Cognitive compatibility and supplier performance, in alignment or not?

Author: Farah Freij
University of Twente
P.O. Box 2017, 7500AE Enschede
The Netherlands

ABSTRACT

Buyer-supplier relationships are one of the drivers of supply chain success. However, information on how to enhance these relationships using alignment strategies lacks, increasing the need for cognitive compatibility. Cognitive compatibility considers the alignment of key relational attributes – trust, power, and commitment. This research studies the effects of the aligned relational attributes that cognitive compatibility consists of, on supplier performance. Additionally, a potential mediating effect of buyer-supplier relationship length on these relationships was studied. A model was proposed to illustrate the expected effects and relationships between these constructs. Survey data of 69 buyer-supplier relationships was assessed using PLS-SEM. This analysis showed that there is no significant relationship between cognitive compatibility as a whole and supplier performance. Moreover, there is no mediating role for buyer-supplier relationship length in this relationship. However, there are substantial effects which indicate that there is some sort of relationship between cognitive compatibility and supplier performance. This study contributes to literature that include various cases and definitions of compatibility and alignment to influence supplier performance. Additionally, it adds onto literature that focusses on buyer-supplier relationships.

Graduation Committee members:
First supervisor – Dr. ir. N.J. Pulles
Second supervisor – Dr. F.G.S. Vos

Keywords
Buyer-supplier relationship, supplier performance, cognitive compatibility, buyer-supplier alignment.

---

1. INTRODUCTION: THE RELEVANCE OF COGNITIVE COMPATIBILITY BETWEEN BUYERS AND SUPPLIERS

Studies in operations management evaluate the advantages of aligning the strategic objectives of suppliers and their major buyers in improving the efficiency and responsiveness of supply chains (i.e., Ellram 1990, Vachon et al. 2009). But, however, do not consider how alignment strategies can influence supplier performance – and therefore improve efficiency and responsiveness of supply chains. Unfortunately, in previous research, limited attention has been given to buyer-supplier alignment. There is no clear agreement on what should be focused on regarding alignment and misalignment, or on their effects on relationship development, or on the processes that affect the change over time (Corsaro & Snehota, 2011, p.1051). Additionally, there are no well-established methods for assessing and measuring alignment and misalignment, as empirical evidence on buyer-supplier alignment has been given little attention to (Corsaro & Snehota, 2011, p.1051). Therefore, how to implement alignment between buyers and suppliers, for instance, to improve supplier performance will need further examining and a bigger focus.

It is known that the relational attributes trust, power, and commitment are of importance to the buyer-supplier relationship. However, it has never been studied if the alignment of these attributes leads to benefits. Cognitive compatibility – the extent to which the buyer-supplier think alike on the relational attributes trust, power, and commitment – does consider alignment of these attributes. This paper sets out to address the research gap within buyer-supplier alignment studies, by studying how alignment of abovementioned relational attributes influences supplier performance in particular. The following research questions is hence proposed:

- **RQ:** How does cognitive compatibility influence the performance of the suppliers in the buyer-supplier relationship?

An analysis was performed using PLS-SEM analysis, with data from 69 buyer-supplier surveys. It was hypothesised that cognitive compatibility would have a direct effect on supplier performance, using aligned trust, aligned power, and aligned commitment to measure this. In addition, it was also hypothesised that buyer-supplier relationship length directly mediates the relationship between cognitive compatibility.

This aims to contribute to literature in various ways. For instance, the concept of cognitive compatibility was developed. Furthermore, even though not all effects perceived in this study were significant, they contribute to the literature that include various cases and definitions of compatibility and alignment to influence supplier performance (e.g., Corsaro, 2011; Azadegan, 2011). Moreover, it adds onto literature that study buyer-supplier relationships (i.e., Dwyer et al., 1987; Maloni & Benton,

2000; Morsy, 2017), as this research shows the effects of aligning relational attributes of a buyer-supplier relationship.

The paper is organised as follows: in the next chapter the theoretical foundation of this study is presented. Subsequently, based on this the conceptual framework and hypotheses are formed in the third chapter. In the fourth chapter, the research methodology is elaborated on. Furthermore, in the fifth chapter the results are analysed, and discussed in chapter six. Additionally, in this chapter the conclusion and the implications, and limitations, and recommendations for future research are also presented.

2. THEORETICAL FOUNDATIONS

2.1 Buyer-supplier relationships and their influence on supplier performance

2.1.1 Supplier performance

Supplying firms need buying firms to push them to improve their performance. Humphreys et al. (2004, p.133) state that increasing supplier performance goals is an efficient way of motivating supplying firms, as without the urging of the buying firm, supplying firms are not likely to initiate programs designed to enhance performance. This is because buying firms have the biggest advantage if supplier performance increases. Supplier performance is one of the key elements of a buying firm's supply chain management, as the buying firm's production is very dependent on it. Hence, buying firms feel the strong need to optimise this performance. To achieve this, supplier performance can be measured using various elements. For example, namely product quality, delivery performance, price, responsiveness to change requests, service support, flexibility, and overall performance are considered to determine a supplying firm's performance (Prahinksi & Benton, 2004, p.43; Jiwa Husada Tarigan et al., 2020, p.239). Improvement on any of these measures can thus lead to improvement of supplier performance. Additionally, improving supplier performance means that the buyer's perception of the supplier's improvement in quality, delivery, cost, inventory, lead time and the rate of new product introduction is being emphasised (Humphreys et al., 2004, p.134).

