could be contacted.

Collect: For this research one source of evidence are the interviews as well as the studies/articles as well as books published. The studies, articles, book chapter are summarized under the term literature. The literature reviewed aided in setting up the interview guideline, thus explaining the link between the arrow pointing both directions between prepare and collect. Then the evidence from the sources is triangulated. According to Patton (2014, p.661) there are four types of triangulations, one is of data sources (data triangulation), among different evaluators (investigator triangulation, of perspectives to the same data set (theory triangulation) as well as of methods (methods triangulation). In this case, data triangulation as well as theory triangulation are applied in order to ensure consistency among the data set and to contribute to a better construct validity.

Analyze: In this case, transcripts and record of the interviews were used as well as the software ATLAS.ti and thematic analysis was performed following the steps of Clarke & Braune. Again, there is also the arrow pointing both directions between the steps collect and analyze implying that already collected data through interviews could serve as input to future interviews or as points of improvements for the future interviews.

Share: This stage includes wrapping up the research in a paper or some kind of a presentation and to present it to a targeted audience.

4.3 Sampling and data collection

The research questions were answered by means of interviews with supply chain professionals and purchasing professionals in order to obtain an overall impression of the situation by means of LinkedIn as first way of contact.

First of all, non-probability sampling is selected as the sampling method of choice in qualitative research. Specifically, purposeful sampling is chosen in this case since participants are selected based on pre-selected criteria relevant to answering the research questions. Purposive sampling provides the basis for obtaining in-depth information from the participants. The pre-selection criteria include the following components; procurement and supply chain professionals with experience and who work for medium-sized to large companies based in different industries and who are concerned with strategic side of purchasing and employees who are more focused

on the operational side of purchasing as well as companies which faced difficulties in turbulent times especially due to the COVID-19 pandemic. These employees were selected because they provided the information necessary for this research. The research was carried out taking into account various opinions from experts from different industries in order to obtain diverse results. Despite this variety among the industries, there was an overall alignment on the subject. Mostly, the interviewees were contacted by means of LinkedIn through sending direct messages explaining about the subject of this thesis and asking whether they would like to participate in an interview. One interviewee was contacted through the personal network and one interviewee was recommended from a participant and then contacted. For complementing the sampling process, data collection is done from the selected sampling population. In this case, direct data will be collected which includes recorded spoken as well as written words as well as observable body language, actions and interactions.

Table 3 shows the interviews which have been conducted. Overall, twelve interviews were conducted with experts from different sectors ranging from the food industry towards the electrical industry. In terms of experiences there were also some differences ranging from 4 years of experience to 30 years of experience. The position within the companies also vary from head of procurement towards tactical buyer.

TABLE 3 SAMPLE OF INTERVIEW PARTNERS

Interview number	position	type of company	overall professional experience	interview duration
1	head of indirect procurement	food industry	9 years	33.48 minutes
2	head of SCM - procurement	electrical components	12 years	55.00 minutes
3	tactical buyer	electrical components	4 years	30.00 minutes
4	category manager	food industry	6 years	47.19 minutes
5	global procurement manager	chemicals/construction	20 years	30.00 minutes
6	procurement consultant	consultancy	6 years	62.00 minutes
7	procurement risk manager	automotive	8 years	85.00 minutes
8	head of procurement direct materials	food industry	25 years	56.12 minutes
9	head of strategic procurement /SCM	metal/steel	14 years	28.42 minutes
10	procurement consultant	consultancy	25 years	46.00 minutes

11	VP/ head of global procurement	automation	30 years	45.00 minutes
12	head of procurement	food industry	13 years	47.53 minutes

The semi-structured interviews were conducted digitally through MS Teams and by phone. The interviews lasted between 30 minutes and 85 minutes. Table 4 shows the main questions asked in the interviews. The complete interview guideline could be found in Appendix A Interview guideline. First of all, the focus was more of a general nature, questions were asked relating to their professional background and their expertise within the field of procurement and supply chain management and what their current task as well as function within the company is. Before the start of the interviews, it was asked for consent with regard to the recording of the interviews. Actually, two interviews were done by phone so everything said was written down. Then questions regarding the relationship with the supplier were asked, followed by questions relating to the characteristics/value of the relationship. Then questions concerning the last years and how the interviewees experienced the last years were asked and whether there are formal processes and policies in place for dealing with those situations. Additionally, questions regarding the entering in a relationship with a supplier were asked. Furthermore, questions relating to external parties were asked, for instance to the industry, agencies as well as other competitors. Then it was asked for capabilities developed.

TABLE 4 MAIN QUESTIONS

Type of question	Question	social capital dimension	specific dimension
Questions relationship supplier	What kind/type of relationship do you have to your suppliers?	internal/external	structural/relational
Questions characteristics/value of relationship	What kind of values do you share with your suppliers?	internal/external	cognitive
Questions experience in recent years	How did you experience the last two years?	internal/external	relational
Questions external relationship	How do your external relationship look like?	external	structural/relational
Questions capabilities	What kind of capabilities did you develop?	internal/external	relational
	What did you learn?	internal/external	relational

4.4 Data analysis of the interviews

After the interviews have been conducted, the answers were listened to, transcribed and a thematic analysis was used for analysing the data (Braun & Clarke, 2006, p.86-93). The interviews were then transcribed through the help of Amberscript and then transferred to ATLAS.ti. Thematic analysis was selected as appropriate instrument for analysis because patterns and themes could be identified, analyzed and in a last step interpreted. Thematic analysis was used to derive themes and relate them to respective dimensions of social capital as well to formulate propositions. As the interview guideline was structured in themes and the social capital dimensions also represent themes, thematic analysis was selected as method of analysis. Thematic analysis consists of a six steps procedure. The first step involved rereading the transcripts in order to get more familiar with the data. The second step was concerned with

the generating of initial codes which involves organising data systematically and the open coding technique will be used. Then axial coding was applied where connections between the codes will be identified. and categories will be formed in order to make sense out of the data obtained from the interviews. Then the categories were reviewed and revised again based on the prior analysis. This approach is described to be of iterative nature so revising and checking again is done in order to cover all aspects. Afterwards selective coding was performed where the identified categories were connected in order to form core categories. The third step deals with the search for overall themes in relation to the research questions. In a fourth step, the themes were reviewed again and may be modified. The fifth step was concerned with the final description of the themes narrowing down their relations to each other. The sixth step deals with the wrapping up the research. During the analysis with ATLAS.ti, six main themes were created also with a focus on the interview questions, the research question as well as the model. Overall, 334 codes were assigned, resulting in 483 quotes and then categorized into the below-mentioned themes. The main themes created based on the dimension identified in the research framework are 1) supplier characteristics & network characteristics, 2) values & visions 3) stakeholder management, then two complementary themes have been created based on the prior themes, those are dealing with turbulent situations and resilience creation.. After the methodology has been described, the results will be shown. The next section describes the results of this research.

5.0 Results and Analyses: Interview data on how social capital contributes to supply chain resilience

5.1 Turbulent situations forcing companies to react quickly

COVID-19 is considered as an event with a low probability of occurrence but with a high impact (Pearson & Claire, 1998, p.60). COVID-19 caused turbulences for supply chains around the world, posing challenges related to business continuity, scarcity of materials and labor. The level of uncertainty was relatively high since no one could certainly say how the situation would develop in the future. All of these attributes classify COVID-19 as a turbulent situation. The interviews that have been performed showed that many interviewees considered the COVID-19 pandemic as a turbulent situation.

Most of the interviewees mentioned that they were forced into action and that due to supply shortages solving critical issues occurring on short term notice constituted their daily business.

Furthermore, the interviewees mentioned that they faced scarcities in terms of hygiene articles, scarcities on the paper market as well as scarcities for materials related to sunflower oil, wheat as well as semiconductors. These scarcities were mainly a result of the increasing demand where most of the interviewees mentioned that “*they would have paid more than usual just to be able to obtain hygiene articles*”, for instance according to interviewee 1. The increased demand resulted in inability of a supplier to deliver and shifted the power to the suppliers. This confirms that scarcity bears the potential of disrupting the supply chain (Khan et al., 2023, p.6).

Apart from that, scarcities were also related to labor since social distancing was a big topic especially within the production where working from home was not possible since the employees must be physically present to do their job. Whenever an employee of the production department had to stay home because of an infection with the virus and to avoid a further spread of the virus, this employee was missing in the department. Staying home and labor scarcity was also mentioned in the literature by (Raj et al., 2022, p.1125).

The pandemic caused also a shift in supply and demand resulting in shifted positions between the buyer and the supplier because the supplier had the components and was the position to allocate these components to the buyer. This finding pertains to the statement of the economic cycles in the literature where it is described that the changing demands of customers are disrupting the supply chain (Huma et al., 2020, p.1770).

There was also a shift from a cost-oriented focus of the organizations towards an organization which could ensure business continuity as prices were not the focus of the buying organizations. Instead, the focus was on ensuring deliveries irrespective of the prices. This statement relates to the low cost sourcing focus and globalization aspect (Guntuka et al., 2024, p.2).

The aspect that Khan et al. (2023, p.5) mentioned about business continuity can be confirmed by the finding that most interviewees mentioned firefighting as well as dependencies upon allocation through some of their suppliers or that they had to aid a supplier to solve issues during the crisis. The term firefighting and being forced into action was mentioned often, most of the interviewees agreed that the COVID-19 pandemic posed challenges related to business continuity because in this situation *no one knew what would happen next and when this situation will develop out of this special mode*”(interviewee 1, interviewee 2, interviewee 4). In order to ensure that customers could still be served and that the business could go on, quick reactions were asked for.

5.2 Quick reactions to the covid-19 pandemic

This section covers what firms did to encounter the COVID-19 pandemic. First of all, the COVID-19 pandemic was about business continuity in order to be able to proceed with the business, therefore strategies were developed to respond to this challenge. In general, most interviewees experienced the years 2020 to 2023 as challenging and that they were forced to act and that their specific department gained importance during the crisis. As interviewee 2 pointed out *“there were 10 pieces of cake for 15 people invited and then it was suddenly not important in terms of purchasing volume for a type A supplier [...] in order to be able to ensure availability.”*

The majority of the interviewees mentioned that they recovered from the crisis based on their stable networks, existing relationships and their conservative management strategies. Drawing from the benefits through the network pertains to the structural dimension of social capital helping in developing supply chain resilience. Moreover, some interviewees explained that the difficult times during COVID-19 especially or when you face a difficult situation served as *“gathering additional experience in terms of learning during those times”* and [...] *“let them focus on what is really important and develop even more creative strategies than before and generating more calmness in difficult situations”* (interviewee 4; interviewee 12). Being flexible to react to changing circumstances represents a reactive strategy to encounter disruptions and contributes towards resilience (Faruquee et al., 2023, p.1506).

Having excess stock proved right during this crisis since at least some components were available or having alternative options such as a second source available helped some companies through the first phase of the pandemic, as the interviewees mentioned *“they always plan for some bad times in order to be able to deliver”*. However, when it came to suppliers related to semiconductors for instance, *“all the planning and assurances were worthless as those suppliers just went for an allocation of resources”* (interviewee 11, interviewee 1, interviewee 5). Despite all the prior efforts, dependencies upon the supplier were created and other strategies needed to be sought. The opinions of the interviewees with regard to having excess stock are in line with the literature. Here attributes such as redundancy and robustness could contribute to supply chain resilience by making use of the capacity strategy (Alvim et al., 2022, p.86).

Nevertheless, most of the interviewees described that the learning effect was huge since they learned to focus on important issues and to be more relaxed when a turbulent situation occurs. Interview 5 added that this *“brought back the attention to risk management and towards*

ensuring business continuity and that the companies which did their homework did not face that many problems“since they took precautions beforehand. According to interviewee 8, processes and policies are formally described in a management handbook, interviewee 10 added that “the bigger the organization the more professional the processes are organized, processes always need top management involvement and that there are guidelines for situations but not unexpected crisis situations”. Additionally, governance needs to be introduced and enforced through top management layers according to interviewee 6 and 7. In particular, interviewee 10 mentioned as an example that they once faced problems due to a fire at a supplier which was discovered through webcrawling activities [...] and solved through active communication through the head of procurement offering help also through being physically present at the suppliers’ location and helping in resolving the crisis. This situation deepened the relationship to the supplier and showed the supplier that the buyer is willing to help in crisis situations.

