

The effect of Covid-19 on buyer-supplier relationships and its further influence on supply chain resilience.

Author: Giulia Rorink
University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

ABSTRACT,

The purpose of this research is to find out how Covid-19 affects buyer-supplier relationships through empirically exploring the effects of trust, communication, commitment, and communication on buyer-supplier relationships as well as their further impact on supply chain resilience. Buyer-supplier relationships have been identified as a determinant for supply chain resilience. 12 buyer-supplier relationships were studied in a multiple case study design. First, we observed a clear trend related to the influence of Covid-19 on the characteristics, communication, trust, and commitment. When the characteristics were influenced positively the cooperation became better, when Covid-19 negatively influenced the characteristics, the cooperation became worse regardless the nature of the buyer-supplier relationship before. Secondly, we show that an increased supply chain resilience does not always follow from strong buyer-supplier relationships. The findings expand on previous research on how power affects the resilience of supply chains and relationships between buyers and suppliers. Thirdly, we offer fresh perspectives on how interpersonal traits like supply continuity might help a business remain resilient in the face of Covid-19 interruptions.

Graduation Committee members:

Dr. Ir. N.J. Pulles

Dr. K.P.M. Stek

Keywords

Buyer-supplier relationships, supply chain resilience, Covid-19, commitment-trust theory, power, flexibility, transparency

1. INTRODUCTION: THE IMPACT OF COVID-19 ON THE RELATION BETWEEN BUYER SUPPLIER RELATIONSHIPS AND THE SUPPLY CHAIN RESILIENCE.

The Covid-19 pandemic has shown massive disruptions in all sorts of supply chain networks (Cohen, 2020). Since the beginning of 2020, we encountered the impacts of Covid-19. Whole countries and cities were in a strict lockdown, inhabitants were multiple days in quarantine, borders were closed, travelling became difficult, international supply chains were in commotion and local sourcing became popular (Choi, et al., 2021). Social distancing became the norm and face-to-face contact was limited to limit the spread of Covid-19 (Shufford, Hall, & Randall, 2021). Covid-19 forced companies to adopt new working practices and the pressure was there to use digital channels more than ever (Almeida, Santos, & Monteiro, 2020). There were multiple ways in which the impact of Covid-19 on supply chains could be displayed. But there are three main areas of supply chains which got affected by the Covid-19: the demand side, the supply side, and the logistic side (Mishra, Kumar, & Subramanian, 2021). For some essential products the demand increased heavily, on the contrary the supply of several products decreased. For instance, the deliveries that had been delayed, the scarcity of materials and the shortage of labour. As a result, the disparity between supply and demand widened.

Covid-19 and its disruptions showed that resilience strategies of companies were necessary to overcome the disruptions (Raj, Anjan, Jabbour, & Srivastava, 2022). Supply chain resilience has been identified as the ability of a purchasing firm to anticipate, respond to, and recover from unanticipated upstream supply chain disruptions by restoring or maintaining operations at the required level of connectedness and control over structure and function (Ponomarev & Holcomb, 2009; Dabhikar, Brikie, & Kaulio, 2016). Covid-19 really tested those strategies of companies (Ivanov & Dolgui, 2020). There are arguments put forward that healthy buyer-supplier relationships have positive influences on supply chain resilience and supply chain performance which companies strive for (Mandal & Sarathy, 2018; Durach & Machuca, 2018; Sharma, Luthra, Joshi, & Kumar, 2020). Although these studies present a comprehensive overview, there is lack of attention on how specifically Covid-19 influenced and changed the relationships among buyers and suppliers. In addition, how these changed buyer-supplier relationships affect the supply chain resilience of companies. So did Mandal and Sarathy (2018) not consider the influence of Covid-19 and is Sharma et al. insufficient in their approach about Covid-19 and its influence on buyer-supplier relationships and its further influence on supply chain resilience. Therefore, the goal of this research is to investigate what the influence of Covid-19 is on buyer-supplier relationships, and how these changed buyer-supplier relationships have influenced the supply chain resilience of organizations. To support this research, the relationship marketing's commitment-trust theory (Morgan & Hunt, 1994) will be applied to the supply chain networks of this research. We concentrate on the theory's explanation of the link between communication, trust, and commitment. In the model of trust and commitment from Morgan and Hunt (1994) is underpinned that communication improves trust, trust improves commitment, and both trust and commitment improve

cooperation, and a better cooperation will indicate a better relationship. Covid-19 and its disruptions and restrictions influenced among other things the way of communicating and therefore influence the commitment and cooperation. With the help of this theory, the research will hopefully be able to highlight a clear preference, trend, or at least more insights on how Covid-19 affected the buyer-supplier relationships and therewith positively affect and change the resilience strategies. This could also help companies to make better decisions, be more prepared for future disruptions or maintaining better relationships among suppliers. Hence the key research question is:

"How did Covid-19 affect the characteristics of the commitment-trust theory in a buyer-supplier relationship and how did this further influence the supply chain resilience?"

To answer this question, we will gather a multiple case study of 12 buyer-supplier relationships, with participants from the buyers' side. The findings of this research provide multiple new insights and insights which are in line with previous research. First, our cases revealed a clear trend regarding buyer-supplier relationship which is in line with the commitment-trust theory where positive influenced trust and commitment strengthen the buyer-supplier relationships (Morgan & Hunt, 1994; Mandal & Sarathy, 2018). Secondly, we demonstrate how strong buyer-supplier relationships do not always imply higher supply chain resilience. Power influences the buyer-supplier relationships and therefore the supply chain resilience. The results add to the literature the role of power in buyer-supplier relationships and supply chain resilience (Chicksand, 2015; Cox, Sanderson, & Watson, 2001). Thirdly, we provide new insights into how relationship qualities can aid in a company's resilience when facing disruptions of Covid-19, like continuity of supply (Wieland & Wallenburg, 2013; Nyaga, Whipple, & Lynch, 2010).

2. LITERATURE REVIEW

In this section of the paper, a better explanation of the core concepts will be provided.

2.1 Research on the impact of supply chain disruptions due to Covid-19.

Supply chain disruptions can have, as earlier explained, disastrous effects. They are caused by humans or due to natural calamities, like terrorist attacks, earthquakes or hurricanes and political events (Liu, Li, & Zhai, 2022). Any unexpected occurrence that has the potential to have a negative impact on the related firm is considered a disruption (Wagner & Bode, 2006). Covid-19 is a pandemic. A pandemic is characterized by three components: first the long-term undetermined and unexpected scale of disruption, second the spread of supply chain disruptions and epidemic outbreaks in the population, and third the disruptions in logistic, demand and supply side (Govindan, Mina, & Alavi, 2020).

Given the devastating impact of the Covid-19 pandemic on supply chains, academics are increasingly focusing on the issue. As a result, since the outbreak of Covid-19, a considerable quantity of research on the impact of Covid-19 has been published in supply chain disciplines (Chowdhury, Paul, Kaisar, & Abdul, 2021). All this research discusses several impacts of the pandemic, especially the key challenges of the pandemic related to supply chain. Uncertainty of demand, inconsistency of

supply, scarce materials, delay in deliveries and scarcity of labor are displayed as the main disruptions due to Covid-19 (Raj, Anjan, Jabbour, & Srivastava, 2022).

Multiple studies have confirmed the negative impacts of supply chain disruptions on several performance indicators of companies. These statements go a long way back. So have Hendricks and Singal (2003) stated that disruptions cause a decrease in shareholder value, decline in return for stockholders and a decline in turnover, return on asset and return in sales (Hendricks & Singhal, 2005). However, the influence the disruptions have depends on several aspects of the network structures of the supply chains. These are: Density, Centrality, network tie, and structural holes (Greening & Rutherford, 2011). All these aspects influence the effect of disruptions on a company.

Firms need to overcome these challenges by building the ability to deal with similar problems in the future. It is important to mitigate the supply chain disruptions due to Covid-19. For this it is from importance to improve your supply chain resilience (Ketchen & Craighead, 2020).