As stated by Fink et al. (2007, p.31), within prior research, limited attention has been given to supplier performance. This is unfortunate as it is of high importance within buyer-supplier relationships. However, the awareness of the relevance of improving supplier performance is rising. For instance, Humphreys et al. (2004, p.131) explain that increasingly more manufacturing firms have realised the importance of supplier performance in establishing and maintaining their competitive advantage, leading to purchasing research emphasising impacts on buyer and supplier performance. In addition, as stated by Prahinski & Benton (2004, p.43) supplier performance impacts the buying firm directly and is, because of that, a highly valued criterion for the buying firm.

2.1.2 Buyer-supplier relationships and the importance of relational attributes

According to Morsy (2017, p.34) the core of achieving a successful supply chain is through the effective management of buyer-supplier relationships. In addition, buyer-supplier relationships in the supply chain are one of the most important elements of supply chain integration (Hsiao et al., 2002, p.3). Establishing and managing effective relationships at every link in the supply chain is increasingly turning into the prerequisite of business success (Hsiao et al., 2002, p.3). Therefore, it is argued that optimising buyer-supplier relationships is of importance to the entire supply chain.

When looking at the buyer's side, the buying organisation's ultimate goal in instituting supplier development activities is to improve the supplier's performance and capabilities to meet the organization's current and future needs (Prahinski & Benton, 2004). Effective management of buyer-supplier relationships can have multiple benefits, such as improved coherence, and the possibility of creating synergies. Furthermore, Maloni & Benton (2000) found that strong buyer-supplier relationships have a significant positive effect on manufacturer performance, supplier performance, and performance of the entire supply chain. Logically, there are certain aspects of a buyer-supplier relationship that help with enhancing supplier performance. There are various views on what attributes are important within partnerships, developed from multiple theories. Supply chain partnerships have namely been investigated from a variety of theoretical perspectives, ranging from transaction cost theory to social theories, such as relational exchange theory, and network theory (Patnayakuni et al., 2006, p.19). These theories and perspectives have shown that within the buyer-supplier relationship, utilising these correctly can improve the relationship and what's more lead to desired outcomes. Therefore, buying firms using certain relational attributes, could arguably lead to improved supplier performance, something any buying firm is interested in. The most frequent discussed relational attributes are trust, power, and commitment, which will be elaborated on below. In addition, it will be argued how these attributes can help buying firms with gaining improved supplier performance.

Firstly, trust will be discussed. Relationships cannot be built without trust, not only in a personal setting, but also within a professional setting. For instance, trust is the pivotal factor in evaluating buyer-supplier relationships, and it should be prioritised in studies, therefore it is a main factor affecting the strength of any inter-organisational relationship (Dwyer et al., 1987; Lambe et al., 2001). A high level of trust between stakeholders implies that the strength of the relationship is high as well. In addition, the stronger the relationship between a buyer and supplier, the better the performance of the supplier (Jiwa Husada Tarigan et al., 2020, p.240). However, it is important to note that the relationship between the buyer and the supplier should be purely relational, and not transactional in order to have a significant impact on supplier performance (Jiwa Husada Tarigan et al., 2020, p.240). Trust can lead to supplier satisfaction and are stated to be the premises of relationship quality (Walter et al., 2003; Maunu, 2003). Additionally, different types of trust have a positive effect on supplier

performance (Poppo et al., 2016). The more trust the supplying firm has in the buying firm, the more likely the supplier is to aspire to perform well (Poppo et al., 2016, p.737), indicating that there is a link between trust and supplier performance. Moreover, the supplying firm's serviceability, dependability, and quality assurance are considered common determinants of the degrees of trust in buyer-supplier relationships (Morsy, 2017). These determinants are related to supplier performance.