Helping suppliers to overcome the crisis was also done financially where plans were developed to support the supplier. This is also confirmed through the literature which is a result of the collaboration between the buyer and supplier (Pimenta et al., 2022, p.655). However, helping a supplier was done for the most important suppliers but not for a non-strategic supplier because resources cannot be made available for every supplier except if the supplier delivers critical parts or components where the risks associated with a non-delivery or scarcity is considered high. The fact that supporting the supplier was done only if there was a long-term strategic partnership and if the supplier delivered critical parts or components where the risks associated with a non-delivery or scarcity was considered high can also be related to the concept of social capital.

5.3 Obtaining structural social capital benefits through creating long-lasting partnerships with strategic suppliers fostering mutual exchanges

The first theme evolved is supplier characteristics & network description which deals with the type of relationship and characteristics of their supplier networks. This theme could be attributed to the structural dimension of social capital since characteristics which are belonging to the structural dimension such as density, type of ties, connectedness within the network, hierarchy as well as the appropriability of relationships are covered and represent the key characteristics of the structural dimension. Similarly, the external social capital dimension density is covered through this table. Table 5 shows the most important aspects mentioned

during the interviews. Four sub-themes emerged out of the themes, those are type of relationship, categorization of suppliers, type of organizational network and expectations towards suppliers.

TABLE 5 SUPPLIER CHARACTERISTICS & NETWORK DESCRIPTION

Supplier characteristics & network description	1	2	3	4	5	6	7	8	9	10	11	12	totals
1) type of relationship													
partnership		x	x	x		x	x	x	x	x	x	x	10
personal relationship	x	x	x								x	x	5
trustful relationship		x						x			x		3
open communication	x	x	x	x	x	x	x	x	x	x	x	x	12
transparent behavior		x	x								x	x	4
mutual interest in development		x		x	x			x			x	x	6
long-term focus								x			x	x	3
win-win orientation		x											1
2) categorization of suppliers													
classification of suppliers	x	x	x	x	x	x	x	x					8
preferential treatment of suppliers						x		x			x		3
usage of certified IFS broker								x					1
3) type of organizational network													
mature organization			x										1
approaching suppliers transactionally			x										1
team-based approach towards supplier			x										1
dense supplier network structure				x			x				x		3
consolidated supplier base							x						1
selecting suppliers of similar size				x							x	x	3
4) expectations towards suppliers													
willingness to invest		x						x			x		3
insights into calculations of supplier			x								x		2
mutual support	x	x		x		x			x		x	x	7
technological competencies		x						x			x		3
IT competencies								x			x		2
similar understanding of doing business			x									x	2

Referring back to the theory section, the emphasis was also on creating long-lasting partnerships to derive benefits out of the network. For the first sub-theme type of relationship, the basis of the relationship towards the supplier is described. In general, most of the interviewees described their relationship as being a “partnership, long-term focus and win-win oriented with a classification on the type of supplier within the portfolio, strategic suppliers or type A suppliers are considered more important and are worth the investment both in terms development as well as on personal level. As interviewee 8 mentioned “one cannot put that many resources as well as time in a supplier who is just not that important, meaning that a distinction is made between

the different suppliers to dedicate resources efficiently to the respective suppliers. This distinction is also made in terms of frequency of communication, with important and strategic suppliers, the communication happens more frequently also because there are many more issues to discuss and the supplier is considered more important. The frequency of contacts could also be attributed to the structural social capital dimension as it revolves around network characteristics. However, during the interviews, 3 out of the 12 interviewed persons mentioned that the partnership is what is communicated on the surface but is not necessarily true since the suppliers within the car manufacturer industry the suppliers are pressured to do what the large manufacturer tells them to do. As a reason the interviewees named often a single-sourcing strategy is followed, forcing the buying organization to be the pressuring party otherwise, disruptions occur easily.

The second sub-theme categorization of suppliers comprises the distinction the different interviewees make in terms of their suppliers, sometimes related to the theory. According to interviewee 11, *“40 suppliers are considered type A suppliers thus generating 80% of the entire procurement volume, another 70 suppliers are classified type B generating the next 15% of the purchasing volume, i.e., with 100 suppliers, 95% of the entire purchasing volume is covered”*. Category C suppliers are monitored then through framework contracts and forecasts and are less frequently contacted than type A or B suppliers as procurement managers just do not have to resources to follow up on the same level. Interviewee 5 explained that *“their procurement department is responsible for a relatively small supplier market where the key suppliers are relatively large and thus considered strategic”*. Therefore, having a close relationship with the supplier is considered essential and time and resources are dedicated towards this relationship to be considered at least as important to the supplier to derive benefits obtained through the relationship creating a link between structural social capital, cognitive social capital as well as relational social capital. This means that they have a long-lasting relationship combined with common goals and characteristics such as trust form the basis for collaboration.

Interviewee 8 also explained that *“materials are not sourced directly in the region, for instance, cacao is not sourced directly in Africa, instead they use intermediaries so-called IFS standard certified brokers who source for the company”*. These brokers are qualified and specialized intermediaries who are responsible for buying the cacao for instance. Hence through the usage of brokers, an organization could save resources and time as the broker takes care of processes ranging from supplier selection to negotiating. Additionally, as the broker has the necessary expert knowledge for the cacao category as well as the market, the organization could benefit

from the knowledge and the contacts of the broker providing the organization with valuable supply chain partners. Especially within the food industry where suppliers need to correspond to specific regulations that apply for dairy products for instance or to the production or component of a specific product itself, well-known and well-established partnerships are preferred since business continuity as well as the fit to the needs of the company are considered important and benefits in terms of information relating to the market are obtained through the supply chain network, hence reducing uncertainty and contributing to supply chain resilience (interviewee 12). Most of the interviewees work for well-established organizations with a certain degree of professionalism regarding their department, therefore the foundation regarding the type of their relationship is long-term focused at least for strategic supplies. Hence a cross-case relationship between the two elements can be observed. Important to note is that even the interviewees where the purchasing and supply chain department is not that professionalized mentioned that they invest in long-term partnerships preferably.

The third sub-theme deals with the type of network, the interviewees prefer concerning their suppliers. Most interviewees emphasized that they prefer a dense network of suppliers with a focus on local sourcing as long as it is possible as well as a good network of their suppliers meaning that a supplier should be able to develop a solution when an issue comes up at a location through shifting to another location or to offer an alternative solution according to interviewee 4 and 12. Here a relation towards the literature can be drawn since a local sourcing strategy facilitates reacting towards a disruption, thus contributing to supply chain resilience (Zhu et al., 2020, p.5). Another important aspect is that suppliers should be of a similar size or slightly bigger so that *“talking to the top management is possible in order to solve issues quickly”*. The top management or the respective departments should always be approachable according to interviewee 4, 11, 12. Here a link between the three dimensions can be identified since having a stable network of suppliers fosters collaboration in terms of following up on common goals through deriving benefits from a trustful relationship. Being able to talk the top management is important to the interviewees for several reasons, firstly being able to directly approach and talk to the top management contributes to better and faster communication because the contact person is in the position to take care of issues directly for instance when they are facing problems with a delivery of components and to solve conflicts right away through this direct communication and creates through the position pressure downwards the organization. Secondly, the relationship is more intense and in the same vein more stable and important since reciprocity will be required in such a relationship. Moreover, the interviewees showed that organization prefer to have a supplier with a good reputation as well as extensive

experience in the market. In this regard, interviewee 3 added that they “value *a mature organization*” meaning that the organization should be experienced in their business and bring a lot of expertise into the relationship itself. Interviewee 3 thus excludes companies that are new on the market or do not have a reputation within their respective industry. Only doing business with mature organizations ensures that the organization already has a certain level of experience and professionalism as well as a reputation in the industry (interviewee 4, interviewee 6).

The fourth sub-theme, expectations towards the suppliers deals with the attributes the interviewees expect from a supplier in a partnership so a relation could be observed to the first sub-theme. The interviewees expect a willingness to invest in a partnership and a similar way of doing business. Besides, transparent behavior is required in this partnership where mutual trust is required beforehand. For entering a relationship, several requirements need to be fulfilled, firstly every supplier is obliged to sign the code of conduct, then most of the interviewees have depending on the industry several criteria that need to be fulfilled beforehand. Mostly criteria such as price, quality, service are viewed as the most important factors for entering a relationship. Then geographical presence/proximity as well as cultural aspects such as communicational barriers are seen as important issues. To foster the relationship, common goals are defined, and more time is dedicated to the relationship with the supplier and communication occurs quite frequently, active communication is required here. Here two aspects of the relational social capital dimension are included, expectations and obligations. The interviewees showed that mutual support is essential for 7 out of 12 interviewees because through supporting each other the relationship may grow. Interviewee 3 and 11 emphasized that it is essential for them to have “*an open exchange with the supplier which means that the supplier also provides access to the figures and how calculations are done*”. Gaining insights into the figures and calculations of the supplier is a requirement for the interviewees although this insight demands substantial information from the supplier because on every issue, negotiations may take place. For allowing insights into the calculation, the level of trust may be high since those calculations represent confidential information. Besides, this open exchange includes transparently communicating problems ahead of time so that actions could be taken. Hence, the relational social capital is expected to be high since interviewees require open communication, transparent behavior, mutual support and sharing of sensitive and important resources between partners which can help companies in finding creative solutions to arising problems (Ozanne et al., 2022,p.118). The development of technological competencies in order to correspond to the latest standards was named as well, as interviewee 11 mentioned “*we want*

to benefit from the supplier’s competencies in IT” and interviewee 8 “suppliers working in a partnership bring technological competencies with them which are useful for our relationship”. Here structural social capital benefits are derived throughout the network of the supply chain. Bringing in resources such as IT align with the literature associated to IT may ultimately contribute to supply chain resilience and also strengthen the relationship since both parties dedicate efforts to IT (Das et al., 2022, p.251-252).

Proposition 1 – related to the structural dimension of SC (internal and external): Through defining criteria and the respective careful selection of potential partnerships, a buyer may develop a mutual exchange relationship fostering interconnectedness where both parties benefit from and thus achieving supply chain resilience.

Proposition 2 related to the relational dimension of SC (internal and external): Through fostering open communication, transparent behavior, mutual support as well as the information exchange between the buyer and supplier throughout the network, supply chain resilience may be fostered.

5.4 On the cognitive dimension, commitment towards the achievement of common goals and values between supplier and buyer may foster the business relationship

The theme value & visions deals with whether organizations share common values & visions with their suppliers. The second theme values & visions is a result of the interviews derived from the process of the coding groups and this theme emerged out of the coding groups. Table 6 below shows the results for this theme. Two sub-themes emerged out of the theme, those are resource protection-related goals and strategic growth goals. This theme covers the cognitive dimension of social capital as shared values & visions contribute to a common approach when facing turbulent situations and strengthen the relationship and contribute to supply chain resilience. Besides, this theme relates to the external social capital dimension proximity.

TABLE 6 VALUES & VISIONS

Values & Visions	1	2	3	4	5	6	7	8	9	10	11	12	totals	
1) Resource protection-related goals														
ESG goals	x	x	x	x	x	x	x	x	x	x	x	x	12	
shared sustainability goals	x	x	x	x	x	x	x	x	x	x	x	x	12	
corporate social responsibility												x	1	
Supply Chain due diligence act	x	x		x	x	x	x	x	x	x	x	x	11	
values & visions shared dependent upon company goals				x	x	x	x	x	x	x	x	x	9	
2) strategic growth goals														
sharing goals for technological advancements												x	x	2

sharing similar goals/values	x		x	x	x	x				x	x	x	8
supplier relationship management tool	x	x	x	x	x	x	x	x	x	x	x	x	12
vendor managed inventory				x	x	x	x	x	x	x	x	x	9

Through sharing similar values & visions, incongruencies in goals are avoided, a common strategy is followed, better alignment between buyer and seller, clarity between buyer and supplier on how to deal with certain issues/topics, everyone knows what to do, therefore leading to enhanced resilience. Through the alignment of values, issues may be approached together, potential issues arising may be discovered quickly and future problems may be prevented through actively searching for a solution early on.