2.2 Supply chain Resilience

There are many definitions of supply chain resilience but, as earlier mentioned, we use the definition where supply chain resilience is defined as the ability to recover and continue a normal state of operations in the face of disruptions (Ponomarov & Holcomb, 2009). Significant supply chain stakeholders must forecast, plan for, and understand the magnitude of a disruption in the aftermath of a disruptive incident. They must design methods to respond fast, as well as reorganize their resources to increase competencies and adapt to the consequences. Modifying and renewing capabilities in this way enables recovery from disruptions and enhances the resilience of companies (Ivanov, Dolgui, Sokolov, & Ivanova, 2016).

There are several factors that influence the resilience of supply chains. The literature shows a diverse variety of causes. So have Christopher and Peck (2004) explained that collaboration, agility, risk management and re-engineering of supply chains play an important part. In addition, knowledge management was added as a cause to a resilient supply chain (Scholten, Scott, & Fynes, Mitigation processes–Antecedents for building supply chain resilience. Supply Chain Management, 2014; Rice & Caniato, 2003). Ponomarov and Holcomb's (2009) conceptual integrative study, which was stated before, employed a resource-based view and dynamic capabilities theory to conclude that specific logistics skills, when properly implemented, will contribute to supply chain resilience. According to Tukamuhabwa et al. (2015) the majority of attention has been placed on expanding flexibility, building redundancy, forming collaborative supply chain connections, and boosting supply chain agility for developing resilience. Supply chain resilience grows as capabilities and vulnerabilities diminish (Pettit, Fiksel, & Croxton, 2010; Wieland & Wallenburg, 2013). More recent studies have researched the dynamic managerial capabilities as antecedents for supply chain resilience (Nikookar & Yanadori, 2022). Their research revealed that supply chain managers' personal relationships with their counterparts (social capital), firm specific supply chain management experience (in other words human capital), and interpretations of supply chain disruption represent as managerial antecedents for supply chain resilience. Mandal and Sarathy

(2018) explained that supply chain resilience can be thought of as a dynamic capability. This because it allows a company's supply chain to adjust to different circumstances. The meaning of resilience implies that it is possible to improve performance in the face of adversity. Furthermore, because resilience is a dynamic quality, they must be able to favorably respond to changes in their environment, and that these capabilities have positive performance effects (Makkonen, Pohjola, Olkkonen, & Koponen, 2014). However, such adaptability necessitates supply chain partners' cooperation, which necessitates commitment, trust, and communication (Mandal & Sarathy, 2018).

Thus, the literature has shown that it is evident that among the different antecedents of supply chain resilience, relationships within supply chains can play an influence in the development of capabilities of supply chains (Srinivasan, Mukharjee, & D., 2011). But nevertheless, the literature lacks research about the impact of relational attributes like communication, trust, commitment and cooperation and its effect on supply chain resilience and how they got affected by Covid-19. Examples of the current literature and its explained factors for resilience are shown in table 1 below.

Table 1

Current literature explained factors for supply chain resilience.

Literature about resilience strategies	Explained factors for supply chain resilience
Christopher and Peck (2004); Ponis & Koronis (2012); Scholten & Schilder (2015)	collaboration, agility, risk management and re-engineering of supply chains
Scholten, Scott, & Fynes (2014); Rice and Caiato (2003)	Knowledge management
Ponomarov and Holcomb's (2009); Ponomarov (2012); Lorenzoni and Lipparini (1999)	Dynamic capabilities and logistic skills
Tukamuhabwa et al. (2015); Christopher and Rutherford (2004)	Collaborative supply chains, flexibility and redundancy
Nikookar and Yanadori (2022)	Dynamic managerial capabilities

2.3 Buyer-supplier relationship and supply chain resilience.

A company's vital resource may cross organizational boundaries and be integrated into inter-firm practices and resources (Dyer & Singh, 1998). Effective partnerships built on trust and commitment can reduce transaction costs while also boosting favorable performance consequences (Zaheer & Perrone, 1998). Fynes et al. (2005) found evidence that the quality of relationships among buyers and suppliers have a positive impact on supply chain performance. As a result, both supply chain resilience and performance will be dependent on a cooperative response to environmental risks by numerous supply chain participants. This collaborative response, in turn, is determined by the quality of the partners' relationships (Mandal & Sarathy, 2018).

That relationships among suppliers and buyers are from importance is clear, but which attributes from relationships are important in a supply chain environment? As mentioned earlier in the introduction, the research from the commitment-trust theory will be applicated (Morgan & Hunt, 1994). This theory argues that in the supply chain network, they act more as business partners without relational attributes in the partnership instead of having a real relationship where characteristics like communication, trust and commitment are important. There is an absence of a real relationship between buyer and seller.

Relational traits, like trust, commitment, communication, and cooperation, that contribute to optimal partnerships are critical to the network's success (Wu, Weng, & Huang, 2012).

There are some studies that applicated the commitment-trust theory on a supply chain setting. So have Wu et al. (2012) looked at the intersection of the commitment-trust theory and supply chain management and so discovered Chen (2011) a favorable association between information exchange, quality of information, and availability of information in several supply chain networks. Luc (2006) discovered that a preemptive reaction, recovery after a disruption, and the exchange of crucial information all require effective communication. In addition, there is discovered that higher levels of trust can result in improved interactions and support in increasing both parties' interests, assist constant co-operation and communication, reduce uncertainties, and reduce a partner's proclivity to leave in the development of supply chain relationships (Wu, Weng, & Huang, 2012).

Despite the fact that supply chain research findings have endorsed several relational attributes, the inter-relationships between them and the influence from Covid-19 has not been captured (Fynes & Mangan, 2008). Brinkhoff et al. (2015) defined trust and commitment as the foundations of supply chain relationships. Communication is important when creating trust and commitment among buyers and suppliers (Sarker, Ahuja, Sarker, & Kirkeby, 2011; Morgan & Hunt, 1994). To match the interest of several supply chain partners, in other words: creating cooperation, both communication, trust, and commitment are essential (Morgan & Hunt, 1994). Therefore, we choose communication, trust, commitment, and cooperation as attributes in exploring the role of buyer-supplier relationships in resilience strategies. In addition, the impact of Covid-19 on these 4 attributes. Thus, we can conclude that supply chain resilience is built on several relational attributes, and these will have a positive influence on supply chain performance. The figure below displays the basis of this research by showing the relation of Covid-19 on the concepts of the buyer-supplier relationship and the supply chain resilience.

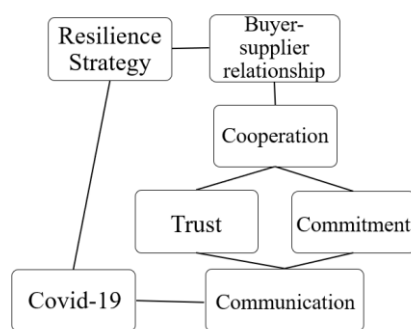


Figure: Research design

3. METHODOLOGY

In this part, we will explain how we will gather the data and process it to answer the research question, while at the same time elaborate the choices.

3.1 Case selection

The research question states, "How did Covid-19 affect the characteristics of the commitment-trust theory in a buyer-supplier relationship and how did this further influence the

supply chain resilience?". The best way to answer this research question is by means of a multiple case study. This is specifically a good option because of the reason that the use of case studies to refine theory has been found to be effective (Dubois & Araujo, 2007; Harrison & Easton, 2004). In addition, it has stated before that it is effective in providing the right knowledge about buyer-supplier relationships (Majumdar, Shaw, & Sinha, 2020).