Secondly power will be discussed. Power is a multi-faceted concept (Han et al., 2022, p.45) and can be split into different sources of power – mediated (coercive) and non-mediated (non-coercive) power (Pulles et al., 2014, p.19). Non-mediated sources of power are not purposefully utilised to influence the partner, and awareness of this source of power might not even exist (Pulles et al., 2014; Maloni & Benton, 2000; Terpend & Ashenbaum, 2012). Contrary to this, with mediated power a firm is aware of their sources of power and purposefully utilises this to influence the partner's response (Pulles et al., 2014; Maloni & Benton, 2000; Terpend & Ashenbaum, 2012). Both types of power are utilised frequently in buyer-supplier relationships (Han et al., 2022, p.45). Non-mediated power may be less influential than mediated power in achieving goals such as pushing for lower prices, addressing poor quality, and requiring suppliers to adopt socially or environmentally responsible practices (Chae et al, 2017; Chen & Chen, 2019). Mediated power is more influential in such contexts, but it can also cause losses (Jain et al., 2014). Furthermore, power can also influence buyer-supplier relationship commitment (e.g., Chae et al, 2017). Additionally, buyer bargaining power has a negative relationship with supplier performance – meaning that the higher the power the buyer exerts on the supplier, the lower the supplier performance (Chang et al., 2022). This seems logical, as the more power is exerted by the buyer on the supplier, the higher the power distance becomes. In general, usage of power seems to revoke negative impressions between parties. Therefore, buying firms and supplying firms aligning their stances towards power can result into better cooperation towards achieving goals, such as improved supplier performance.

Lastly, commitment will be discussed. There is also empirical evidence in the supply chain literature that strong relationships, characterised by commitment, lead to superior exchange performance between buyers and suppliers (Prahinski & Benton, 2004; Shin, Collier, & Wilson, 2000). Commitment is a key relational attribute for buyer-supplier relationships' success (Kim & Choi, 2015, 63). Moreover, according to Lambe et al. (2001) from a social exchange theory perspective, commitment is strongly influenced by the level of social and economic rewards received in a relationship - firms receiving a high level of benefits from a relationship may view that relationship as important to maintain. Therefore, suppliers could be stimulated to perform better for buyers they commit to in an aligned way. The attribute positively influences acquiescence and cooperation and negatively influences a firm's propensity to leave (Morgan and Hunt, 1994). Additionally, Anderson & Weitz (1992) found that each channel member's commitment to the relationship was based on its

perceptions of the other party's commitment. When put in context of buyer-supplier relationships, they found that the buying firm's commitment positively influences the supplier's commitment (Anderson & Weitz, 1992). Subsequently, Krause (1999) found that the buying firm's perceptions of the supplier's commitment positively affected the buying firm's commitment to the supplier. If these perceptions are positive, supplier commitment will be positive as well, which eventually leads to better supplier performance. In addition, as examined by Srinivasan and Brush (2006), given the buying firm credibly commits to the buyer-supplier relationship, and the supplying firm reciprocates this, supplier performance improves. The visualisation of the effects of exerted trust, power, and commitment on supplier performance can be seen below in figure 1.

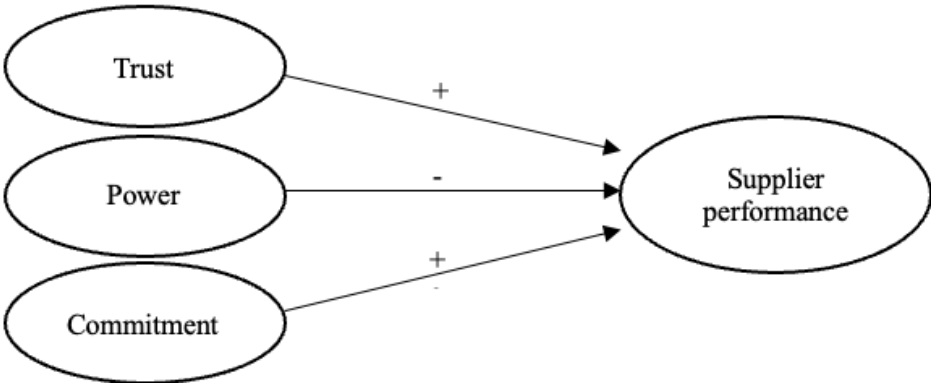

Figure 1. Relational attributes that affect supplier performance

In addition, in the figure below, the literature backgrounds of the relational attributes of buyer-supplier relationships are presented, to visualise the relevance of these concepts.

Table 1. Literature backgrounds of relational attributes of buyer-supplier relationships

Characteristic	Definition	Theoretical perspective	References
Trust	A substitute for costly control and coordination mechanisms.	Transaction cost economics	Bromiley & Cummings (1995)
Trust	A relational lubricant, allowing greater benefits of knowledge transfer, joint learning, and the sharing of risks and costs associated with exploring and exploiting opportunities.	Social capital theory	Inkpen & Tsang (2005), Nahapiet & Ghoshal (1998)
Power	The ability to influence other firms to act in a desired manner for economic gains.	Transaction cost economics	Ireland & Webb (2007)

Power	Can be categorised as mediated and non-mediated power. Mediated power is used deliberately for control, whereas with non-mediated power the existence of it is not always known.	Social exchange theory	Pulles et al. (2014).
Commitment	Reflects the willingness of each organization to exert the necessary efforts and make the appropriate investments that would result in mutual benefit for both parties	Social exchange theory	Lambe, Wittmann, & Spekman (2001), Terawatanavong & Quazi (2006)
Commitment	Defined as relationship partners' confidence regarding the importance and efforts of maintaining the long-term relationship by willingly making short-term sacrifices.	Social exchange theory	Shahzad, Ali, Takala, Hero, & Zaefarianc (2018)