Regarding the first sub-theme resource protection-related goals, most interviewees share some goals with their suppliers. A focus of all of the interviewees is on the sustainability side so protecting resources involving ESG topics, supply chain due diligence act as well as corporate responsibility. Especially ESG topics are becoming increasingly important as well as the supply chain due diligence act forces companies to take initiative and also to change processes accordingly. In particular, Co2 reduction, waste reduction, the achievement of sustainable goals are put on the agenda of the respective companies. „*Although most procurement managers realize that changes are about to come, the enforcement is still lacking*” according to interviewee 6. Despite a focus of the supplier on keeping up with sustainability topics, “*the supplier could benefit from an organization which also has sustainability topics to follow but with a stronger strategy behind that through deriving the learnings from it*” according to interviewee 6. A relation between the sub-themes could be observed as when following goals related to the resource protection, strategic growth goals can also be achieved through mutual efforts.

For the second sub-theme, strategic growth goals, most of the interviewees emphasized that it is important that a supplier shares similar values than the company itself, this could be on sustainability, on development, technological advancements, or growth. For instance, respondent 2 said “*we plan to double our turnover by 2030 through our partners [...], thus, expecting partners to invest in the relationship.* Another interviewee reinforced this statement through saying that “*suppliers are expected to do reinvestments in particular in technological advancement (investments in IT technology) from which the company and the relationship will benefit from*”. Investing in IT technology is also considered important in the literature as helping supply chain partners in achieving supply chain resilience (Pimenta et al., 2022, p.651). Moreover, when it comes to doing business globally, interviewees having frequently to do with Asian countries emphasized that *clear communication is required in order to avoid any*

misunderstandings and that in these regions representatives of the company are employed in order to ensure adherence to quality standards and to be there in case of problems respectively discover potential problems. Communicating clearly as well as introducing layers of control when dealing with Asian countries could be attributed to the fact that in Asian countries communication is preferred to be indirect, avoiding losing face. Mostly, tools like a supplier management tool are used for managing the relationship with the supplier where the supplier also needs to upload the required documents especially when it comes to certificates, or the certificates related to ESG topics and the supply chain due diligence act. Despite this tool, also one interviewee mentioned that they make use of vendor managed inventory which authorizes the supplier to produce in advance for the supplier on previously agreed upon conditions. Vendor managed inventory and supplier relationship management are considered as strategic growth goals as both contribute to gaining advantages throughout the network of the supplier. Here a link towards the structural social capital dimension can be identified since through sharing issues, benefits may be derived through the network of the suppliers.

Proposition 3 – relation to the cognitive social capital dimension (internal and external):

Through deriving benefits out of the cognitive social capital, common goals and value definitions may foster the relationship as a result of the commitment and the collaboration between the buyer and the supplier, thus creating resilience

5.5 Linking internal and external social capital by means of internal and external stakeholder management are enablers for achieving resilience

Another theme is stakeholder management, which includes internal as well as external management of stakeholders, for instance, employees internally, suppliers, or other external resources like advisory agencies. Table 7 illustrates the results of the category stakeholder management. This theme represents a link between external and internal social capital as both types are reunited in this theme.

TABLE 7 STAKEHOLDER MANAGEMENT

stakeholder management	1	2	3	4	5	6	7	8	9	10	11	12	totals
1) cross-functional management													
internal collaboration	x	x	x	x	x	x	x	x	x	x	x	x	12
internal and external collaboration		x			x		x	x		x	x	x	7
key stakeholder meeting	x	x	x	x	x	x	x	x	x	x	x	x	12
2) external and internal stakeholder management													
internal and external stakeholder alignment		x					x			x	x	x	5
spread information through company		x		x			x		x	x	x	x	7
talking openly about negative topics	x	x	x				x	x		x	x	x	8

involvement of head of procurement		x									x	x	3
deep internal connectedness		x		x	x				x	x	x	x	7

For the first sub-theme cross-functional management, the majority of the interviewees considered it important to foster internal collaboration on topics for instance when someone discovers an issue that could potentially cause a problem, then as a result seeking short ways of communication internally in order to bring the topic onto everyone’s agenda. In this regard, interviewee 8 pointed out that *“within their organization communication and collaboration are encouraged through open rooms as well as through possibilities for communicating with other employees on the floor through coffee stands/discussion points”*. Interviewee 10 suggested to *“build up a system where internal collaboration is fostered through cross-functional collaboration and regular meetings [...] “ in order to better create more supply chain resilience. When within the organization, the information exchange between the different departments is working well and regular exchanges take place, misunderstandings may be avoided, and topics are discussed early on and this reduces uncertainty and contributes to resilience. The different departments know about issues early on and may aid in resolving issues.*

For the second sub-theme, internal and external stakeholder management, interviewee 11 pointed out that within their organization, *“the procurement department is deeply connected to other departments such as development, production as well as sales and product management so they know what happens within the organization on the one hand and on the other hand they are connected to their respective market”*. Nevertheless, communication or advice seeking through external resources is considered important as interviewee 8 mentioned, *“that external information is important [...] contributing to internal resources”*. Here interviewees mentioned that it is quite common to exchange information within the industry, this also involves talking with competitors and also to seek the advice of agencies or other experts within the field of business. Interviewee 6 extended this description by mentioning that internal alignments are necessary and then an organization could start to align with external parties. Aligning internally as well as throughout the network fosters collaboration between the parties and provides the information exchange necessary to derive the benefits out of relational social capital, therefore contributing to supply chain resilience. Literature also states through better collaboration, there are shorter ways of communication and misunderstandings will be avoided. The relationship will be fostered through better collaboration when sharing information throughout the network, thus reducing uncertainty and contributing to supply chain resilience (Christopher & Peck, 2004, p.9).

Here an interplay between the internal and external social capital dimension can be observed since through having internal structures fostering collaboration, the foundation for collaborating with external parties is laid in order to derive benefits also in terms of information exchange through the network and thus contributing to supplier relationship management therefore the following propositions are formulated:

Proposition 4: relating to the internal as well as external social capital dimension: Internal and external stakeholder alignment is essential for supplier relationship management as it connects the internal and external social capital dimension.

Proposition 5: relating to the internal social capital dimension: In regard to relational social capital, internal communication and collaboration helps in getting through difficult times.

5.6 Coping with turbulent situations

This complementary theme deals with strategies for coping with turbulent situations respectively what companies did in the past. Table 8 shows the results of the interviewees on this section.

TABLE 8 COPING WITH TURBULENT SITUATIONS

coping with turbulent situations	1	2	3	4	5	6	7	8	9	10	11	12	totals
1) strategies													
building up stock				x					x		x	x	4
increasing levels ordered				x					x			x	3
organizing a second or third source for strategic categories	x	x	x	x	x	x	x	x	x	x	x	x	12
verticalisation strategies								x			x		2
contractual adaptations								x	x				2
reducing complexity of products								x				x	2
internal collaboration	x	x	x	x	x	x	x	x	x	x	x	x	12
2) processes & policies													
preliminary contracts		x									x		2
early warning systems		x				x			x	x			4
formal processes		x				x	x						3
3) capabilities													
intercultural skills			x			x							2
interpersonal skills	x												1
visibility	x												1
adaptability	x	x	x				x	x			x	x	7
flexibility	x	x	x	x	x	x	x	x	x	x	x	x	12
robustness	x	x	x	x	x	x	x	x	x	x	x	x	12

Regarding the sub-theme strategies, all of the interviewees agree that to best encounter a turbulent situation is to be prepared, this is achieved through qualifying a second or third source for the strategic categories. In the theory, there is a distinction between proactive and reactive resilience strategies, most of the interviewees mentioned in this context that they combine

proactive and reactive resilience strategies, so again there could be observed an alignment between the theory and the interviewees. This strategy is followed in order to prevent delays and inabilities to deliver. In relation to social capital theory, investing in setting up stable relationships with the suppliers which is long-term and characterized through trust and commitment towards achieving common goals represents a proactive resilience strategy. Furthermore, Alvim et al. (2022, p.86) also suggests to make use of a capacity strategy where suppliers are qualified as well to have built up excess inventory as a preparation for a scarcity or delay as well as ordering more to strengthen robustness and redundancy. Interviewee 11 provided the example and mentioned that they have a high depth of production, so they just had to buy some components and also have relatively “*full supply chains*” so that they were able to accommodate the covid-19 pandemic effects for half a year, then they were also dependent upon the allocation of the electronical suppliers who did not deliver as promised. Regarding the reactive resilience strategies, it could be observed that arising issues are solved in collaboration with the supplier. As the collaboration with the supplier is characterized through trust and reciprocity, the elements of social capital theory are contributing towards solving issues, thus contributing to supply chain resilience.

A more short to middle-term strategy was to reduce the complexity of the products in order to reduce also the steps within the supply chain in order to minimize the risks associated with supply and to disseminate the effects of the crisis.

Another more long-term focused strategy is according to interviewee 8 to *think about verticalization strategies for instance through producing components within the company but then “you have the complete procedure for yourself and you have to take care that everything works and also you need to ensure that the necessary competencies for producing successfully inhouse are there”*. Producing inhouse reduces in the long run uncertainties associated with the supply risk as dependencies decrease. However, producing inhouse is also a time-intensive process and is often associated with substantial costs. Within the literature, verticalization strategies are also suggested in order to encounter disruptions and to contribute resilience (Stek et al., 2022).

In terms of managing turbulent situations like the covid-19 pandemic, communicating on a frequent basis is a key with both the supplier as well as internally. The point of action when it comes to a turbulent situation is depending upon the seriousness of the situation and if it is of strategic importance to the company. Additionally, it depends on the company itself when they decide to act and when they will just closely monitor what happens then. Some of the

interviewees mentioned that they instantly take action whereas others prefer to closely monitor the situation. Here a link can be made to the dimensions of social capital since through well-established partnerships, issues arising will be shared earlier on and solutions can be found. In a relationship characterized through trust and reciprocity, evolving issues may be shared earlier and when disruptions occur, benefits may be drawn out of the network.

Concerning the sub-theme, processes & policies, processes require *cross-functional collaboration since alignment between departments is needed in order to establish processes* according to interviewee 7. This is also in alignment with the other interviewees who mentioned that for processes to work, cross-functional collaboration needs to be fostered.

Regarding the sub-theme capabilities developed in the last years, involved the development of interpersonal skills, communication skills, cross-functional collaboration as well as finding creative solutions for potential problems. Interviewee 10 added that it is “*always important to combine people with the skills of machines in order to generate the best outcome*”. All of the interviewees agreed that everything they learned in the past helped in the future development within the procurement field. Most of the interviewees agreed that their field of business is a people business and that it is necessary to develop good skills in that field in order to be able to reach the optimum with the supplier. The last years taught most of the interviewees to be more relaxed in difficult situations and to be flexible and communicating with the suppliers a lot in order to solve a problem. Moreover, intercultural capabilities are needed as some of the interviewees mentioned to do a lot of the business with the Asian countries where indirect communication is more appropriate and where the interviewees are required to communicate more clearly in order to avoid misunderstandings or create wrong expectations. Additionally, layers of control are introduced in Asian countries in order to receive information regarding problems early on.

Proposition 6: Combining proactive and reactive resilience strategies in order to cope with turbulent situations.

5.7 Resilience creation in turbulent times

The complementary theme resilience creation comprises the main elements which are important for achieving supply chain resilience. Table 9 below illustrates the main findings for this category.