Next to this, there are 2 main forms of data, Qualitative and quantitative data. Fossey et al. (2002) explains qualitative data as the term that encompasses the researchers approaches that do not employ statistical procedures or quantification, especially to understand the relationships, experiences, behaviors and other social situations. The purpose of this thesis is to see if there is any evidence that covid-19 affected the buyer-supplier relationships and further influenced the supply chain resilience of the companies. This is a field of study were little to no previous work has been done. An exploratory investigation is a study that attempts to fill a gap in the literature (Singh & Goyal, 2007). To research the gap in its natural setting, qualitative research allows the researcher to get answers to the important 'why' questions. This all considered, qualitative research and therefore a multiple case-study suits best with the goal of this paper.

The unit of analysis of the research in this paper is the relationship between the buyer and supplier. In this case selection, the aiming is on the identification of several cases by which the identification of a relationship could be gained. It has been stated before that the buyer-supplier relationships are not limited to specific industries or companies. To come up with the best results for this research, the investigation of three industries that have been hit hard by Covid-19 has been done, because then it could become visible if the relationship has been affected by Covid-19, just as the resilience strategies. One of the main criteria by selecting the companies to investigate was that they should have multiple suppliers with which they interact several times. Secondly, they should have had some influence of Covid-19. This to fully understand different kinds of characteristics of the relationships and it provides diversity and because we want a rich answer to our research question. While selecting the cases, we aimed at generating diversity by not only the difference of duration of agreement but also the difference of sourcing location. So, local suppliers but also transnational and European suppliers were taking into account.

The selection of specifically two production companies with mostly production on order and one mass production company has been done to create diversity with the goal of identifying several potential development routes for buyer-supplier relationships as a result of Covid-19 and its effect on resilience of companies. In addition, the sizes of the company are variable. At the same time, for the sake of comparability, the respondents had to utilize identical comparison criteria. Therefore, we asked our interviewees to select at least 2 relationships, one with whom they experience a good relationship and one with whom they don't experience a good relationship. Table 2 shows the relevant characteristics of our research.

To ensure the selection of knowledgeable interviewees, the selection of employees who are in direct contact with the suppliers was conducted on purpose to fully research the relationship in the point of view from the buyers and suppliers (Howard, Roehrich, Lewis, & Squire, 2017). The interviewees came from a wide range of departments, from purchasing to

management positions. The focus of this research is on the commitment-trust theory of Morgan and Hunt (1994). To make sure the interviewees are familiar with the concepts trust, commitment, cooperation, and communication of this theory, they were provided first with a verbal explanation of the concepts before the interview started.

Table 2
Case characteristics.

Company and interviewee information	Relationship 1 (Good relationship; GR)	Relationship 2 (Bad relationship; BR)
Employee A Industry: High precision metal parts Sales: €18 million ^a Employees: 110 Interviewee: General manager Experience: 2 ^b years	<i>With: Supplier</i> Transnational <i>Relationship length:</i> 20 years <i>Main reason good relationship:</i> strategic requirement for partnership from both sides.	<i>With: Supplier</i> Transnational <i>Relationship length:</i> 3 years <i>Main reason bad relationship:</i> failing to deliver the promised requirements regarding delivery and quality.
Employee B Industry: High precision metal parts Sales: €18 million Employees: 110 Interviewee: Supply chain manager Experience: 5 years	<i>With: Supplier</i> Location: Europe <i>Relationship length:</i> 6 years. <i>Main reason good relationship:</i> high performance and a proactive supplier in adding value to the relationship	<i>With: Supplier</i> Location: Local <i>Relationship length:</i> 10 years <i>Main reason bad relationship:</i> failing to deliver the required qualities.
Employee C Industry: manufacturing industry Sales: €16 million Employees: 19 Interviewee: Head of purchasing Experience: 8 years	<i>With: Supplier</i> Location: Europe <i>Relationship length:</i> 20 years <i>Main reason good relationship:</i> Helped each other during the worst times.	<i>With: Supplier</i> Location: Europe <i>Relationship length:</i> 4 years <i>Main reason bad relationship:</i> not holding up to the agreements.
Employee D Industry: manufacturing industry Sales: €16 million Employees: 25 Interviewee: General manager Experience: 20 years	<i>With: Supplier</i> Location: Europe <i>Relationship length:</i> 20 years. <i>Main reason good relationship:</i> Intensive working together, strengthen each other.	<i>With: Supplier</i> Location: Europe <i>Relationship length:</i> 3 years <i>Main reason bad relationship:</i> not holding up to agreed terms.
Employee E Industry: Food industry Sales: €500 million Employees: 2800 Interviewee: strategic purchaser meat. Experience: 10,5 years	<i>With: Supplier</i> Transnational <i>Relationship length:</i> 15 years <i>Main reason good relationship:</i> Can build on each other.	<i>With: Supplier</i> Location: Europe <i>Relationship length:</i> 3 years <i>Main reason bad relationship:</i> Not working together enough to develop a good relationship.
Employee F Industry: Food industry Sales: €500 million Employees: 2800 Interviewee: strategic purchaser ingredients. Experience: 5,5 years	<i>With: Supplier</i> Transnational <i>Relationship length:</i> 8 years <i>Main reason good relationship:</i> No breach of contract in all those years, can rely on the supplier.	<i>With: Supplier</i> Location: Europe <i>Relationship length:</i> 2 years. <i>Main reason bad relationship:</i> sudden cancelled contracts and changed quality.

^a The sales are annual

^b Experience is a reference to the interviewees relevant working experience

3.2 Data collection

For the collection of the data, fieldwork was done. As explained earlier, several employees of the companies were interviewed, who are in direct contact with the suppliers and are therefore responsible for the purchasing department. The interviews who were conducted were partly virtually, and partly in real-life. All the interviews were recorded and were taken in Dutch or in English, this depended on the preference of the interviewees.

In total we did 9 interviews with a total of 6 interviewees in which we analysed 12 cases. With three interviewees we did a second round to get more information. The interviews were semi-structured (Newton, 2010). These are interviews which gives interviewers a lot of flexibility to restate questions, ask for more clarification, investigate and challenge compared to structured interviews (Segal, Coolidge, O'Riley, & Heinz, 2006). In addition, they ensure a certain level of comparison. The semi-structure is therefore more appropriate because it allows the interviewee to go into more detail, it has more freedom when responding which could provide answers with concepts which otherwise would not have been discussed. The interview guideline is presented in table 4 with example questions. The full interview guide is presented in Appendix 1.

The interview itself consist of five main sections (see table 3). The first section is about the topic of the personal information of the interviewee and its function. The second section of the interview is about the general relationships with suppliers and the resilience strategy of the company. The third section is about more in-depth relationships with the supplier, especially the 4 concepts of the commitment-trust theory and the resilience strategy of the company. The fourth section is about the influence of Covid-19 on the relationships and resilience and how it changed them. The fifth section is about the influence of the (changed) buyer-supplier relationship on the supply chain resilience of the company. Lastly, there will be room for the remaining, which discusses the missed topics and the other interesting aspects. The funnel method is used (Karlssoon, 2008).

After the interviews are done, the interviewee was provided with 1 extra question about the three most noticeable changes due to Covid-19 and its regard on the buyer-supplier relationship via e-mail. The reason for this is to get better insights in the changes among the buyer-supplier relationships. This question will be “*What three specific changes in the buyer-supplier relationship were the most noticeable due to Covid-19 and in addition affected your supply chain resilience?*”. This will result in easier answering of the research question and distinguishment of the relationships between the different suppliers.

3.3 Data analysis

The data analysis started at the same time as the data collecting. To get the most reliable results of this research, the analysis of the data was done during several steps. The first step, after the interview was conducted, was writing a summary. These include the most important aspects regarding the concepts, useful quotes and other remarks which are not about the main concepts but could be still important for this research. The summaries vary from half a page to a summary of 2 pages. After this step, the summary with drafted findings will be shared and approved by the interviewee to provide a useful feedback loop that helps to inform some of the discussion and analysis (Ellram, 1991). It will in addition, enable validation of research possibilities by

supply chain executives (Van Hoek, 2020). Thirdly, the feedback will be analysed and again be summarized until the interviewee totally agrees with the result.