2.2 Cognitive compatibility

2.2.1 Definition and derivation of cognitive compatibility

As the three above mentioned attributes are so frequently mentioned within buyer-supplier relationship literature, that alignment of them is expected to impact the buyer-supplier relationship. By aligning these attributes, we speak of cognitive compatibility – *the extent to which the buyer-supplier think alike on the relational attributes trust, power, and commitment*. This definition is considering instances that are similar to cognitive compatibility and that have been defined previous times in literature, albeit that the terminology and scope thus have differed. For instance, Kehoe et al (2007, p.1142) focus on the structure and operations supply chains and refer to it as operations alignment. The authors define it as "the way in which supply chain operations and activities should be managed to meet the demands of product/market through synchronization and coordination of operations" (Kehoe et al, 2007, p.1144). Moreover, according to Gattorna & Walters (1996), alignment entails the 'appropriateness' of various elements, that are relative to one another. In addition, Azadegan (2011) states that the degree of alignment between buyers and suppliers depend on their knowledge sharing capabilities. Therefore, when the buying party and the supplying party have shared views on the key relational attributes trust, power, and commitment, the alignment between both parties in general is expected to increase.

2.2.2 The impact of cognitive compatibility

Moreover, lack of compatibility leads to a degradation of performance in general (Bläsing et al. 2022, p.291), as a lack of compatibility, logically, indicates misalignment. This should be avoided, as it can reduce effectiveness and efficiency of implemented actions. According to previous studies, misalignment between buyers and suppliers cause complications (Leminen, 2001), so detecting whether there is misalignment, and choosing measures to achieve alignment, is of high importance (Scherpereel, 2006). Furthermore, buyers' and sellers' interpretations of conflicts and solutions appear to affect their interactive behaviour, their strategic choices, and their choice of solution for certain problems (Kaplan, 2008). Therefore, it is important buyers and suppliers have aligned views. In addition, it can enable various benefits, such as a long-lasting relationship, and improved supplier performance. For instance, aligning views – in this study's case trust, power, and commitment, can lead to more harmony, which might impact buyer-supplier relationship length. Additionally, equal confidence and satisfaction between buyers and suppliers is essential for a long-term relationship (Ganguly & Roy, 2021, p.248). When the buying firm initiate strategies to increase their cognitive compatibility with the supplying firm closer partnerships can form, which also influence the relationship length. Moreover, the buying firm should treat their suppliers as their partners, not as outsiders, to increase harmony and relationship length. (Lawrence, 2004). Relationship length could also act as a mediator between aligning the relational attributes and supplier performance. For instance, buyers and supplier tend to state that trust in one another has been built up over time, based on longstanding business relationships (McKinsey, 2020, p.5). Additionally, from the buyer's perspective, the main advantages derived from close long-term relationships with suppliers are almost all related to supplier performance, such as reliability of supply, improved delivery schedules, lower product/production costs, and the ability to resolve conflicts satisfactorily (Han et al., 1993, p.335). Therefore, in these literature examples it becomes clear that relationship length can play a role with a supplier's willingness to improve their performance.

What's more, buyers and suppliers improving their cognitive compatibility should put a high emphasis on joint value creation – which can add onto achieving supplier satisfaction – and thus eventually improved supplier performance. For instance, a study by Ahmed et al. (2020) showed that when buying firms and supplying firms simultaneously commit to aligning e.g., communication, service and time management quality, the buying firms significantly boosted their relationship with the suppliers and enhanced supplier performance. Hence, it has been shown that when buying firms and supplying firms aligning certain aspects, supplier performance can improve. The illustration of the expected impact of cognitive compatibility on the buyer-supplier relationship can be seen in figure 2 below.