TABLE 9 RESILIENCE CREATION

resilience creation	1	2	3	4	5	6	7	8	9	10	11	12	totals
1) supplier-buyer relationship													
active exchange on potential problems	x	x	x	x	x	x	x	x	x	x	x	x	12
foster information exchange		x		x		x	x		x	x	x	x	9
helping with problems	x	x	x	x	x	x	x	x	x	x	x	x	12
transparency within supply chain			x			x		x		x	x	x	6
combining proactive and reactive resilience approaches	x	x	x	x	x	x	x	x	x	x	x	x	12
collaboration with supplier	x	x	x	x	x	x	x	x	x	x	x	x	12
3) internal stakeholder management													
cross-functional collaboration	x	x	x	x	x	x	x	x	x	x	x	x	12
cross-functional meetings	x	x	x	x	x	x	x	x	x	x	x	x	12
top management involvement	x	x	x	x	x	x	x	x		x	x	x	11
4) external stakeholder management													
prioritization	x	x	x	x	x	x	x	x	x	x	x	x	12
openness to external sources of information						x	x	x		x			4
good planning	x										x		2
5) processes & tools													
introduction of governance						x	x			x	x	x	5
supplier relationship management platform	x	x	x	x	x	x	x	x	x	x	x	x	12

Overall, factors found to be fostering resilience creation are a good buyer-supplier relationship, transparent and open communication, sharing common values, collaboration, internal alignment and external alignment, internal communication and collaboration. Proactive and reactive resilience approaches are combined according to the interviewees since not all crisis situations could be avoided beforehand. Then the supply chain of a company should accommodate disruptions. Then resiliency could be created through implementing strategies so that an organization develops robustness and recovers from the crisis quickly. Interviewee 6 enhanced this statement by adding that is *important to create transparency within the supply chain through digital tools and to understand the entire supply chain and then develop a risk management based on that knowledge*. Interviewee 12 stipulates that *internal as well as external communication are also considered important factors in achieving resilience so that potential delivery problems or other issues are reported early on and could be dealt with. In addition to communication, a level of flexibility is also necessary in order to react to potential problems quickly*.

Internally all of the interviewees agree that cross-functional collaboration is an important issue in order to foster supply chain resilience. This also includes having regular cross-functional meetings within the organizations, as most interviewees mentioned there are cross-functional meeting with the quality management department, product management, as well as logistics

department to discuss current issues, whenever it is necessary other departments may be involved as well. Another factor considered important is top management involvement in order to speed up issues, to enforce issues as well as to put an emphasis on it. Externally, it is important to prioritize on issues with the suppliers depending on their importance and urgency. Apart from that, some interviewees indicated that it is important to be open to external information for instance through agencies, competitors as well as other media. Additionally, governance processes may be introduced in order to facilitate the flow of information within the organization as well.

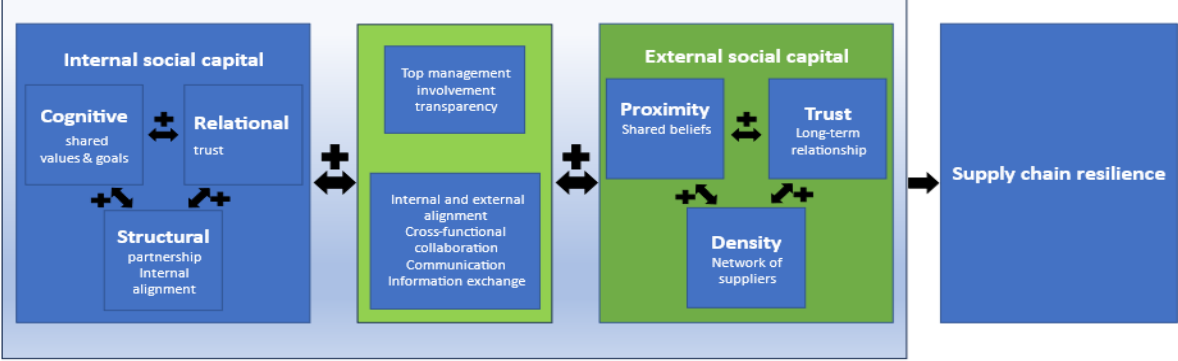
To summarize, through long-lasting partnerships with strategic suppliers, turbulent times can be overcome through working together on common goals and helping each other through difficult times. On the structural social capital dimension, benefits can be derived throughout the network and the respective collaboration whereas on the cognitive dimension, a shared course of action through goals and values contributes to supply chain resilience. Characteristics of the relationship such as trust and reciprocity exemplify the relational dimension, the relationship builds upon mutual obligations where through collaboration, common goals are achieved. In turbulent times, the partners help each other in order to be able to continue business operations.

6.0 Discussion of the main findings in relation to the research model, theoretical contributions as well as practical contributions

6.1 Description of the model

Based on the recent developments such as the COVID-19 pandemic, the Ukraine war or other disruptions causing delays in the supply chain, the core research problem was to find whether social capital contributes to supply chain resilience in turbulent times. Therefore, the following research question has been addressed: *How does social capital affect resilience of firms in turbulent times?* This research question has been divided into the respective dimensions of social capital theory, the structural dimension, the cognitive as well as the relational dimension as well as the dimensions of external social capital, trust, density, and proximity were explored as well. As a conclusion the theoretical model below has been derived based on the interviews and theory. Next, the propositions identified based on the interviews will be elaborated according to the theoretical model which is based on the interviews as well as the theory Figure 4.

FIGURE 4 EXTENDED MODEL BASED ON THE INTERVIEWS AND THEORY



In general, the model seems to be in line with what was previously identified in the literature and the interviews. Important to note is that the dimensions could not be considered isolated from each other since the dimensions are connected to each other (Nahapiet & Ghoshal, 1998, p.244). This is also applicable for internal and external social capital. The propositions are providing further explanations to the research framework in particular for social capital theory and its respective dimension both internally as well as externally. As the model shows the internal social capital are influencing each other positively for instance structural social capital is associated with relational capital e.g. having a partnership characterized through trust. Additionally, cognitive social capital is related to both structural social capital and relational capital. Through the careful selection of partnerships, a mutual exchange relationship could be developed which in turn contributes to supply chain resilience, so interviewees select their partners carefully and invest their time and financial resources in fostering the relationship. Benefits of this partnership are derived through the network relationship between the buyer and the supplier. As an example, the buyer will in turbulent times benefit from this long-term partnership. In this partnership, open communication and transparent behavior, mutual support as well as information exchange throughout the network is fostered, contributing to resilience. Also, common goals and values are identified to be positively contributing to supply chain resilience since through committing towards achieving common goals and in a turbulent situation a partner is more likely to help out since common goals are followed. Then a link between the dimensions of social capital is identified, the internal and external alignment, through aligning internally as well as cross-functionally, organizations could extend their collaboration as well as communication practices positively and this contributes to resilience. When the collaboration between the partner is functioning well, information is shared early and arising issues could be dealt with, thus contributing positively to supply chain resilience. Involving the top management in situations where pressure as well as authority is needed in

order to push is also contributing to supply chain resilience. Top management also fosters the collaboration through taking care of establishing a culture within the organization.

It turned out that partnerships are carefully selected and not considered for any kind of supplier leading to the first proposition were based on this proposition the partnership aspect was added to the model. Then the proposition related to open communication, transparent behavior and information exchange was formulated which was added to the model as well. During the interviews, a link between internal and external social capital through cross-functional collaboration has been discovered. This link in turn fosters collaboration externally, as benefits are derived throughout the network structure helping through turbulent times. Through internal communication and collaboration throughout the organization on topics, a problem may be discovered earlier on and when the right persons are involved early on issues can be solved quicker was added to the model. In a last step, the combined efforts of both proactive and reactive resilience strategies in order to encounter turbulent times was found to be contributing to supply chain resilience.

6.2 Research question in relation to propositions

The propositions have been derived based on the interviews with the different interviewees as well as the literature. Table 10 shows how the research questions relate to the propositions through providing a synthesis. A more detailed description could be found in Appendix B Propositions in relation to research questions.

TABLE 10 SYNTHESIS TABLE

Research question	Key findings	Proposition
Central RQ: How does social capital affect supply chain resilience of firms in turbulent times?	<ul style="list-style-type: none"> • Long-term focused, strategic partnerships characterized through mutual trust and exchange are helping companies through turbulent times • Strategic importance of supplier to become a partner • Higher amount of trust and exchange => positive influence on supply chain resilience • Suppliers ‘willingness to help in turbulent times when involved in a partnership • Dense network with good connections within the industry as well as throughout the supply chain with frequent information exchange contributes to supply chain resilience (external SC) 	Proposition 1: Through defining criteria and the respective careful selection of potential partnerships, a buyer may develop a mutual exchange relationship fostering interconnectedness where both parties benefit from and thus achieving supply chain resilience

<p>How do the dimensions of social capital contribute to supply chain resilience strategies of a firm in turbulent times?</p>	<ul style="list-style-type: none"> • Transparent and open communication with an information exchange fosters supply chain resilience through high relational social capital • Establishing common goals and values, avoiding misunderstandings, better collaboration through common goals • Higher willingness to help in turbulent times • Defining common goals to accomplish ESG goals together by helping each other • Aligning internal stakeholders by cross-functional collaboration • Benefiting from external parties through receiving information from companies located within the same industry or agencies • Receiving information ahead of time could help in avoiding future problems • Setting up good internal structures • Foster communication and collaboration • Top management involvement to speed up issues 	<p>Proposition 2: Through fostering open communication, transparent behavior, mutual support as well as the information exchange between the buyer and supplier throughout the network, supply chain resilience may be fostered</p> <p>Proposition 3: Through deriving benefits out of the cognitive social capital, common goals and value definitions may foster the relationship as a result of the commitment and the collaboration between the buyer and the supplier, thus creating resilience</p> <p>Proposition 4: Internal and external stakeholder alignment is essential for supplier relationship management as it connects the internal and external social capital dimension</p> <p>Proposition 5: In regard to relational social capital, internal communication and collaboration helps in getting through difficult times</p>
<p>What kind of firm capabilities enhance supply chain resilience?</p>	<ul style="list-style-type: none"> • Creating excess inventory to be able to respond to disruptions • Thinking of a second or third source as part of a proactive resilience strategy • Reducing complexity • Verticalization strategies • Getting insights into the suppliers internals 	<p>Proposition 6: Combining proactive and reactive resilience strategies in order to cope with turbulent situations and to contribute towards supply chain resilience</p>

Overall, it is essential to foster collaboration within the organization as well as throughout the supply chain to extend supply chain resilience. Through fostering strategic partnerships with key suppliers with frequent exchanges, issues may be discovered early on and firms could overcome disruptions better. Throughout the network, benefits may be derived also through the information exchange between the parties of the supply chain network. Encouraging communication throughout the network helps in discovering problems earlier, thus contributing to supply chain resilience. Involving the top management also helps in tackling issues earlier on and generating pressure to solve issues. Setting common goals and values also contributes to resilience since through the collaboration, working on accomplishing goals, in times of a crisis, parties involved help each other in achieving the goals. Combining proactive and reactive

resilience strategies through qualifying a second source, having excess stock and ultimately through deriving the benefits out of the partnership help to overcome turbulent times and contribute to supply chain resilience.

As conclusion, the central research “how does social capital affect supply chain resilience?” could be answered by showing that social capital entails benefits with it when being in a relationship with a supplier through deriving benefits out of this relationship which in turn help in performing ahead of the competition or industry. Being integrated within the network within the industry and having good contacts and information exchange throughout this network contributes to supply chain resilience when information is shared within the network. Regarding the subquestion “how do the dimensions of social capital contribute to supply chain resilience strategies in turbulent times? “, the different dimensions all contribute to supply chain resilience, often in combination to each other. Structural social capital helps in being embedded in the relationship and to derive benefits out of the network both internally as well as externally. Cognitive social capital ensures that common goals and values are shared and followed, providing guidance through difficult times. Relational social capital pertains to the characteristics of the relationship represented through trust and reciprocity as well as obligation where in a relationship with such characteristics the parties are more willing to dedicate resources to the relationship also through financial means. The second subquestion, “what kind of firm capabilities enhance supply chain resilience?”, involves creating excess inventory to respond to disruptions, qualifying a second or third source for strategic categories as well as to collaborate with the suppliers all contribute to supply chain resilience.

6.3 Theoretical contributions: Findings and literature (expectations from literature have been confirmed based on interview findings)

This research contributes to theory in several ways. Firstly, the research adds to social capital theory by exploring on the dimensions, structural, cognitive, relational as well as the dimensions of external social capital, trust, density, proximity in relation to supply chain resilience.