Table 4
Interview guideline

#	Topics	The main concepts of the section	The purpose of the section
1	General information about the company, the interviewee, and the suppliers.	Job description, experience, turnover, and age	To gain information about the interviewee and its company.
2	Relationship with suppliers and the resilience strategy of the company	Relationship characteristics size of the supplier, duration of agreement (If so). Short summary of resilience strategy.	General information about the relationships and general information about the resilience strategy
3	In-depth information about the buyer-supplier relationship and the supply chain resilience	Detailed description of the relationship (trust, commitment, cooperation and communication)	To gain more in-depth knowledge of the buyer-supplier relationship related to the commitment-trust theory
4	Influence of Covid-19	The main disruptions caused by Covid-19 and its influence on relationships between the buyer and supplier and the resilience of the company.	To gain more knowledge about the influence Covid-19 had on the relationships.
5	Influence of the affected buyer-supplier relationships regarding the resilience of the company.	The influence of the changes due to Covid-19 on the resilience strategy of the company	To gain more knowledge about the influence of Covid-19 on resilience strategy
6	Remaining	Topics the interviewee likes to discuss.	Other interesting aspects which are missed.

After the feedback of the interviewees and several analyses on the interviews, some conclusions will be drawn from the data that is gathered by the interviews. A cross-case analysis was used to detect newly developing patterns by concentrating on the differences and similarities between the cases. We used the data of the within case analysis, the short summaries. Then we compared the cases which have had a good or bad relationship and then the cases where Covid-19 caused relatively big changes. After that we compared the events that changed the level of the relationship and its effect on the resilience strategy of the companies. This together with the review of data of previous research should provide us with the knowledge to answer the research question.

4. RESULTS: ANALYZING THE DATA

In this section of the paper, the focus will lie on using the qualitative data acquired to address the research question. In table 6 is an overview of the main findings in which the influence of Covid-19 is shown on the characteristics of the buyer-supplier relationships and how these affected the resilience of the

companies. In the following sections the findings will be further elaborated regarding the main disruptions caused by Covid-19, its influence on the buyer-supplier relationships and the influence on the resilience of the companies.

4.1 The effect of Covid-19 on the characteristics of the commitment-trust theory regarding the buyer-supplier relationship

After reviewing the interviews, multiple disruptions caused by Covid-19 came forward which are most prominent regarding influencing the supply chain in general. All participants mentioned the disruptions which were of great influence on their supply chain. Scarcity of materials, longer lead times, decreasing demand and decreased production capacity due to sick leave of employees were seen as the biggest disruptions. In addition, logistic failures like the scarcity of containers, truck driver shortages and closed borders were of great influence. In appendix 2, table 5, the major disruptions that came forward during this research and which disruptions affected what case are displayed. It also shows that all cases have been affected by Covid-19 and therefore suitable for the research. It is remarkable to see that almost all the cases in different industries counter the same disruptions. However, there were disruptions causing troubles which did not affect all the companies and departments. So, did the reduced face-to-face contact only negatively affect C(BR), E(GR), E(BR). Within the other cases, the contact was solved differently, for example with online conferences via teams. Therefore, it is not seen as a big disruption in the other cases.

As earlier explained, to explain the buyer-supplier relationship, the commitment-trust theory of Morgan and Hunt (1994) will be applied. In this section, the characteristics communication, trust, commitment, and cooperation and how they got affected by Covid-19 and its disruptions will be explained.

4.1.1 Communication

The most important factor in relationships is, according to the participants, communication. Without communication there is no relationship or cooperation. They all agree that since Covid-19 happened, a lot has been changed regarding the way of communicating. Before Covid-19 the contact was based on mainly frequent emails and meetings face-to-face. In addition, the buyer had more power compared to the supplier, depending on the size of the company. This made the communication fiercer towards each other especially regarding prices. However, because of Covid-19, the face-to-face contact had to be reduced, more meetings were now held online via web conferences and emailing or calling. The easiness of online communicating and the need for communication, because of the disruptions, increased. This resulted in even more frequent contact. An example was given by participant F, he normally visited the suppliers once a month and had now frequent contact with them weekly. Moreover, as a result of the disruptions, both the suppliers and buyers were facing multiple problems regarding living up the agreements. The reasons for failing had to be communicated and to get a form of understanding from their suppliers and/or buyers. They communicated more open and were more transparent, this to reach a higher level of understanding. This resulted in less fierce discussions about pricing. Another reason for the less fierce discussions is that the

suppliers have just no other option than accept the price because there are no alternatives. Participant B in the case B(GR) pointed out *“You are now more likely to say, ‘It is what it is’ regarding the prices suppliers are offering you, because you are happy that you even can get the materials”*. The power of the buyers completely has fallen away because of the scarcity of materials. Another factor that was pointed out by Participant F in case F(BR) that changed the way of communicating was the pressure on both sides to on the one hand increase the selling price and on the other decrease the purchasing price. This together with the changing dynamic of power changed the way of communicating in a way that it became more frequent, transparent and with a changed power dynamic. See table 6.

4.1.2 Trust

Participant F mentioned in his interview that the job of a purchaser is to find the most reliable suppliers with, in addition, delivering good qualities. This means that when going in business with a supplier, you have already evaluated the trustworthiness of the supplier. However, the level of trust changed during Covid-19.

The level of trust was before Covid-19 less than it is now for most cases. Because of the increased transparency in communication and higher willingness to share problems, the trust increased in especially the cases which were already indicated as ‘good’. Another reason for the increased trust mentioned by B(GR) and E(GR) is that the buyers have no other option than trusting the suppliers because there are no alternatives.

However, there were cases in which the trust decreased like C(BR) and F(GR). Reasons for this were the sudden cancellation of contracts, changed quality and the not following up of agreements. The sudden cancellation of contracts was mentioned in all the cases, however, in the good relationships, this was of less influence than on the bad relationships. Because they were more willing to forgive certain mistakes in good relationships than with whom who have had harmed the trust before, which got pointed out by Participant C. When having frequent actions which influence the trust negatively, the cooperation will be ended.

4.1.3 Commitment

The commitment towards the suppliers and buyers, is also influenced by Covid-19. Before Covid-19, the commitment towards the suppliers was less than it was after Covid-19 had happened. Several participants pointed out that, from the buyer’s view, there were several options regarding the supplies. This resulted in less effort put into one specific supplier. Only regarding unique materials and products, the suppliers are not there in numbers pointed out by participant E. When this is the case a lot of effort is put into that specific supplier to continue its supply.

However, after Covid-19 happened, all the participants pointed out that they had to put more effort into their suppliers and buyers. Participant B pointed out that the demand had fallen a little bit, therefore there was less demand for the materials, this had as a cause less buyers. It had to put more effort into specific buyers to still get rid of their products. All participants mentioned that because of the scarcity of materials, the suppliers are not able to fulfill all the requests they get from the several buyers. They need to put more effort into their suppliers to get the materials.

Regarding committing towards the agreed tasks, increased during Covid-19. This because it was harder to keep up the agreed terms. Participant E pointed out that there is now more effort put into the communication and problem solving and less in the development of projects together with the supplier. In addition, in case F(GR), the effort was in the form of money investing. They invested in new machines in the suppliers’ company to have a continuity of supplies in the future. Which in turn enhances the resilience.

4.1.4 Cooperation

Regarding cooperation, Covid-19 caused the most changes regarding the relations with suppliers from a buyers’ view. This because you, together with your supplier are responsible for the final product. Especially in the case A(GR), participant A said *“When we deliver a bad product, we are not the only ones who are held responsible. Our suppliers will be held responsible too, which is the reason why they want to work together and solve problems to deliver the best final products”*. This shows the need for cooperation is necessary to get a final product of high quality.

As earlier explained, the trust and showing commitment increased towards your supplier. This in addition with a more frequent, transparent and on time communication made the cooperation much better between the multiple members of the supply chain. So showed the case B(GR) that they communicated directly with the supplier about the orders the buyers have, and with which order they have to start. These forms of cooperation increased the level of relationship.