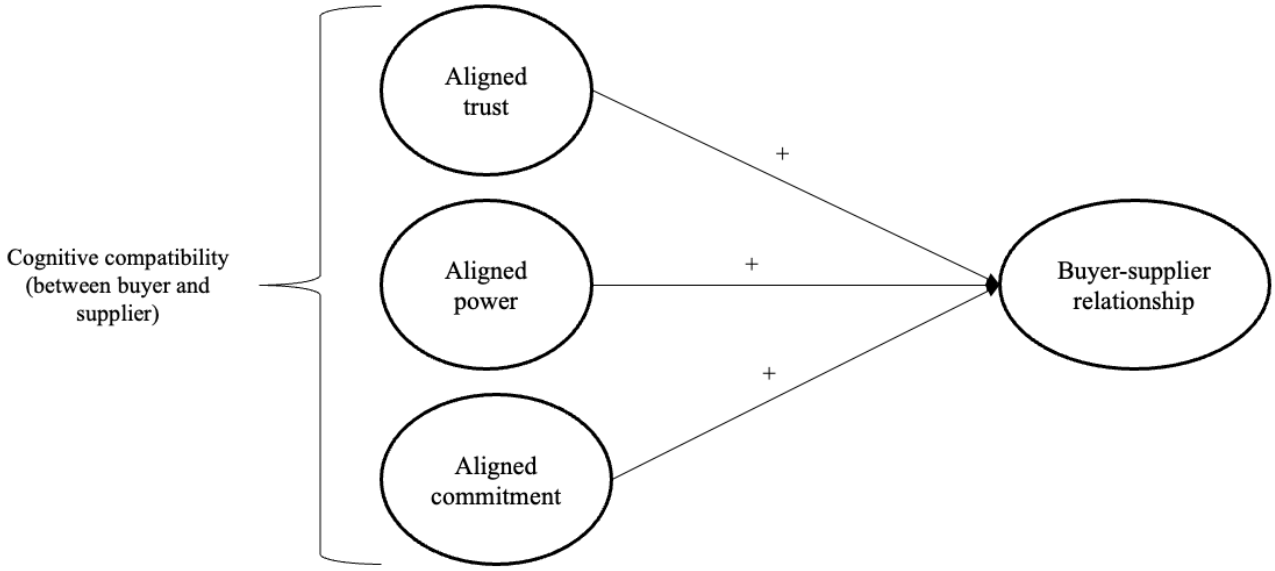

Figure 2. Model of cognitive compatibility

Unfortunately, as experience has shown, little attention has been given to this topic. There is no clear agreement on what should be focused on regarding alignment and misalignment, or on their effects on relationship development, or on the processes that affect the change over time (Corsaro & Snehota, 2011, p.1051). Additionally, there are no well-established methods for assessing and measuring alignment and misalignment, as empirical evidence on buyer-supplier alignment is limited (Corsaro & Snehota, 2011, p.1051). Hence, how to implement alignment between buyers and suppliers to enhance supplier performance will need further examining and a bigger focus. It is thus known that the relational attributes trust, power, and commitment have a high impact on the buyer-supplier relationship. However, it is not known if aligning the views on these attributes ultimately improves supplier performance. This highlights the importance of why cognitive compatibility between the buyer and supplier should be studied. Trust, power, and commitment are key relational attributes, which can argue that aligning these might be a logical step to improving buyer-supplier compatibility. As there is little agreement on how alignment and misalignment should be conceptualized and or tackled, especially with respect to the underlying processes that characterize their changes (Corsaro & Snehota, 2011, p.1043), looking at the alignment of relational attributes can be a step in the right direction.

3. CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

This research will test if striving for cognitive compatibility will positively affect supplier performance. To study this, the impact of the aligned relational attributes of cognitive compatibility; trust, power, and commitment on supplier performance will be tested.

Buyer-supplier alignment entails that strategy priorities, business approaches, and value expectations of buying firms and supplying firms should show acceptable levels of consistency with each other (Lee, 2002, Gligor et al., 2021). Striving for alignment indicates that a match between a buying firm and supplying firm's strategic priorities and the corresponding coordination of activities and structures of both should be strived for (Yang & Jiang, 2023). Taking the relational attributes into consideration might be beneficial, as these attributes are thus characteristic to a buyer-supplier relationship. In addition, as hinted at in chapter two, there are linkages between trust, power, commitment, and supplier performance. This highlights that there is more to discover on how to achieve supplier performance using these three attributes. Moreover, buying firms initiating alignment strategies with supplying firms can result into improved integration, which subsequently results in improved performance. A few examples of this are better customer service, better management of inventory levels, higher forecast accuracy, and greater customer and employee satisfaction (Kahn & Mentzer, p.6, 1996). In addition, internal integration strategies can positively affect the level of information exchange between the buyer and the supplier in a relationship (Kanter, 1994; Zhao et al., 2011).

It is thus expected that when buyers and suppliers align their views on trust, power, and commitment, supplier performance will be positively impacted. The more alignment there is between the views of buyers and suppliers on the relational attributes trust, power, and commitment – the more likely we can speak of cognitive compatibility between buyers and suppliers. It is important to note that buying firms are seen as the initiators of these strategies, as the buying organisation's ultimate goal in instituting supplier development activities is to improve the supplier's performance and capabilities to meet the organization's current and future needs (Prahinski & Benton, 2004). Moreover, buying firms initiating discussions to e.g., aim for improving cognitive compatibility can signal to the supplying firm that the buying firm is aiming for maintaining or developing a good relationship. Subsequently, a good buyer-supplier relationship tends to motivate supplying firms to improve their performance accordingly to the desires of the buying firm (Jiwa Husada Tarigan et al., 2020, p.239).

The first three hypotheses focus on the aligned relational attributes – power, trust, and commitment – as used in the definition of cognitive compatibility, and their individual influence on supplier performance. Subsequently, a last hypothesis examining the possible mediating effect of the length of the buyer-supplier on the relationship between cognitive compatibility and supplier performance is formed. The hypotheses are illustrated in figure 3.