The first contribution is the finding that maintaining good relations with suppliers, with good communication, frequent, open discussions foster relationships and thus suppliers offer solutions to problems more probable when the relationship is like a partnership, based on trust, with opportunities for mutual development. Most of the interviewed participants mentioned that it is important to *have a relationship which is characterized through trust with growth opportunities for both parties*. This type of relationship is applicable for strategic suppliers of

the company since they cannot invest the same kind of resources into a category C supplier relationship for instance as it would *be too time-consuming, and resources need to be deployed to strategic issues first*. In the literature, relationships are described as being based upon mutual exchange require high levels of trust as well as long-term orientation of both business partners (Johnson, 2013, p.325). Therefore, the results of the interview confirm what has been discovered in the literature.

Furthermore, the second contribution is that internal stakeholders which includes the employees working within the company should work rather cross-functionally organized to best cope with issues arising, then regular meetings with the department as well as throughout other departments are suggested (Jüttner, 2011, p.248) to enhance supply chain resilience. Collaboration within the different departments should be fostered. Additionally, internal and external collaboration (external collaboration involving working with the suppliers or within the industry) through regular exchanges on the latest developments may contribute to supply chain resilience.

The third contribution involves that formulating common goals fosters the collaboration between the buyer and supplier and can help in achieving goals even in difficult times. Common goals provide a connection between the buyer and the supplier and guide the collaboration especially in turbulent times. Now with a special focus on sustainability goals or specifically the ESG goals, the supply chain due diligence act, companies are forced to dive deeper into their respective business relationship. The European Commission forces organizations to rethink their procurement and follow more sustainable practices, the German supply chain due diligence act also obliges organization to verify within their supply chain that standards are kept (Commission, 2023). Additionally, suppliers need to provide information on their respective supply chains in order to ensure sustainable behavior. All of the interviewees stated that they set up a system where they could digitally see certificates of suppliers and through which communication is processed and that time and resources are dedicated to the successful implementation of such a system. The next section focuses on the practical contributions of this research.

6.4 Practical contributions

Besides, the theoretical contributions, there are also practical contributions obtained through the research. Overall, the thesis shows supply chain managers how important it is to establish a partnership with an important supplier in accordance with their categorization. Additionally, investing and nurturing the relationship well is considered important. Especially for ESG

related goals, it is important to establish common goals so that both could benefit from the collaboration.

This research contributes to practice in several ways. Firstly, organizations could learn that communication both internally as well as externally is important for managing turbulent situations. In turbulent times, action may be immediately necessary, hence direct communication is required to solve problems quickly. Essential for fostering and enforcing the communication within the organization is the top management as how the top management deals with internal communication provides the direction for all of the other departments within the organization. The communication to internal stakeholders is important and needs to be encouraged through top management as well as engrained in the company culture/mission/vision. Organizations need to foster a culture where communication is handled openly as well as transparently and collaboration between the different departments within the organization is encouraged. The internal communication could be fostered through creating regular meetings, through designing open floors where new conversations could be easily started. For the communication to the members of the supply chain it is important to follow open and transparent ways of communication, especially in a partnership where the trust and reciprocity is already high, benefits throughout the network will be derived. Through the relational aspect, obligations between the partners within the supply chain network are entered and when the partners commit to a goal, the partners mutually work towards achieving the goal. Also when there are problems, through the information exchange within the network one receives the information ahead of time and could react earlier and this could also result in an advantage in relation to the competitors.

Apart from the internal communication, it is important to maintain cross-functional collaboration between the different departments within the organization. An organization may take care of regular meetings/cross-functional discussions to solve issues occurring quickly. The cross-functional collaboration may also contribute to a better supply chain management because when the frequency of discussions is higher issues might be discovered earlier onwards, and possible solutions could be created through internal means.

Besides, good relations to the supplier and the respective investment in the relationship prove beneficial for ensuring business continuity in most situations. Being prepared to a certain degree can help in continuing operations or help in being able to react better. The combination of proactive and reactive strategies towards supply chain resilience turned out to be an approach to encounter disruptions, this could include building up stock to an extent, qualifying a second

or third source for a critical component or region. In the middle to long term horizon, verticalization strategies could be taken into consideration when it is possible. Introducing formal processes for dealing with uncertain turbulent times can help in achieving more supply chain resilience.

7.0 Limitations and Future research directions

One of the main limitations is that the number of interviewees is not that large, therefore it could be that these results are not generalizable to a larger population although the variety of participants within the data set is quite various.

Besides, the study was of a qualitative nature therefore the data was not tested quantitatively so findings may be rather subjective as interpretations of the data is not done in a predefined way or standard. Another researcher may come up with different results due to another way of interpreting the data. Furthermore, the effects between the variables were not quantitatively tested so possible measurable interaction effects are just qualitatively verified.

The variety within the data set is quite large as interviewees from different industries ranging from consultants towards food industry were questioned, thus, making it difficult to derive findings for the respective industries due to the variation within the data set. Likewise, the results may be applicable for those specific industries but not for the public procurement sector as the requirements for this sector may be different and different strategies are selected in order to enhance supply chain resilience. Next to the variation, qualitative research always brings some subjectivity into the research itself. Therefore, extending the research through other methods such as focus groups or questionnaires may provide additional input to the research or methods could even be combined through mixed methods research by first doing a quantitative study and then using the results as basis for qualitative research. Future crisis situations will vary in their scope, length and impact but when having laid a foundation for what is suitable in terms of a resilience strategy towards crisis, the overall impact may be decreased. Therefore, the findings could also pertain to other future crises.

In another research project, it might be a good idea to start a quantitative study on a larger scale over a longer period of time in order to reach a better data saturation. Then another sample could be chosen for instance with a focus on the Asian regions and maybe also including the cultural variables through Hofstede's (Hofstede & Hofstede, 2005, p.243) dimensions in order to explore on differences between countries. Habel et al. (2020, p.195) already did a research on industrial purchasing during the pandemic including the dimensions but this study could be

extended through a longitudinal study over a longer period of time. Furthermore, other types of risks such as financial risk or another type of a disruption such as natural hazards could be selected to be included in the study. Besides, a variable which is treated only on the surface are how technologies aid in the resilience creation and how modern systems could help in managing the risk better could be added to the research model (Munir & Jajja Shakeel Sadiq, 2022, p.1597). Moreover, selecting a specific industry as focus might also provide more insights into this topic. Then additional variables may be added to the research that are industry-specific like in the food industry the perishability of goods and the adherence to industry standards such as HACCP or ISO standards.

Then aspects such as the introduction of governance processes may be researched as it was suggested during the interviews that governance brings responsibilities with it which could be further considered within the risk management field (Tsolakis et al., 2023, p.165).

References

- Adler, P. S., & Kwon, S. (2002). Social capital: Prospects for a new concept *The Academy of Management Review* 27(1), 17-40. doi:<https://doi.org/10.2307/4134367>
- Alexander, A., Blome, C., Schleper, M. C., & Roscoe, S. (2022). "Managing the "new normal": the future of operations and supply chain management in unprecedented times ". *International Journal of Operations & Production Management*, 42(8), 1061-1076. doi:<https://doi.org/10.1108/IJOPM-06-2022-0367>
- Alvim, S. L. d. S., De Farias, I. V., Frazzon, E. M., & De Simas, D. (2022). *Supply chain resilience in turbulent times: conceptual model and real-world case*.
- Ambulkar, S., Blackhurst, J., & Grawe, S. (2015). Firm's resilience to supply chain disruptions: Scale development and empirical examination. *Journal of Operations Management*, 33-34, 111-122. doi:<http://dx.doi.org/10.1016/j.jom.2014.11.002>
- Ansari, S., Munir, K., & Gregg, T. (2012). Impact at the 'bottom of the pyramid': The role of social capital in capability development and community empowerment *Journal of Management Studies*, 49(4). doi:10.1111/j.1467-6486.
- Asamoah, D., Agyei-Owusu, B., & Ashun, E. (2020). Social network relationship, supply chain resilience and customer-oriented performance of small and medium enterprises in a developing economy. *Benchmarking: An international Journal*, 27(5), 1793-1813. doi:<https://doi.org/10.1108/BIJ-08-2019-0374>
- Aslam, H., Syed Abbas, T., Blome, K., Ramish, A., & Ayaz, K. (2022). The multifaceted role of social capital for achieving organizational ambidexterity and supply chain resilience. *IEEE Transactions on Engineering Management*, 1-14. doi:10.1109/TEM.2022.3174069
- Ates, A., & Bititci, U. (2011). Change process: A key enabler for building resilient SMEs. *International Journal of Production Research* 49(18), 5601-5618. doi:<https://doi.org/10.1080/00207543.2011.563825>
- Attinasi, M. G., De Stefani, R., Frohm, E., Gunnella, V., Koester, G., Melemenidis, A., & Tóth, M. (2021). The semiconductor shortage and its implication for euro area trade, production and prices. *ECB Bulletin*https://www.ecb.europa.eu/press/economic-bulletin/focus/2021/html/ecb.ebbox202104_06~780de2a8fb.en.html, 4.
- Belhadi, A., Kamble, S., Jabbour, C. J., Gunasekaran, A., Ndubisi, N. O., & Venkatesh, M. (2021). Manufacturing and service supply chain resilience to the covid-19 outbreak: Lessons learned

- from the automobile and airline industries *Technological Forecasting and Change* 163. doi:<https://doi.org/10.1016/j.techfore.2020.120447>
- Bier, T., Lange, A., & Glock, C. H. (2020). Methods for mitigating disruptions in complex supply chain structures: A systematic literature review. *International Journal of Production Research*, 58(6), 1835-1856. doi:<https://doi.org/10.1080/00207543.2019.1687954>
- Bogner, A., Littig, B., & Menz, W. (2009). *Interviewing Experts* Springer
- Bohnenkamp, T. (2018). *Global sourcing or deep localization: A social capital perspective* (Doctoral thesis). University of Twente
- Bourdieu, P. (1985). The forms of capital *Readings in Economic Sociology*, 280-291. doi:<https://doi.org/10.1002/9780470755679.ch15>
- Brandon-Jones, E., Squire, B., Autry, C. W., & Petersen, K. J. (2014). A contingent resource-based perspective of supply chain resilience and robustness *Journal of Supply Chain Management* 50(3), 55-73. doi: <https://doi.org/10.1111/jscm.12050>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101. doi:10.1191/1478088706qp063oa
- Bryman, A., & Bell, E. (2007). *Business research methods* Oxford University Press.
- Burkhart, M. (2020). *Impacts of natural disasters on supply chain performance*. (Doctor). Karlsruher Institut für Technologie,
- Burt, R. S., & Soda, G. (2021). Network capabilities: Brokerage as a bridge between network theory and the resource-based view of the firm. *Journal of Management* 47(7), 1698-1719. doi:<https://doi.org/10.1177/0149206320988764>
- Cai, W., Polzin, F., & Stam, E. (2021). Crowdfunding and social capital: A systematic review using a dynamic perspective. *Journal of Technological Forecasting and Change*, 162. doi:<https://doi.org/10.1016/j.techfore.2020.120412>
- Capaldo, A. (2007). Network structure and innovation: The leveraging of a dual network as a distinctive relational capability *Strategic Management Journal* 28, 585-608. doi:DOI: 10.1002/smj.621
- Choudhury, N. A., Kim, S., & Ramkumar, M. (2022). Effects of supply chain disruptions on due to covid-19 on shareholder value *International Journal of Operations & Production Management*, 42(13), 482-505. doi:10.1108/IJOPM-03-2022-0173
- Chowdhury, M., Prayag, G., Orchiston, C., & Spector, S. (2018). Postdisaster Social Capital, Adaptive Resilience and Business Performance of Tourism Organizations in Christchurch, New Zealand. *Journal of Travel Research*, 58(7), 1209-1226. doi:10.1177/0047287518794319
- Chowdhury, M. M. H., Islam, M. T., Ali, I., & Quaddus, M. (2023). The role of social capital, resilience, and network complexity in attaining supply chain sustainability *Business Strategy and the Environment* 33, 2621-2639. doi:<https://doi.org/10.1002/bse.3613>
- Christopher, M., & Peck, H. (2004). Building the resilient supply chain *The International Journal of Logistics Management* 15(2), 1-14. doi:<https://doi.org/10.1108/09574090410700275>
- Cisneros, L., Deschamps, B., Chirita, G. M., & Geindre, S. (2022). Successful family firm succession: Transferring external social capital to a shared-leadership team of siblings. *Journal of Family Business Strategy*, 13(3). doi:<https://doi.org/10.1016/j.jfbs.2021.100467>
- Claridge, T. (2018). *Dimensions of social capital - structural, cognitive and relational* Retrieved from <https://www.socialcapitalresearch.com/wp-content/uploads/2018/01/Dimensions-of-Social-Capital.pdf>
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology* 94, S95-S210. doi:<https://doi.org/10.1086/228943>
- Coleman, J. S. (1990). *Foundations of social theory*: Harvard University Press.
- Commission, E. (2023). Corporate sustainability due diligence Retrieved from https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en#what-are-the-next-steps