4.2 The effect of Covid-19 on resilience strategies.

During the interviews it became clear that Covid-19 did not only change the buyer-supplier relationships, Covid-19 also showed the direct need for having a resilience strategy. Looking at the resilience strategies of companies, Covid-19 did wake all the companies up. Before Covid-19, all the companies which were interviewed, did not have a specific resilience strategy. However, they all took actions regarding uncertainties, but none of them were enough to overcome the disruptions from Covid-19. Examples of actions companies took before Covid-19 are higher margins regarding lead times, saving costs by economies of scale, diversity of suppliers, local sourcing, and temporary safety stocks. Due to the scarcity of materials, safety stocks were completely used and not able to make anymore. Another example that was pointed out in case B(BR), local suppliers couldn’t deliver, so the local sourcing did not strengthen your resilience anymore. This is the reason why Covid-19 showed that the current resilience strategies were not enough, and the companies had to come up with new, better actions to strengthen their resilience. The two main things that the companies have learned because of Covid-19 was that planning was very important. Especially the scarce materials and long lead times require good calculations and planning of the companies. Next to this is being flexible and agility an important factor for the resilience of a company. So mentioned participant D that their flexibility increased by looking for more and participant B mentioned that they had to be more flexible regarding production because the materials are not delivered as they are supposed to. This shows that flexibility and planning became an important factor in overcoming the disruptions. However, the importance of a buyer-supplier relationship in the supply chain regarding the resilience of the company came forward during Covid-19.

Table 6
Main findings

Case	Characteristics of buyer-supplier relationship before Covid-19 leading to a ...		Effects of Covid-19 on				The current buyer-supplier relationship		Influence on Resilience of the company
	... Good relationship	... Bad relationship	Communication	Trust	Commitment	Cooperation	Better	Worse	
A(GR)	Openness and transparency, willingness to help		Became much better, the partners showing each other that reporting problems is good	Higher levels of trust because of the openness about problems and pricing	More effort is put into the buyer regarding time investing.	Solving problems together and growth into main buyer due to better relationship	X		The strengthen partnership results in better problem solving together.
A(BR)		Fierce negotiations about price and quality, and fierce competition.	More openness in communication about price and problems which resulted in a little bit more understanding.	Higher levels understanding and the open communication resulted in more trust	More time investing in especially communication and quality delivering to make cooperation better	The improved cooperation because of the better communication, trust and commitment	X.		More guarantees and contracts to ensure the business in the future and new better cooperation's.
B(GR)	High power about price, availability, helping each other in difficult times		More communication about priorities, problems, and orders.	Higher, put more trust in one supplier because there are no others.	More structural and frequent meetings which causes more time.	Working together to one goal because both parties responsible	X		Ensure business continuity and higher quality when having a good relationship
B(BR)		Low sales volume for supplier, fierce negotiations about quality	More frequent communication via video conferences	Cancelled contract resulted in less trust	More effort had to be put into the supplier to make sure it delivers the supplies	Cooperation became less because of the difficulties in supply and how it was handled and increased pricing.		X	Maintain good relationships to ensure supply of materials, not having a good relationship results in not getting the right supplies.
C(GR)	Availability, long-term partnership, responsible for continuity of business		More frequent informal communication via online or calling	The more and open communication caused higher levels of trust	A lot of effort into the relationship to maintain the relationship and continuity of supplies	Feeling to reach goals together and a better communication, reaching goals together.	X		The better relationship made sure that they were able to get the materials
C(BR)		Not holding up to agreements, low trust.	Communication more frequent.	The supplier is saying one thing and is doing the other, not reliable.	A lot of time is put into the supplier to make sure they keep up to the agreements.	Relies more on contracts and guarantees but still cancelling them.		X	Not holding up to the agreements caused the search for new diverse suppliers and the urge for guarantees.
D(GR)	Cooperation on personal level, high trust. Can build on the supplier.		More intensive communication and 'shorter lines' towards each other.	Fully rely on the supplier, no unexpected actions	More effort in helping each other	Intensive cooperation because of the continuity of the business due to the relationship	X		The better communication made sure that problems could be solved easier.

Table 6 (continued)

Case	Characteristics of buyer-supplier relationship before Covid-19 leading to a ...		Effects of Covid-19 on				The current buyer-supplier relationship		Influence on Resilience of the company
	... Good relationship	... Bad relationship	Communication	Trust	Commitment	Cooperation	Better	Worse	
D(BR)		Less cooperation and communication	Less open about certain problems in the supply chain	Not reliable and trustworthy.	Effort is put into the supplier because there are no other options and signs of negligence.	Less business together because of negligence of supplier		X	The search for new suppliers makes sure there is a diversity of supply
E(GR)	Long-term partnership, reliable and trustworthy		Less fierce communication about pricing, less communication in face-to-face however, more communication about problems.	Trust not specifically better, but no other choice than trusting the supplier because there are no other options.	More effort in communication about problems, less effort in projects and business trips together.	Good cooperation when problem solving and helping each other.	X		Resulted in a preferred customer status
E(BR)		Short-term partnership, power with supplier. Price focused. Small order quantities	Communication much less and is less important	No other choice than trusting the supplier because no other options.	More effort is put into the supplier to get the supplies.	Cooperation less because power relies with the supplier, they don't need them. Fierce discussions		X	Searching for new suppliers more local
F(GR)	High turnover for the supplier, good cooperation. Long term partnership.		Form of communication stayed the same, people now talk to the right person, more transparency	Trust became lower because of the scarce materials.	A lot of time and money investing in the supplier, e.g. machines for the supplier.	Did not change. The lower trust and higher commitment compensate each other	Stayed the same.		More effort results in continuity of supplies in the future.
F(BR)		Supplier is monopoly and uses power advantages, low turnover for supplier.	Hard to communicate and more pressure on communication of negotiations.	Trust became lower, changing qualities and cancelled contracts.	Not visiting each other in real, less time and money investments.	More formal, and supplier can continue business without them, and decreased trust		X	Weakened the position. Search for alternative of supplies.

4.3 The effect of the affected buyer-supplier relationship in relation to supply chain resilience.

According to the research, good buyer-supplier relationships have a favourable impact on a company's resilience. In this part, we'll look at how changed buyer-supplier interactions have impacted the resilience strategies of companies.

All the participants have mentioned how crucial resilience activities are in times of crisis. Participant C assured that a good buyer-supplier relationship can result in better resilience by saying *"Our main supplier with which we have a great relationship pointed out that we are his first customer and that we are the first that gets the materials, they reserved a part of the materials specifically for us"*. This shows that having a good relationship can make sure that you get the supplies and therefore strengthen the resilience. Participant A mentioned that because of the better relationship, they have due to the openness of communication towards each other, they will be informed sooner

about certain problems to solve them together or to be able to change the plans. This in addition indicates that they need to be flexible to adapt certain business processes. This results in reducing the impact of a disruption on the company. It also shows that a good buyer-supplier relationship can help in the supply chain resilience.

As earlier explained, the power dynamic has changed. This was unexpected one of the biggest influences on the buyer-supplier relationships. Especially the influence on communication. The communication became less fierce towards each other, and more time was invested into the relationship to get the best out of the situation. Because the buyers had no power, they had to 'pleas' the relationship more. The control you have over, for example, the prices had fallen away. However, despite the fact that the relationship became better, it is not guaranteed that you get the supplies. This indicates that not only a good buyer-supplier relationship results in supply chain resilience, but also the level of power impacts the supply chain resilience.