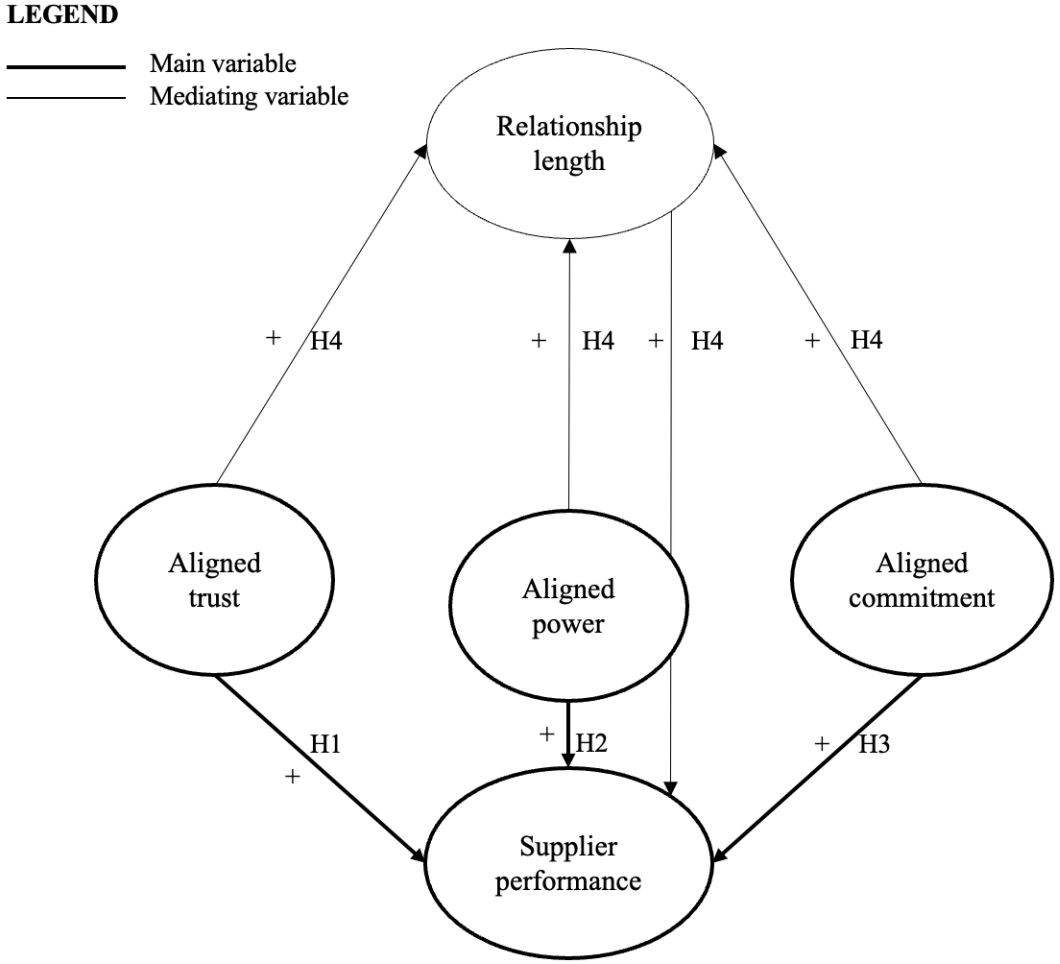

Figure 3. Proposed research model

3.1 The direct effects of the relational attributes separately on supplier performance

One of the main relational attributes plays a big role in buyer-supplier relationships is trust. As mentioned before, trust is the pivotal factor in evaluating buyer-supplier relationships (Dwyer et al., 1987). The supplying firm's serviceability, dependability, and quality assurance are considered common determinants of the degrees of trust in buyer-supplier relationships (Morsy, 2017). All these aspects are a part of supplier performance. There is thus a link between trust and supplier performance. In addition, Poppo et al. (2016) found out that different types of trust have a positive effect on supplier performance, what strengthens this. Furthermore, trusting relationships, where each party in the chain has mutual confidence and presumptions in the other members' capabilities and actions, (Handfield & Nichols, 999, p.67) are highly emphasised. The keyword here is mutual, as this indicates that both parties have aligned expectations for each other. Moreover, the more trust the supplying firm has in the buying firm, the more likely the supplier is to aspire to perform well (Poppo et al., 2016, p.737), again indicating that there is a link between trust and supplier performance. As trust can have a positive impact on supplier performance, and buyer-supplier alignment in general tends to be beneficial, it is thought that combining trust and alignment together can positively impact supplier

performance. Therefore, it is hypothesised that buyers initiating to align the views on trust with suppliers could lead to improved supplier performance.

H1: Aligned views on trust between buyers and suppliers in a relationship have a direct effect on supplier performance.