- Conz, E., & Magnani, G. (2020). A dynamic perspective on the resilience of firms: A systematic literature review and a framework for future research *European Management Journal* 38(3), 400-412. doi: <https://doi.org/10.1016/j.emj.2019.12.004>
- Das, D., Datta, A., Kumar, P., Kazancoglu, Y., & Ram, M. (2022). Building supply chain resilience in the era of covid-19: An AHP-DEMATEL approach. *Operations Management Research*, 15, 249-267. doi:<https://doi.org/10.1007/s12063-021-00200-4>
- Duodu, B., & Rowlinson, S. (2019). The effect of social capital on exploratory and exploitative innovation. *European Journal of Innovation Management* 23(4), 649-674. doi:<https://doi.org/10.1108/ejim-08-2018-0178>
- Duong, L., Nguyen Khan., & Chong, J. (2020). Supply chain collaboration in the presence of disruptions: A literature review. *International Journal of Production Research*, 58(11), 3488-3507. doi:<https://doi.org/10.1080/00207543.2020.1712491>
- Durach, C. F. (2018). A matter of perspective - the role of interpersonal relationships in supply chain risk management *International Journal of Operations & Productions Management* 38(10), 1866-1887. doi:<https://doi.org/10.1108/ijopm-03-2017-0157>
- Eggert, J., & Hartmann, J. (2023). Sustainable supply chain management - a key to resilience in the global pandemic. *Supply Chain Management: An International Journal*, 28(3), 486-507. doi:<http://dx.doi.org/10.1108/SCM-10-2021-0463>
- Erboz, G., Abbas, H., & Nosratabadi, S. (2023). Investigating supply chain research trends and covid-19 : a bibliometric analysis *Management Research Review*, 46(3), 413-436. doi:<http://dx.doi.org/10.1108/MRR-05-2021-0408>
- Ernst & Young advisor Hamish, M.-S. (2022). *2022 Global EY Chief Procurement Officer Survey Procurement in a post-pandemic world*. Retrieved from https://assets.ey.com/content/dam/ey-sites/ey-com/en_uk/topics/supply-chain/ey-2022-global-ey-chief-procurement-officer-survey.pdf
- Fan, Y., & Stevenson, M. (2019). Non-linear effects of relational capital on supply-side resilience - The moderating role of boundary spanners' personal time *International Journal of Operations & Production Management*, 30(9/10), 1063-1075. doi:DOI 10.1108/IJOPM-09-2018-0530
- Faruquee, M., Paulraj, A., & Irawan, C. A. (2023). A typology of supply chain resilience: recognising the multi-capability nature of proactive and reactive contexts. *Production Planning & Control*, 1-21. doi:<https://doi.org/10.1080/09537287.2023.2202151>
- Filho, L. W., Fedoruk, M., Paulino Pires Eustachio, J., Babir, J., Lisovska, T., Lingos, A., & Baars, C. (2023). How the war in the Ukraine affects food security *Foods* 12, 1-21. doi:<https://doi.org/10.3390/foods12213996>
- Fortune. (2020). *94% of the Fortune 1000 are seeing coronavirus supply chain disruptions* Retrieved from <https://fortune.com/2020/02/21/fortune-1000-coronavirus-china-supply-chain-impact/>
- Forum, W. E. (2013). Re: Global risks
- Gölgeci, I., & Kuivalainen, O. (2020). Does social capital matter for supply chain resilience? The role of absorptive capacity and marketing-supply chain management alignment *Industrial Marketing Management* 84, 63-74. doi:<https://doi.org/10.1016/j.indmarman.2019.05.006>
- Granovetter, M. (1983). The strength of weak ties: A theory revisited *Sociological Theory*, 1. doi:<https://doi.org/10.2307/202051>
- Guba, E. G. (1981). ERIC/ECTJ Annual review paper: Criteria for assessing the trustworthiness of naturalistic inquiries *Educational Communication & Technology* 29(2), 75-91.
- Guntuka, L., Corsi, T. M., & Cantor, D. E. (2024). Recovery from plant-level supply chain disruptions: supply chain complexity and business continuity management *International Journal of Operations & Production Management*, 44(1), 1-31. doi:<https://doi.org/10.1108/IJOPM-09-2022-0611>
- Gurbuz, M. C., Yurt, O., Ozdemir, S., Sena, V., & Yu, W. (2023). Global supply chain risks and covid-19: Supply chain structure as a risk mitigation strategy for small and medium-sized enterprises. *Journal of Business Research*, 155, 1-13. doi:<https://doi.org/10.1016/j.jbusres.2022.113407>

- Habel, J., Jarotschkin, V., Schmitz, B., Eggert, A., & Plötner, O. (2020). Industrial buying during the coronavirus-pandemic: A cross-cultural study. *Industrial Marketing Management*, 88, 195-205. doi:<https://doi.org/10.1016/j.indmarman.2020.05.015>
- Handfield, R. B., Graham, G., & Burns, L. (2020). Corona virus, tariffs, trade wars and supply chain evolutionary design. *International Journal of Operations & Production Management*, 40(10), 1649-1660. doi:<https://doi.org/10.1108/IJOPM-03-2020-0171>
- Häuberer, J. (2011). *Social capital theory - Towards a methodological foundation* (Doctor).
- Hofstede, G., & Hofstede, G. J. (2005). *Cultures and Organizations - Software of the Mind*: Mc Graw Hill.
- Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual review of ecology and systematics*, 4(3), 1-23. doi:<https://doi.org/10.1146/annurev.es.04.110173.000245>
- Hosseini, S., Ivanov, D., & Dolgui, A. (2019). Review of quantitative methods for supply chain resilience analysis. *Transportation Research Part E: Logistics and Transportation Review*, 125, 285-307. doi:<https://doi.org/10.1016/j.tre.2019.03.001>
- Hugos, M. (2018). *Essentials of Supply Chain Management* (4 ed.): John Wiley & Sons Inc.
- Huma, S., Ahmed, W., & Najmi, A. (2020). Understanding the impact of supply-side decisions and practices on supply risk management *Benchmarking: An international Journal* 27(5), 1769-1792. doi:DOI 10.1108/BIJ-06-2019-0272
- Ivanov, D. (2018). Revealing interfaces of supply chain resilience and sustainability: A simulation study. *International Journal of Production Research*, 56(10), 3507-3523. doi:<https://doi.org/10.1080/00207543.2017.1343507>
- Jääskeläinen, A., Lintukangas, K., & Vos, F. G. S. (2022). The role of social capital in achieving preferred customer status with manufacturing and service suppliers. *International Journal of Operations & Production Management*, 42(13), 385-410. doi:<https://doi.org/10.1108/IJOPM-01-2022-0023>
- Jääskeläinen, A., Schiele, H., & Aarikka-Stenroos, L. (2020). Getting the best solution from a supplier – A social capital perspective. *Journal of Purchasing and Supply Management*, 26(5). doi:<https://doi.org/10.1016/j.pursup.2020.100648>
- Jackson, L. (2016). When business networks "kill" social networks: A case study in Bangladesh. *Industrial Marketing Management*, 58, 148-161. doi:<https://doi.org/10.1016/j.indmarman.2016.05.022>
- Jia, X., Chowdhury, M., Prayag, G., & Hossain Chowdhury, M. M. (2020). The role of social capital on proactive and reactive resilience of organizations post-disaster. *International Journal of Disaster Risk Reduction*, 48. doi:<https://doi.org/10.1016/j.ijdrr.2020.101614>
- Johnson, N. (2013). Exploring the role of social capital in facilitating supply chain resilience *Supply Chain Management: An International Management Journal* 18(3), 324-336. doi:<https://doi.org/10.1108/scm-06-2012-0203>
- Jüttner, U. (2011). Supply chain resilience in the global financial crisis: An empirical study. *Supply Chain Management: An International Journal*, 16(4), 246-259. doi:<https://doi.org/10.1108/13598541111139062>
- Kähkönen, A., Evangelista, P., Hallikas, J., Immonen, M., & Lintukangas, K. (2021). COVID-19 as a trigger for dynamic capability development and supply chain resilience improvement. *International Journal of Production Research*, 1-20. doi:<https://doi.org/10.1080/00207543.2021.2009588>
- Kalubanga, M., & Gudergan, S. (2022). The impact of dynamic capabilities in disrupted supply chains: The role of turbulence and dependence. *Industrial Marketing Management*, 103, 154-169. doi:<https://doi.org/10.1016/j.indmarman.2022.03.005>
- Katsaliaki, K., Galetsi, P., & Kumar, S. (2022). Supply chain disruptions and resilience: A major review and future research agenda. *Annals of Operations Research*, 319, 965-1002. doi:<https://doi.org/10.1007/s10479-020-03912-1>
- Khan, O., Huth, M., Zsidisin, G. A., & Henke, M. (2023). *Supply Chain Resilience: Reconceptualizing risk management in a post-pandemic world*

- Khodoomi, M. R., Seif, M., & Hanne, T. (2023). Effects and challenges of the covid-19 pandemic in supply chain management: a text analytics approach. *Supply Chain Forum: An International Journal* 1-18. doi:<https://doi.org/10.1080/16258312.2023.2253523>
- Lang, D. L., Tiwari, K. A., Hieu, N. H., Ha, M. N., & Gaur, J. (2023). The role of structural social capital in driving social-oriented sustainable agricultural entrepreneurship *Journal of Energy Economics*, 124. doi:<https://doi.org/10.1016/j.eneco.2023.106855>
- Lazarova, M., & Taylor, S. (2009). Boundaryless careers, social capital, and knowledge management: Implications for organizational performance *Journal of Organizational Behavior* 30, 119-139. doi:10.1002
- Lee, H. L. (2021). The new AAA supply chain *Management and Business Review* pp. 174-176.
- Li, H., Pedrielli, G., & Lee, L. H. (2017). Enhancement of supply chain resilience through inter-echelon information sharing. *Flex Serv Manufacturing Journal* 29, 260-285. doi:10.1007/s10696-016-9249-3
- Lotfi, F. H., Allahviranloo, T., Shafiee, M., & Saleh, H. (2023). *Supply Chain Performance Evaluation: Application of Data Envelopment Analysis*: Springer.
- Magableh, G. M. (2021). Supply chain and the covid-19 pandemic: A comprehensive framework. *European Management Review*, 18, 363-382. doi:0.1111/emre.12449
- Malachek, R., & Martin, M. W. (2015). Sociobiology and sociology: A new synthesis. In *International Encyclopedia of the Social & Behavioral Sciences* (pp. 892-898).
- Mc Manus, S., Seville, E., Vargo, J., & Brunson, D. (2008). Facilitated process for improving organisational resilience *Natural Hazards Review* 9(2), 81-90.
- Melnyk, S. A., Closs, D. J., Griffis, S. E., Zobel, C. W., & Macdonald, J. R. (2014). Understanding supply chain resilience. *Supply Chain Management Review* 34-42.
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., & Smith, C. D. (2011). Defining supply chain management *Journal of Business Logistics*, 22(2), 1-25. doi: <https://doi.org/10.1002/j.2158-1592.2001.tb00001.x>
- Meuser, M., & Nagel, U. (1991). *ExpertInneninterviews - vielfach erprobt, wenig bedacht: Ein Beitrag zur qualitativen Methodendiskussion*.
- Modgil, S., Singh, R. K., & Hannibal, C. (2022). Artificial intelligence for supply chain resilience: learning from Covid-19. *International Journal of Logistics Management*, 33(4), 1246-1266. doi:<https://doi.org/10.1108/IJLM-02-2021-0094>
- Munir, M., & Jajja Shakeel Sadiq, M. (2022). Capabilities for enhancing supply chain resilience and responsiveness in the COVID-19 pandemic: exploring the role of improvisation, anticipation, and data analytics capabilities. *International Journal of Operations & Production Management*, 42(10), 1576-1604. doi:<https://doi.org/10.1108/IJOPM-11-2021-0677>
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *The Academy of Management Review*, 23(2), 242-266. doi:<https://doi.org/10.5465/amr.1998.533225>
- Novak, D. C., Wu, Z., & Dooley, K. J. (2021). Whose resilience matters? Addressing issues of scale in supply chain resilience. *Journal of Business Logistics*, 42(3), 323-335. doi:<https://doi.org/10.1111/jbl.12270>
- Ozanne, L. K., Chowdhury, M., Prayag, G., & Mollenkopf, D. A. (2022). SMEs navigating COVID-19: The influence of social capital and dynamic capabilities on organizational resilience. *Journal of Purchasing and Supply Management*, 104, 116-135. doi:<https://doi.org/10.1016/j.indmarman.2022.04.009>
- Parra-Requena, G., Ruiz-Ortega, M. J., Garcia-Villaverde, P. M., & Rodrigo-Alarcón, J. (2015). The mediating role of knowledge acquisition on the relationship between external social capital and Innovativeness. *European Management Review*, 12(3), 149-169. doi:<https://doi.org/10.1111/emre.12049>