In table 6, a clear pattern is viewable with the level of a buyer-supplier relationship and the supply chain resilience. The most relationships which were indicated as 'good' before Covid-19, increased during Covid-19 even more when the communication, trust and commitment improved. This resulted in better relationships, in E(GR) even in a form of preferred customer status which in that case resulted in the continuity of supply. The continuation of supply is one of the reasons why a company has a resilience strategy because it is partly responsible for the continuity of the business. All the indicated 'bad' relationships before Covid-19 were even more negatively impacted by Covid-19 on behalf of communication, trust and commitment. They got even worse except in 1 case, the case of A(BR). Covid-19 caused better communication which resulted in better trust in this case. This together with a higher level of commitment, the relationship was indicated better than before Covid-19. This shows that the effect of Covid-19 influenced the relationship. In addition, it did positively affect the resilience of the company.

To summarize, there is a clear pattern in the effect of Covid-19 on relationships and its effect on resilience. On the one hand you have the influence of Covid-19 on the specific characteristics communication, trust, commitment, and cooperation which, when influenced positively, resulted in better relationships. Just as the other way around, when negatively influencing the characteristics communication, trust, commitment, and cooperation, the relationship would be worse than before. In addition, the characteristic communication alone can influence the resilience of the company. So can communication itself ensure better resilience by being able to know sooner about problems and, when being flexible, adjust towards these problems without having a good cooperation.

On the other hand, the influence of a good buyer-supplier relationship on the resilience has shown to be positive. It gives a form of assurance for continuity of supply from materials and continuity of the business. In addition, it provides you with more information so you can respond faster to upcoming problems. Next to this, the concepts power, flexibility, and transparency play a huge role in the influence of the buyer-supplier relationships on resilience of the company. So, transparency of communication results in more trust and flexibility makes sure that you can respond better to unexpected events. Power, on the contrary, shows that a good buyer-supplier relationship not always influences the resilience of a company.

5. DISCUSSION, IMPLICATIONS AND LIMITATIONS

Previous research had investigated if the commitment-trust theory of Morgan and Hunt (1994) can be applied on buyer-supplier relationships and showed that it could be an important determinant of a buyer-supplier relationship (Mandal & Sarathy, 2018). The influence of Covid-19 on the buyer-supplier relationship and its effect on the resilience strategy of a company are less fully understood in relation towards each other. In this study we addressed this gap and conducted a multiple case study to examine the effect of Covid-19 on buyer-supplier relationships and how this development affects the resilience of the companies. One of our main findings include a clear trend that Covid-19 affected the buyer-supplier relationships in the form of communication, trust, commitment, and cooperation. If the influence was positive on the characteristics of the commitment-trust theory (Morgan & Hunt, 1994), the result was a better

buyer-supplier relationship. Looking at it from the other way around, when Covid-19 negatively influenced the characteristics, the relationship was worse than before. The better relationship resulted in a better resilience of the supply chain regarding getting the materials from suppliers and better prices. However, communication alone could influence the supply chain resilience without having a good buyer-supplier relationship by the means of responding faster to knowable problems because of the transparent communication, just as the antecedent power. Which showed that good buyer-supplier relationships not always strengthen the supply chain resilience. Especially when the other party has the power. In addition, there are several antecedents which have an influence on the supply chain resilience other than the buyer-supplier relationship. So, play the antecedents transparency and flexibility a role in the determination of buyer-supplier relationships and supply chain resilience. Our findings have several limitations and implications for theory and practice.

5.1 Implications for literature

This research adds to our understanding of the Commitment-trust theory, antecedents, and consequences, as well as the interaction of these antecedents, the function of the commitment-trust theory in translating a buyer-supplier relationship to a resilience strategy, and why some relationships have a large impact on a company's resilience while others have a smaller impact. This all together with the influence of Covid-19 on the buyer-supplier relationships.

Firstly, the findings of this study are compatible with Morgan and Hunt's (1994) commitment-trust theory, supporting the importance of trust and commitment's direct effects on the supply chain (Chen, 2011) and resilience of the companies. So states the theory that communication improves trust and commitment and they both improve the cooperation. Just as in this research where the 4 positively influenced characteristics communication, trust, commitment, and cooperation, results in better relationships and when being negatively influenced results in worse relationships. In addition, it is in line with literature in which communication, trust and commitment are helping in building a better cooperation between the supply chain members and therefore help in developing proper relationships (Sønderskov & Daugbjerg, 2011; Morgan & Hunt, 1994).

Secondly, Covid-19 caused an interesting interaction between several antecedents and the characteristics of the commitment-trust theory. This research revealed that having a bad relationship, when being a big player, still can lead to becoming the top priority. This is depending on the power of the firm. This speaks to the discussion about the role of power in a buyer-supplier relationship (Chicksand, 2015). There is a notion that power is a dominant mechanism in buyer-supplier relationships (Cox, Sanderson, & Watson, 2001). However, Covid-19 changed the power dynamics within the current buyer-supplier relationship. This research suggests that the power lies more at the suppliers' side because of the scarcity of materials. The changed dynamic in power changed the way of communicating and the level of commitment each party must give. However, when still having a lot of power, because of the high-volume buyer it is for the supplier. It can still receive priority treatment regardless of the nature of the relationship (good or bad). So, this shows how some buyer-supplier relationships have smaller impact on a company's resilience compared to the impact of power. In addition, it shows the impact of power on the buyer-

supplier relationships. Therefore, it informs the literature, the role of power in supply chain resilience and buyer-supplier relationships (Chicksand, 2015; Cox, Sanderson, & Watson, 2001).

Thirdly, although our findings are consistent with earlier research on supply chain resilience (Nyaga, Whipple, & Lynch, 2010; Mandal & Sarathy, 2018; Wieland & Wallenburg, 2013; Lorenzoni & Lipparini, 1999), our focus on the buyer-supplier relationship in connection to resilience revealed new insights into how relationship qualities can aid in a company's resilience when facing disruptions of Covid-19. Next to being flexible and planning is especially the developing of good buyer-supplier relationships important to maintain continuity of supply and further continuity of their business. This research showed that having a good relationship can have as a result that the supplier will deliver its materials to you as opposed to the competitor. Which results in being able to deliver the final products to the customers. So, next to increasing risk awareness and decreasing vulnerability a good buyer-supplier relationship can cause (Wieland & Wallenburg, 2013), it can also increase the probability of continuity of supply and through this the continuity of business in the future when facing disruptions like Covid-19. This because you are better in facing problems regarding the disruptions due to the buyer-supplier relationship because potential problems will be communicated faster and solved together rather than alone.

This research is adding to the current literature the influence of Covid-19 on the buyer-supplier relationship, regarding the commitment-trust theory (Morgan & Hunt, 1994), and the further influence on the resilience strategies.

5.2 Managerial implications

Our findings have several implications for supply chain managers. First, all participants explained the role of communication in the relationship as one of the most important factors when influencing the buyer-supplier relationship and the resilience of the company during Covid-19. During emergencies, the transmission of clear and transparent communication among supply chain members is crucial so that all members can take the necessary activities to restore the supply chain to the highest suitable condition. This is the basis of the supply chain resilience (Ponomarov & Holcomb, 2009). Hence, supply chain managers must foster an environment that encourages open involvement among supply chain members. This will also provide the chance to exchange information about risk management knowledge, expertise and other important factors in the supply chain. In addition, the importance of communication in enhancing and boosting supply chain connections has been discovered (Wieland & Wallenburg, 2013). Communication, according to our research, is a prerequisite for developing supply chain connections by increasing mutual trust among supply chain participants.

As a result, the suppliers and buyers should facilitate the information flow to increase transparency and trust in the buyer-supplier relationship. So did also mention participant A that they have created an environment in which the buyer or supplier is not scared to mention problems they are facing. Increasing openness and transparency leads to higher trust. Because, when a person does not trust the other party in the supply chain, the advantage of a good cooperation may not be utilized (Cao & Zhang, 2011). When there is no trust, the communication will not be believed,

and the cooperation will be influenced negatively. This can be seen in the case F(BR). There is a constant fear of being betrayed in a form of cancelled contracts or changed quality of materials. In addition, the research has shown that when the members of the supply chain are showing more commitment towards their agreements, the focal firm will have an easier time aligning the interests of the buyers and suppliers. So, as the journey from buyer-supplier relationships to resilience is beneficial, all of this will lead to the development of better supply chain resilience.