Besides trust, another key relational attribute of a buyer-supplier relationship is power. In general, usage of power seems to revoke negative impressions between parties. Therefore, buying firms and supplying firms aligning their stances towards power can result into better cooperation towards achieving goals, such as improved supplier performance. Furthermore, firms must understand the consequences of power, as well as the advantageous (dis)use of this power, that can be directed to achieve supply chain performance (Maloni & Benton, 2005, p.4). In addition, different types of power have different types of effects on supplier performance (Chang et al., 2022; Patatoukas, 2012). This shows why buying firms and supplying firms should discuss their stance on power, and how it should be applied within the relationship. Therefore, buyers and suppliers should discuss with one another how power should be applied in the relationship and aim for alignment. Again, as alignment has been shown to positively affect supplier performance (Ahmed et al. (2020), it is believed that aligning power could do that too. This is the main reason for buying and supplying firms to aim for such a strategic compatibility. All in all, it is expected that by buying firms and supplying firms aligning their view on the usage of power, supplier performance can increase.

H2: Aligned views on usage of power between buyers and suppliers in a relationship have a direct effect on supplier performance.

The last key relational attribute is commitment. Commitment between the buying firm and supplying firm has been highly regarded as a crucial attribute for relationship development and continuity (Dwyer, Schurr, and Oh 1987; Morgan and Hunt 1994). Better cooperation between buyers and suppliers enhances the buyer-supplier relationship, and tends to elongate it in the process, which results in an increased commitment between both stakeholders. However, the uncertainty concerning expectations buying and supplying firms have to one another is an inevitable dilemma in buyer-supplier relationships (Gorton et al., 2015). Anderson & Weitz (1992) found that buyers and suppliers base their commitment on perceptions of the other party's commitment. Moreover, the buying firm's commitment positively influences the supplier's commitment (Anderson & Weitz, 1992). This means that if the buying firm is committed to the supplying firm, the supplying firm tends to reciprocate this commitment. Subsequently, the other way around, the buying firm's perceptions of the supplier's commitment positively affects the buying firm's commitment to the supplier (Krause, 1999). So, if the supplying firm is committed to the buying firm, the buying firm tends to reciprocate this as well. Studies have shown that commitment results in many benefits, including enhancing performance (Anderson and Weitz 1992; Brown, Lusch, and Nicholson 1995; Dwyer, Schurr, and Oh 1987; Lusch

and Brown 1996). Therefore, buying firms and supplying firms aligning their views on commitment to each other can lead to increased supplier performance. In addition, when the buying firm credibly commits to the relationship and the supplying firm reciprocates this goodwill, supplier performance increases (Srinivasan and Brush, 2006). Therefore, if both firms align their views on commitment, supplier performance will be positively affected.

H3: Aligned views on commitment between buyers and suppliers in a relationship have a direct effect on supplier performance.

3.2 Length of the buyer-supplier relationship as mediating variable between cognitive compatibility and supplier performance

As mentioned in the literature review, buyer-supplier relationship length might influence the supplying firm's willingness to improve their performance. In addition, as previously stated cognitive compatibility is theorised to influence supplier performance positively, however, it might influence the length of the buyer-supplier relationship as well. Therefore, it is thought that buyer-supplier relationship length can mediate the relationship between buyer-supplier cognitive compatibility and the supplier performance. The idea behind this is that for buyer-supplier relationships to become longstanding, buyers and suppliers need common ground, otherwise they are too incompatible for a relationship to last long-term. For instance, when the relational attributes of the buying firms are in alignment with those of the supplying firm, the relationship has more reasons to succeed. Therefore, there might be a positive relationship between cognitive compatibility and buyer-supplier relationship length. Hence, it is expected that cognitive compatibility can have a direct effect on the relationship length between the buying firm and supplying firm. On the other side of the mediating relationship, it is discovered that longer relationships are likely to influence supplier performance (Chang et al., 2022, p.1497). From the buyer's perspective, the advantages derived from close long-term relationships are almost all related to supplier performance (Han et al., 1993, p.335). Therefore, all arrows seem to point out that long buyer-supplier relationships tend to lead to improved supplier performance. It is hence thought that because long-term buyer-supplier relationships lead to improved supplier performance, the effect of cognitive compatibility might actually be on the relationship length, which subsequently causes improved supplier performance.

H4: The length of the buyer-supplier relationship mediates the relationship between cognitive compatibility and supplier performance directly.

4. RESEARCH METHODOLOGY

4.1 Research design and method of analysis

In order to test the hypotheses, a quantitative study – confirmatory factor analysis in particular – has been performed. Quantitative research methods are a good fit to answer "how" questions (Rasinger, 2013) – which is applicable to the research question in this study. Advantages of quantitative studies are that the findings are likely to be generalised to a whole (sub-) population as it involves a larger sample which is randomly selected (Carr, 1994). Besides sampling, data analysis is less time consuming as it implies the use of statistical software (Connolly, 2007). Nevertheless, next to advantages quantitative research also contains disadvantages. For instance, it tends to take a 'snapshot of a phenomenon' rather than looking at the whole picture and do not reveal the deeper underlying meanings and mechanisms (Rahman, 2016, p.106). PLS-SEM was performed to test the hypotheses. It is a repetitious algorithm that estimates the different blocks of the measurement model separately and then, estimates the coefficients of the structural model (De Battisti & Siletti, 2019, p.794). As stated by De Battisti & Siletti (2019, p.794) PLS-SEM takes a sequence of equations into account that report the relationships among key theoretical constructs (i.e., the structural model) and a sequence of equations, that show the relationships between the latent and manifest variables (i.e., the measure model). PLS-SEM was specifically chosen with this study, as it can easily visualise the relationships between the constructs. Moreover, it is easy in use, which is practical. With help of the software SmartPLS 4, using the bootstrapping method, the model was assessed.