- Passarelli, M., Bongiorno, G., Beraldi, P., Musmanno, R., & Filice, L. (2023). *Supply chain management in case of producer disruptions between external (instable) forces and effective models*. Paper presented at the 4 th International Conference on Industry 4.0 and Smart Manufacturing
- Patton, M. (2014). *Qualitative research and evaluation methods* (Vol. 4): SAGE.
- Paul, S. K., Agarwal, R., Sarker, R. A., & Rahman, T. (2023). *Supply chain risk and disruption management: Latest tools, techniques and management approaches*
- Pearson, C. M., & Claire, J. A. (1998). Reframing crisis management. *Academy of Management Review*, 23(1), 59-76.
- Pettit, T. J. (2010). Ensuring supply chain resilience: Development of a conceptual framework. *Journal of Business Logistics*, 31(1), 1-21. doi:<https://doi.org/10.1002/j.2158-1592.2010.tb00125.x>
- Pettit, T. J., Croxton, K. L., & Fiksel, J. (2019). The evolution of resilience in supply chain management: A retrospective on ensuring supply chain resilience. *Journal of Business Logistics*, 40(1), 56-65. doi:doi: 10.1111/jbl.12202
- Pimenta, M. L., Cezarino, L. O., Piato, E. L., Pinto da Silva, C. H., Oliveira, B. G., & Liboni, L. B. (2022). Supply chain resilience in a covid-19 scenario: Mapping capabilities in a systemic framework. *Sustainable Production and Consumption*, 649-656. doi:<https://doi.org/10.1016/j.spc.2021.10.012>
- Ponomarov, S. Y., & Holcomb, M. C. (2009). Understanding the concept of supply chain resilience. *The International Journal of Logistics Management*, 20(1), 124-143. doi:<https://doi.org/10.1108/09574090910954873>
- Portes, A. (1998). Social Capital: Its origins and applications in modern sociology. *Annual review of sociology*, 1-24.
- Putnam, R. D. (1995). Tuning in, tuning out: The strange disappearance of social capital in America. *Political Science & Politics* 28(4), 664-683. doi:<https://doi.org/10.1017/s1049096500058856>
- Raj, A., Mukherjee, A. A., Jabbour Lopes de Sousa, A. B., & Srivastava, S. K. (2022). Supply chain management during and post-covid-19 pandemic: Mitigation strategies and practical lessons learned *Journal of Business Research*, 142, 1125-1139. doi:<https://doi.org/10.1016/j.jbusres.2022.01.037>
- Ramani, V., Ghosh, D., & Sodhi, M. S. (2022). Understanding systemic disruption from the covid-19-induced semiconductor shortage for the auto industry. *Omega*, 113. doi:<https://doi.org/10.1016/j.omega.2022.102720>
- Reyers, B., Moore, M.-L., Haider, J. L., & Schlüter, M. (2022). The contributions of resilience to reshaping sustainable development. *Nature Sustainability*, 5, 657-664. doi:10.1038/s41893-022-00889-6
- Roh, J., Tokar, T., & Swink, M. (2022). Supply chain resilience to low-/high-impact disruptions: the influence of absorptive capacity *The International Journal of Logistics Management*, 33(1), 214-238. doi:<https://doi.org/10.1108/IJLM-12-2020-0497>
- Sauer, P. C., Silva, M. E., & Schleper, M. C. (2022). Supply chains' sustainability trajectories and resilience: A learning perspective in turbulent environments. *International Journal of Operations & Production Management*, 42(8), 1109-1145. doi:<https://doi.org/10.1108/ijopm-12-2021-0759>
- Scarpin, M. R., Scarpin, J. E., Krespi Musial, N. T., & Nakamura, W. T. (2022). The implications of COVID-19: Bullwhip and ripple effects in global supply chains. *International Journal of Production Economics*. doi:<https://doi.org/10.1016/j.ijpe.2022.108523>
- Schiele, H., Ellis, S. C., Eßig, M., Henke, J. W. j., & Kull, T. J. (2015). Managing supplier satisfaction: Social capital and resource dependency frameworks *Australasian Marketing Journal* 23, 132-138.
- Scholten, K., Scott, P. S., & Fynes, B. (2014). Mitigation processes - antecedents for building supply chain resilience. *Supply Chain Management: An International Journal*, 19(2), 211-228. doi:10.1108/SCM-06-2013-0191

- Scholten, K., Van Donk, D. P., Power, D., & Braeuer, S. (2023). Contextualising resilience to critical infrastructure maintenance supply networks *Supply Chain Management: An International Journal*, 28(7), 1-14. doi:<http://dx.doi.org/10.1108/SCM-02-2022-0078>
- Sheffi, Y., & Rice, J. B. (2005). A Supply Chain View of the Resilient Enterprise. *MIT Sloan Management review*, 47(1), 40-49.
- Shih, W. C. (2020). Global supply chains in a post-pandemic world. *Harvard Business Review*. Retrieved from <https://hbr.org/2020/09/global-supply-chains-in-a-post-pandemic-world>
- Spieske, A., Gebhardt, M., Kopyto, M., & Birkel, H. (2022). Improving resilience of the healthcare supply chain in a pandemic: Evidence from Europe during the COVID-19 crisis. *Journal of Purchasing and Supply Management*. doi:<https://doi.org/10.1016/j.pursup.2022.100748>
- Stek, K., Kiers, J., & Zwanenburg, M. (2022). Which strategies and corresponding competences are needed to improve supply chain resilience: A covid-19 based review. *logistics* 6(12), 1-17. doi:<https://doi.org/10.3390/logistics6010012>
- Strindlund, L., & Dahlgren, M. A. (2022). When cooperation turns ugly: exploring the dark side of social capital *Qualitative research in organizations and management: An International Journal* 17(5), 1-18. doi: 10.1108/QROM-01-2020-1884
- Sukoco, B. M., Hardi, H., & Qomariyah, A. (2018). Social capital, relational learning and performance of suppliers. *Asia Pacific Journal of Marketing & Logistics*, 20(2), 417-437. doi:DOI 10.1108/APJML-02-2017-0022
- Truant, E., Bolatto, E., Crocco, E., & Sahore, N. (2024). Environmental, social and governance issues in supply chains: A systematic review for strategic performance. *Journal of Cleaner Production*, 434, 1-13. doi:<https://doi.org/10.1016/j.jclepro.2023.140024>
- Tsolakis, N., Zissis, D., & Tjahjono, B. (2023). Scrutinising the interplay between governance and resilience in supply chain management: A systems thinking framework. *European Management Journal*, 41, 164-180. doi:<https://doi.org/10.1016/j.emj.2021.11.001>
- Välikangas, L. (2018). Strategic resilience. In *The Palgrave Encyclopedia of Strategic Management*. London Palgrave Maximilian.
- Wadle, M. (2016). Update: Fire at the North Harbor in Ludwigshafen Retrieved from <https://www.basf.com/global/en/media/news-releases/2016/12/p-16-391>
- Weber, A. N. (2021). Responding to supply chain disruptions caused by the covid-19 pandemic: A black swan event for omnichannel retailers. *Journal of Transport and Supply Chain Management*, 15, 1-16. doi:<https://doi.org/10.4102/jtscm.v15i0.628>
- Wieland, A., & Durach, C. F. (2021). Two perspectives on supply chain resilience. *Journal of Business Logistics*, 42(3), 315-322. doi:<https://doi.org/10.1111/jbl.12271>
- Wissuwa, F., Durach, C. F., & Choi, T. Y. (2022). Selecting resilient suppliers - Supplier complexity and buyer disruption *International Journal of Production Economics*, 253, 1-12. doi:<https://doi.org/10.1016/j.ijpe.2022.108601>
- Wu, Q., Zhu, J., & Cheng, Y. (2023). The effect of cross-organizational governance on supply chain resilience: A mediating and moderating model. *Journal of Purchasing and Supply Management*, 29, 1-13. doi:<https://doi.org/10.1016/j.pursup.2023.100817>
- Yin, R. K. (2018). *Case Study Research and Applications - Design and Methods* (Vol. 6): SAGE.
- Yu, W., Wong, C. Y., Chavez, R., Jakobs, M., & Nittala, L. (2023). How intellectual capital builds supply chain resilience? Exploring mediation and interaction effects from an intellectual capital based view *Supply Chain Management: An International Journal*, 28(6), 1060-1074. doi:<http://dx.doi.org/10.1108/SCM-12-2022-0477>
- Yuzawa, M., & Tanabe, S. (2019). Toyota and Subaru idle plants as quakes disrupt supply chains *Nikkei Asia* Retrieved from <https://asia.nikkei.com/Economy/Natural-disasters/Toyota-and-Subaru-idle-plants-as-quakes-disrupt-supply-chains>
- Zhang, L., Pu, X., Cai, Z., Liu, H., & Liang, L. (2023). Uniting partners to cope with environmental uncertainty: Disentangling the role of social capital in developing supply chain agility *Journal of Purchasing and Supply Management*, 29, 1-17. doi:<https://doi.org/10.1016/j.pursup.2023.100822>

Zhu, G., Chou, M. C., & Tsai, C. W. (2020). Lessons learned from the covid-19 pandemic exposing the shortcomings of current supply chain operations: A long-term prescriptive offering *Sustainability*, 12, 1-19. doi: doi:10.3390/su12145858

Appendices

Appendix A Interview guideline

1. General information

Information about the research itself and myself

Information about the research goal

Privacy documentation, asking for consent with regard to recording the interview otherwise manual approach, ensuring confidentiality of data obtained through the interviews. Data obtained will be treated anonymously and only be used for this purpose.

Branch of the company, size of the company, what is their field of business, organizational structure? Geographical presence?

2. At the beginning of the interview:

Question 1:

What is your function and what is your role in your company?

How long do you work here?

How long have you worked in this role or similar roles before?

3. The interview itself

3a) Questions relationship supplier

Question 2: What kind/type of relationship do you have to your suppliers?

2a) Do you distinguish between suppliers in a portfolio?

2b) Does this difference influence the way how you establish a relationship with this supplier?

3b) Questions characteristics/values of relationship

Question 3: What kind of values do you share with your suppliers?