5.3 Limitations and future research

This research has some clear limitations regarding the results. Firstly, the findings of this research are about the influence of Covid-19 on buyer-supplier relationships and its effect on supply chain resilience. However, multiple participants have pointed out that not only Covid-19 did affect the buyer-supplier relationship, but also other impacts in the environment and personal circumstances have impacted the relationship. Future research should research the effects on the supply chains next to Covid-19.

Secondly, we only looked at the influence of buyer-supplier relationships and the impact of Covid-19 on supply chain resilience. In real life, multiple concepts influence and affect the resilience of companies. Future research should therefore aim at the additional concepts which could play a role in the determination of a resilience strategy, and which could affect the buyer-supplier relationships. Antecedents like power and flexibility could be researched in addition to this research. Because the explanation of the buyer-supplier relationship is based on the commitment-trust theory (Morgan & Hunt, 1994) it is also possible to investigate what the influence from power is on that model. It could also, for example, be interesting to examine the dynamics of supply chain resilience during the start-up or termination of the relationship (Wadell, Bengtson, & Åberg, 2019). Next to this, future research could explore the several options and requirement associated with implementing good buyer-supplier relationships within the supply chain resilience.

Thirdly, there is a restriction in that this study is based primarily on qualitative data. When using qualitative methods, there is a danger that the interviewees would interpret concepts differently than they were intended by this research. Additionally, the number of interviews taken, could be higher to validate the research more. One of the reasons is to get more data in general, and the other reasons is to get more data from a suppliers' view. Because in this research all the cases were from a buyers' view. So, future research could add quantitative research. This to increase the number of participants and of reduce the chance of misinterpretation of various concepts.

6. ACKNOWLEDGEMENT

Initial and foremost, I want thank my first supervisor Dr. Ir. N.J. Pulles, and Dr. K.P.M. Stek, for their assistance, guidance, and support throughout the various stages of this bachelor thesis. Secondly, I would want to thank all the participants and their companies that agreed to participate in this research. It allowed me to gain a better understanding of how buyer-supplier relationships influence the supply chain resilience and its effect from Covid-19.

7. REFERENCES

- Almeida, F., Santos, J. D., & Monteiro, J. A. (2020). The Challenges and Opportunities in the Digitalization of Companies in a Post-COVID-19 World. *Institute of Electrical and Electronics Engineers*.
- Brinkhoff, A., Özer, Ö., & Sargut, G. (2015). All You Need Is Trust? An examination of Inter-Organizational Supply Chain Projects. *Production and Operations management*.
- Cao, M., & Zhang, Q. (2011). Supply chain collaboration: Impact on collaborative advantage and firm performance. *Journal of operations management*.
- Chen, J. (2011). The impact of sharing customer returns information in a supply chain with and without a buyback policy. *European journal of operational research*.
- Chicksand, D. (2015). Partnerships: the role that power plays in shaping collaborative buyer-supplier exchanges. *Industrial marketing management*.
- Choi, T. Y., Narayanan, S., Novak, D., Olhager, J., Sheu, J.-B., & Wiengarten, F. (2021). Managing extended supply chains. *Journal of Business Logistics*.
- Chowdhury, P., Paul, S. K., Kaisar, S., & Abdul, M. M. (2021). COVID-19 pandemic related supply chain studies: A systematic review.
- Christopher, M., & Peck, H. (2004). Building the resilient supply chain. *The international journal of logistics management*.
- Christopher, M., & Rutherford, C. (2004). Creating supply chain resilience through agile six sigma. *Critical eye publications*.
- Cohen, M. j. (2020). Does the COVID-19 outbreak mark the onset of a sustainable consumption transition? 3.
- Cox, A., Sanderson, J., & Watson, G. (2001). Supply chains and power regimes: toward an analytic framework for managing extended networks of buyer and supplier relationships. *Journal of supply chain management*.
- Dabhilkar, M., Brikie, S. E., & Kaulio, M. (2016). Supply-side resilience as practice bundles: a critical incident study. *International journal of operations & production management*.
- Dubois, A., & Araujo, L. (2007). Case research in purchasing and supply management: opportunities and challenges. *Journal of purchasing and supply chain management*.
- Durach, C. F., & Machuca, J. A. (2018). A matter of perspective - the role of interpersonal relationships in supply chain risk management. *International Journal of Operations & Production Management*.
- Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of inter-organizational competitive advantage. *Academy of Management review*.
- Ellram, L. (1991). Life-cycle patterns in industrial buyer-seller partnerships. *International Journal of Physical Distribution & Logistics Management*.
- Fossey, E., Harvey, C., McDermott, F., & Davidson, L. (2002). Understanding and evaluating qualitative research. *Journal of psychiatry*.
- Fynes, B. d. (2005). Supply chain relationship quality, the competitive environment and performance. *International journal of production research*.
- Fynes, B. D., & Mangan, J. (2008). The effect of relationship characteristics on relationship quality and performance. *International journal of production economics*.
- Govindan, K., Mina, H., & Alavi, B. (2020). A decision support system for demand management in healthcare supply chains considering the epidemic outbreaks: a case study of coronavirus disease 2019 (COVID-19). *Transportation research Part E*.
- Greening, P., & Rutherford, C. (2011). Disruptions and supply networks: a multi-level, multi-theoretical relational perspective. *The international journal of logistics management*.
- Harrison, D., & Easton, G. (2004). Temporally embedded case comparison in industrial marketing research. *Critical realist applications in organisation and management studies*.
- Hendricks, K. B., & Singhal, V. R. (2003). The effect of supply chain glitches on shareholder wealth. *Journal of Operations management*.
- Hendricks, K. B., & Singhal, V. R. (2005). Association Between Supply Chain Glitches and Operating Performance.
- Howard, M., Roehrich, J., Lewis, M., & Squire, B. (2017). Converging and diverging governance mechanisms: the dynamic interplay of (dys)function. *academic managing procurement*.
- Ivanov, D., & Dolgui, A. (2020). Viability of intertwined supply networks: extending the supply chain resilience angles towards survivability. A position paper motivated by COVID-19 outbreak. *International journal of production research*.
- Ivanov, D., Dolgui, A., Sokolov, B., & Ivanova, M. (2016). Literature review on disruption recovery in the supply chain. *International journal of production research*.
- Karlsson, C. (2008). Researching operations management, researching operations management.
- Ketchen, D. J., & Craighead, C. W. (2020). Research at the Intersection of Entrepreneurship, Supply Chain Management, and Strategic Management:

- Opportunities Highlighted by COVID-19. *Journal of Management*.
- Liu, Z., Li, M., & Zhai, X. (2022). Managing supply chain disruption threat via a strategy combining pricing and self-protection. *International Journal of production economics*.
- Lorenzoni, G., & Lipparini, A. (1999). The leveraging of interfirm relationships as a distinctive organizational capability: A longitudinal study. *strategic management journal*.
- Luc, C. (2006). Collaboration planning in a supply chain. *Supply Chain Management: An International Journal*.
- Majumdar, A., Shaw, M., & Sinha, S. K. (2020). COVID-19 debunks the myth of socially sustainable supply chain: A case of the clothing industry in South Asian countries. *Sustainable production and consumption*.
- Makkonen, H., Pohjola, M., Olkkonen, R., & Koponen, A. (2014). Dynamic capabilities and firm performance in a financial crisis. *Journal of Business Research*.
- Mandal, S., & Sarathy, R. (2018). The effect of supply chain resilience: Empirical evidence from India.
- Mishra, R., Kumar, s. R., & Subramanian, N. (2021). Impact of disruptions in agri-food supply chain due to COVID-19 pandemic: contextualised resilience framework to achieve operational excellence. *the international journal fo logistics management*.
- Morgan, R., & Hunt, S. (1994). the commitment-trust theory of relationship marketing. *Journal of Marketing*.
- Newton, N. (2010). The Use of Semi-structured Interviews in Qualitative Research: Strengths and Weaknesses. *Academia*.
- Nikookar, E., & Yanadori, Y. (2022). Preparing supply chain for the next disruption beyond COVID-19: managerial antecedents of supply chain resilience. *International journal of operations and production management*.
- Nyaga, G. N., Whipple, J. M., & Lynch, D. F. (2010). Examining supply chain relationships: Do buyer and supplier perspectives on collaborative relationships differ? *Journal of operations management*.
- Pettit, T., Fiksel, J., & Croxton, K. (2010). ensuring supply chain resilience: Development of a conceptual framework. *Journal of business logistics*.
- Ponis, S., & Koronis, E. (2012). Supply chain resilience: Definition of concept nad its formative elements. *journal of applied business research*.
- Ponomarov, S. (2012). Antecedents and consequences of supply chain resilience: A Dynamic Capabilities. *PhD Dissertation, University of Tennessee-USA*.
- Ponomarov, S. J., & Holcomb, M. C. (2009). Understanding the concept of supply chain resilience. *The international journal of logistics management*.
- Raj, A., Anjan, M. A., Jabbour, A. B., & Srivastava, S. K. (2022). Supply chain management during and post-COVID-19 pandemic:. *Journal of business research*.
- Rice, J., & Caniato, F. (2003). Building a secure and resilient supply network. *supply chain management review*.
- Sarker, S., Ahuja, M., Sarker, S., & Kirkeby, S. (2011). The role of communication and trust in global virtual teams: A social network perspective. *Journal of management information systems*.
- Scholten, K., & Schilder, S. (2015). The role of collaboration in supply chain resilience. *Supply chain management: an international journal*.
- Scholten, K., Scott, P., & Fynes, B. (2014). Mitigation processes—Antecedents for building supply chain resilience. Supply Chain Management. *International journal*.
- Segal, D. L., Coolidge, F., O'Riley, A., & Heinz, B. A. (2006). Structure and semi structured interviews. *Department of psychology*.
- Sharma, M., Luthra, S., Joshi, S., & Kumar, a. (2020). Developing a framework for enhancing survivability of sustainable supply chains during and post-COVID-19 pandemic. *International journal of logistic research adn applications*.
- Shufford, K. N., Hall, D. L., & Randall, A. K. (2021). Connected while apart: Associations between social distancing, computer-mediated communication frequency, and positive affect during the early phases of Covid-19.
- Singh, N., & Goyal, A. (2007). Consumer perception about fast food in India: an explanatory study. *British food journal*.
- Sønderskov, K., & Daugbjerg, C. (2011). The state and consumer confidence in eco-labeling: organic labeling in Denmark, Sweden, The United Kingdom and The United States. *Agriculture adn human values*.
- Srinivasan, M., Mukharjee, & D., G. A. (2011). Buyer-supplier partnership quality and supply chain performance: Moderating role of risks, and environmental uncertainty. *Journal of European management*.
- Tukamuhabwa, B., Stevenson, M., Busby, J., & Zorzini, M. (2015). Supply chain resilience: Definition, review and theoretical foundations for further study. *International journal of production research*.
- Van Hoek, R. (2020). Research opportunities for a more resilient post-COVID-19 supply chain – closing the gap between research findings and industry practice. *International journal of operations and production management*.

- Wadell, O., Bengtson, A., & Åberg, S. (2019). From dusk till down: attracting suppliers for resource mobilization during bankruptcy. *Journal of purchasing and supply management*.
- Wagner, S. M., & Bode, C. (2006). an empirical investigation into supply chain vulnerability. *Journal of purchasing and supply chain management*.
- Wieland, A., & Wallenburg, C. (2013). The influence of relational competencies on supply chain resilience: A relational view. *International journal of physical distribution & logistics management*.
- Wu, M.-y., Weng, Y.-C., & Huang, I.-C. (2012). A study of supply chain partnerships based on the commitment-trust theory. *Asia pacific journal of marketing*.
- Zaheer, A. M., & Perrone, V. (1998). Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *organization science*.

8. APPENDIX

8.1 Appendix 1

Interview Guide

Interviewer(s):

Interviewee(s):

Organization interviewee(s):

Supervisor: Dr. Pulles

Date interview: Recorded: Yes/No

Introduction:

1. Can you introduce yourself and your role in the business?
2. Can you explain what the business is doing?
 - a. How big is your business compared to the market?
3. What is the meaning of buyer-supplier relationships for you and your colleagues?
4. What is the meaning of a resilience strategy for you and your colleagues?

State before Covid-19 for the good relationship and the bad relationship:

6. How would you explain the relationship you have with your suppliers, and the difference between multiple suppliers?
 - a. What are specific characteristics you think are important in buyer-supplier relationships?
 - b. What are specific differences between several suppliers and the relationships you have with them?
7. **Communication:** How would you explain the communication between you and the suppliers?
 - a. How is the accuracy of the supplier regarding communication and answering questions?
 - b. Would you assess the communication of the supplier as timeliness?
 - c. Do you believe what the supplier is saying? Do you think the suppliers are credible?
 - d. How would you describe the form of communication when talking about critical information?
8. **Trust:** Do you always belief that the supplier will perform its tasks as how they are agreed upon before?
 - a. Did you experience unexpected actions from the supplier once you agreed to something?
 - b. Do you trust your supplier it will perform as it is supposed to and will not act uncertain?
9. **Commitment:** Do you put a lot of effort into the relationship with your supplier?

- a. Do you invest in the relationship?
10. **Cooperation:** Do you have a feeling that you want to achieve mutual goals and sustain your operations together with your supplier? If yes, do you therefore cooperate better with each other?
11. Could you explain the characteristics of your resilience strategy?
- a. When you don't have a specific resilience strategy, what are the actions you take to overcome disruptions in the supply chain?
 - b. How are your dynamic capabilities? Can you easily switch between suppliers, do you have back up suppliers?
12. What role play relationships with the suppliers in the resilience of you company?

State during and after Covid-19 for the good and bad relationship:

13. Can you describe the major impacts of Covid-19 on your supply chain?
- a. What were the biggest disruptions which influenced your supply chain?
14. What are the major changes Covid-19 and its disruptions caused regarding the buyer-supplier relationship?
- a. Especially regarding the characteristics of trust, commitment, cooperation and communication.
 - b. What is the influence of Covid-19 on the way of communicating?
 - c. Do you put more effort into several suppliers to maintain a buyer and maintain the relationship?
 - d. Do you still have the feeling that you cooperate to a mutual goal?
15. How did these changes influence the resilience strategy of your company?
- a. Became it clearer that resilience strategies are necessary?
 - b. Did you take actions to overcome these disruptions and prevent it in the future?
 - c. When didn't change anything, why not?
16. Did the role of relationships with suppliers in the resilience of your company change because of Covid-19?

General future state:

17. What do you think will be most effective in becoming resilient?
18. Do you have any tips for other supply chain managers to maintain good relationships with suppliers and overcome disruptions at the same time?
19. Lastly, is there anything you think I should have asked, that I haven't?

8.2 Appendix 2

Table 5: major disruptions caused by Covid-19

Case	Major disruptions caused by Covid-19.						
	Scarcity of materials	Increased lead time	Logistic disruptions	Increased prices	Decreased production capacity	Decreased demand	Reduced face-to-face contact
A(GR)	X	X	X	X	X	X	
A(BR)	X	X	X	X	X	X	
B(GR)	X	X	X	X	X	X	
B(BR)	X	X	X	X	X	X	
C(GR)	X	X	X	X	X	X	
C(BR)	X	X	X	X	X	X	X
D(GR)	X	X	X	X	X	X	
D(BR)	X	X	X	X	X	X	
E(GR)	X	X	X	X	X		X
E(BR)	X	X	X	X	X		X
F(GR)	X	X	X	X	X		
F(BR)	X	X	X	X	X		