3a) Do you have shared goals and visions?

3b) Which tools do you use to collaborate with your suppliers?

3c) Questions related to Risk management

Question 4: Do you distinguish between different types of risk? (focus on operational as well as disruption risk)

a) Environmental

b) Financial

- c) Operational
- d) Strategic

3d) Questions to experience in recent years

Question 5: How did you experience the last two years?

- 5a) How do you deal with turbulent situations?
- 5b) Do you have processes in place for dealing with turbulent situations?
How does the process look like?
- 5c) Do you have policies in place for dealing with turbulent situations?
- 5d) How do you decide when to take action with regard to a turbulent situation?

Question 6: How do you enter in a relationship?

- 4a) What do you consider important in a relationship with a supplier?
- 4b) How do you foster the relationship with a supplier?

Question 7: How would you describe your external relationships?

- 5a) How do you collaborate with external suppliers?
- 5b) What do you consider important?
- 5c) How do you create value out of the external relationships?
- 5d) How do you align internal needs and external relationships?

Question 8: How do you deal with risk in general?

- 8a) identification - How do you identify risk?
- 8b) assessment - How do you assess risk?
- 8c) management (disruption and operation)
 - How do you deal with Operational risk?
 - o What kind of approach do you have with regard to risk management?
 - o Which strategy do you follow? (proactive, reactive, combination)
 - o How do you choose which strategy to select?
 - How do you deal with Disruptions?
 - o Do you distinguish between different types of disruptions?
 - o What kind of approach do you have with regard to risk management?
 - o Which strategy do you follow? (proactive, reactive, combination)
 - o How do you choose which strategy to select?
- 8d) mitigation/monitoring - How do you mitigate risk?

Question 9: What kind of capabilities did you develop in the last years?

9a) Which capabilities turned out to be important/not important?

4. Outro

What are the most important factors for you?

Do you have any questions?

Appendix B Propositions in relation to research questions

Proposition 1: Through defining criteria and the respective careful selection of potential partnerships, a buyer may develop a mutual exchange relationship where both parties benefit from and thus achieving supply chain resilience

As discussed during the interviews, proposition 1 addresses the importance of partnerships, a buyer may develop a mutual exchange relationship where both parties benefit from and thus achieve supply chain resilience. Partnerships with suppliers which are long-term focused, win-win oriented as well as characterized through mutual exchanges as well as trust may help companies through difficult times. Suppliers are carefully selected and must be strategically important to become involved in a partnership, not every supplier is deemed to become involved in a partnership. Here, the higher amount of trust and exchange will positively influence supply chain resilience based on the possibility of having a well-established relationship, the supplier will contribute a substantial amount of time and resources in the relationship and probably prefer a partner when it comes to turbulences within the supply chain (Schiele et al., 2015, p.133). In a relationship where trust and mutuality is fostered, one may be more willing to share exclusive information or when the supplier faces a problem or an issue. The buyer may even offer help in finding a solution to the arising issue together. This kind of behavior might not be possible to realize when the relationship is rather dysfunctional meaning that trust is lacking, and open ways of communication are not fostered. Therefore, this proposition also reflects the relational dimensions through bringing in characteristics such as trust and also friendship. Hence, the interrelation of the relational social capital towards the structural capital dimension is also shown through this proposition (Nahapiet & Ghoshal, 1998). Both during the interviews as well as in the theory, examples could be found where suppliers are supported in difficult

times especially financially because the trust and reciprocity is so high that both partners trust that the situation will resolve (Pimenta et al., 2022). When a turbulent situation occurs, the partner will probably prefer to serve a partner first who is strategic to the company than just any supplier (Jääskeläinen et al., 2022, p.386; Schiele et al., 2015, p.133). Despite the connection to the trust dimension, there is also a connection to the external social capital density dimension since organization benefit from a dense network of their suppliers reuniting both strong and weak ties, which then contribute to supply chain resilience (Parra-Requena et al., 2015). As Lang et al. (2023, p.2) stresses it is important to have interactions which then create stronger ties within the organization through sharing resources as well as information with the supplier. Besides, developing a dense network where suppliers are easily to reach and could benefit from short ways of communication are also aiding the organization in achieving more resilience and thus relates to the structural dimension of social capital. Building strong ties to the supplier is essential for growing a relationship where the most advantages could be derived out of the network. Additionally, there is the connection to the internal structural social capital dimension where an emphasis is placed upon establishing a long-lasting relationship with the suppliers characterized through the above-mentioned trust and dedication, contributing positively to supply chain resilience. According to Jia et al. (2020, p.3), “ structural social capital among partnering firms creates a structure with dense interactions and multiple connections, thus facilitating information exchange”.

Proposition 2: Through fostering open communication, transparent behavior, mutual support as well as the information exchange between the buyer and supplier throughout the network, supply chain resilience may be fostered

Proposition 2 relates to the relational dimension of social capital as it revolves around the qualities important in a relationship. When within the supply chain of a firm, the communication is open as well as transparent with an information exchange throughout the network, relational social capital is considered to be high, supply chain resilience may be fostered (Ozanne et al., 2022, p.118).

Proposition 3: Common goals and values definition may foster the relationship between the buyer and the supplier, thus creating resilience

Proposition 3 spots light on the alignment within the cognitive dimension through establishing common goals and targets which will pave the way for the collaboration and obliges the parties within the relationship to stick to the established goals and provide guidance for what is

considered important and thus positively contributes to the generation of supply chain resilience. Common goals and values may foster the relationship, this could be goals related to sustainability, reduction of waste, Co2 emissions, achieving a strategic target. In particular, companies are required to fulfil their obligations regarding the supply chain due diligence act where adherence to standards is necessary. Organizations need to gain insights into the activities within the supply chain of their suppliers in order to correspond to the standards required in the supply chain due diligence act. Selecting suppliers which also follow sustainable goals could be helpful in achieving the own sustainability goals. Additionally, through setting common goals, targets could be fulfilled and companies could grow together (Jüttner, 2011). This proposition relates to the cognitive social capital dimension and the external social capital dimension proximity is also affected. When business partners share common goals and visions, commitment may be improved and mutual thinking processes as well as collaboration and the exchange of work might be enhanced (Jääskeläinen et al., 2020, p.5). Furthermore, through sharing common goals a basis for collaboration is provided and misunderstandings may be reduced. When goals and visions are shared, it is prerequisite that the communication between the buyer and supplier is good in order to achieve the optimum (Sukoco et al., 2018, p.419). Then suppliers and buyers may improve their relationship through open communication. Moreover, both the buyer and the supplier could learn from each other as their relationship evolves. Especially in turbulent situations, when there are commonalities between the buyer and the seller in terms of goals and common targets are established, both parties dedicate their efforts towards achieving those goals. When there are incongruencies between the expectations towards the achievement of those goals it will be relatively easy recognized when one party does not dedicate the same efforts into the achievement of those goals. Jia et al. (2020, p.3) postulates that when both parties show commitment to the relationship, there is an awareness of how the parties could contribute to achieving the goals formulated.

According to Yu et al. (2023, p.1064), organizations could generate a competitive advantage through sharing knowledge and ultimately strengthen their capability to compete. In fact, this proposition shows the strong connection between the structural dimension and the cognitive and the relational dimension as through strong network ties, information will be shared among the partners within the network requiring trust and a rather long-lasting relationship.

Proposition 4: Internal and external stakeholder alignment is essential for supplier relationship management as it connects the internal and external social capital dimension

Proposition 5 explains the need for internal and external stakeholder alignment in order to facilitate supplier relationship management. Aligning internal stakeholders, which involves cross-functional collaboration throughout the company between the different departments and foster communication on topics through regular meeting may aid in achieving supply chain resilience. In the literature, four types of capabilities are related to all of the dimensions of social capital, those are velocity, flexibility, visibility as well as collaboration (Jüttner, 2011, p.247). Whereas velocity relates to the efficiency pace at which a supply chain can recover, flexibility is more concerned with the absorption function of the supply chain. Furthermore, visibility provides the stakeholders of the supply chain with the information and contributes to the prevention of overreactions and unnecessary actions. Collaboration includes working together in order to enhance resilience. Besides Johnson (2013, p.325) postulates that for long-term supply chain effectiveness, trust, shared values and partnership are required. This proposition pertains to the relational dimension of social capital and serves as a connection point between internal social as well as external social capital. Through the alignment of internal as well as external stakeholders, companies may benefit from the resources obtained through both the inside information as well as distant information and knowledge available within the network. These external stakeholders such as other companies which are located in the same industry or another industry, agencies as well as suppliers might be aligned towards the internal stakeholders in order achieve resilience through benefiting from external input in terms of information. As Granovetter (1983) points out for organizations it is viewed as important to have both strong and weak ties within the network in order to utilize resources best. Capaldo (2007) extends this theory by arguing that organizations also should bear in mind other sectors so called intersectional ties in order to obtain leverage throughout the network. Gölgeci and Kuivalainen (2020, p.63) added that it is important to well-established relationship with suppliers in order to benefit from the relationship when a disruption occurs, thus contributing to resilience.

Through receiving information as well as resources ahead of time and through the coordination with the supplier, an organization may recover quicker from a disruption and thus enhance resilience (Fan & Stevenson, 2019, p.1056). According to Fan and Stevenson (2019, p.1055-1056), “a buying organization obtains four key benefits through relational capital, those are *information benefits*, unique and open access to information required for preparing, responding and recover from disruption occurred, *resource benefits* including access and control to resources [...] *knowledge benefits* fostering transfer of knowledge accumulated between buyer and supplier and *timing benefits* through acting proactively, sharing business continuity plans”.

According to Scholten et al. (2023, p.2) collaboration creates mutual benefits for all stakeholders through information sharing, joint knowledge creation, decision synchronization or incentive alignment that help in the recovery of a disruption, leading to more resiliency. Therefore, this proposition serves as the bridge between internal and external social capital.

Proposition 5: In regard to relational social capital, internal communication and collaboration help in getting through difficult times

Proposition 5 describes the need for good internal structures fostering collaboration as well as communication among all of the stakeholders within the organization. This proposition pertains to the relational internal social capital as good internal organization are needed as well as communication and collaboration among the stakeholders within the organization. Nowadays it is considered important in order to get through turbulent situations and crises to have internal structures which foster communication within the organization among the employees of the various different departments (Jüttner, 2011, p.248). This in alignment with most of the interviewees mentioned that they realized that internal communication and collaboration is really critical towards being more resilient. Good internal structures which encourage communication as well as collaboration within the organization exert a positive impact upon supply chain resilience. In particular, cross-functional collaboration seems to be important in order achieve more resilience since through working together with departments ranging from product development to sales, discussion on projects is fostered leading to quicker solutions and increased understanding of the other departments tasks. In case of an issue it might be possible to solve the issue internally first so avoiding potential lengthy processes of finding solutions to an issue which could be solved through own resources. Ways for fostering communication within the company are for instance regular meetings as well as opportunities to talk like the previously mentioned meetings points. Another important point is here that communication and collaboration needs to be fostered from the top level management as well, when the top management considers it important to maintain good collaboration and communication this also transports further down the layers within the organization. Processes and policies may also help in providing guideline to when other departments need to be involved in a topic so that employees within the company are aware of the steps to be taken. Furthermore, potential problems or issues might be discovered earlier on and employees could start working on a solution earlier onwards. Similarly, misunderstandings may be avoided when frequent exchanges between the departments is encouraged (Gölgeci & Kuivalainen, 2020). One interviewee stated that it is important to coordinate between the different department within the organization and also to implement a linking position between the various departments who

coordinates the collaboration between the different departments. Collaborating on cross-functional projects could also foster communication, anyway, or to have regular short conversations within the department on the progress of projects.

Proposition 6: Combining proactive and reactive resilience strategies in order to cope with turbulent situations and to contribute towards supply chain resilience

Through combining both proactive and reactive resilience strategies, a firm's supply chain is prepared to disruptions. This involves creating robustness and redundancy through having excess inventory or through qualifying a second or third source. Then through the collaboration and information sharing between the buyer and supplier, problems could be proactively encountered.