4.2 Sample and data collection

The quantitative study has been conducted with help of five firms. The first firm is a Dutch heating systems manufacturer, that operates internationally. The company has existed for 75 years but is since recently part of a big Italian thermal company, that runs its operation on a big scale globally. Moreover, it specialises itself in producing heating products and devices, such as central heating systems and heat pumps. As the firm operates globally, it also has a lot of suppliers dispersed worldwide. The second firm is a cable manufacturer located in the Netherlands. They provide cables, systems, and services to their worldwide customer base. Moreover, the third firm is a Dutch healthcare organisation. This hospital is one of the biggest in the east of the Netherlands and has been busy with commercialising its business in the last few years. Furthermore, the healthcare organisation is a member of a hospital alliance, that strives to enhance healthcare in the Netherlands. The fourth firm is a German company that produces and develops water pumps for private and industrial customers and is an important player in the water management industry. With about 8,000 employees the company successfully operates in different markets, dealing with a global customer and supplier base. The last and fifth firm, is a large enterprise with approximately 650 employees located in the Netherlands, specializing in bakery machinery and fully integrated bakery lines. They are a family-owned company that has been around for the better part of two centuries. The firm overviews with information on the

firm size, filled out supplier surveys, response rate and most recent turnover can be seen in the table below.

Table 2. Firm overviews

	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5
Industry	Heating systems	Cable manufacturer	Healthcare	Water systems	Bread production
Size (employees)	196	925	3,800	8,000	lines
Supplier surveys	17	23	6	15	8
Response rate	37,78%	76,67%	12%	55,56%	28,57%
Turnover* **	€80,885	€450	€450	€1900	€180

* In millions **Based on 2022

In the period of June till July 2023, surveys were sent to different parties: suppliers, purchasers, and internal other functions. All firms provided a list with all suppliers they do business with consistently. The result was a list with 276 applicable suppliers in total. In table 3 the profiles of the participating suppliers can be seen. As disclosed in the table, a number of 69 suppliers completely filled in the survey, which resulted in a total response rate of 25%. Moreover, as can be seen, almost half of the suppliers were based in The Netherlands. The survey also stated for suppliers to fill out their general work experience and their work experience within their supplying firm, to determine their competency. This concluded that the average general work experience is 26.8 years and the work experience at their firm is on average 13.2 years.

Table 3. Profiles of participating suppliers

N = 69	Frequency		Frequency		Frequency
Industry sector		Number of employees		Country	
Industrial machinery	20,3%	<50	21,7%	Netherlands	46,4%
Consumer goods	2,9%	50-250	36,2%	Germany	31,9%
Automotive	2,9%	>250	42,0%	Italy	8,7%
Chemicals/Pharmaceuticals	2,9%			Austria	2,9%
Services	7,2%			Spain	2,9%
Other	63,8%			United Kingdom	2,9%
				Finland	1,4%
				Norway	1,4%
				Poland	1,4%

The surveys were held online, and the link was sent to all the suppliers on a list. To raise the response rate, various measures were taken. Prior to distributing the surveys, an introductory email was sent to all the suppliers. In the email it was stated that the data would be anonymised and be treated confidentially. Moreover, in this email the topic of the research was explained, with the survey announcement. The surveys were sent out through email one week later. Subsequently, another week later a reminder email was sent with another link to the survey. Suppliers that did not fill in the survey were contacted by email and phone to ensure they knew about the request of participation. This helped with rising the response rate, as some suppliers missed the invitation, e.g., due to the emails ending up in their spam box.

Participating firms were asked to provide their annual expenditure with each supplier. Four out of five firms complied, while the fourth considered the data too confidential to share. Comparative t-tests were conducted on this data to investigate any non-response bias. The tests revealed that for firm 1, the average expenditure reported 506,339 euros with respondents and 547,081 euros with non-respondents. No significant difference was found ($t = 0.042$, $p = 0.967$). For Firm 2, the average spend with respondents was 7,552,998 euros and 2,236,244 euros with non-respondents. The difference was not statistically significant ($t = 0.963$, $p = 0.344$). It should be noted that one outlier in the respondent group had an annual spend three times larger than the next highest, influencing the average. Firm 3 had an average expenditure of 925,353 euros with respondents and 710,206 euros with non-respondents, with no significant difference ($t = 0.572$, $p = 0.570$). Lastly, firm 5 reported an average expenditure of 933,168 euros with respondents and 604,562 euros with non-respondents. The difference was not significant ($t = 1.333$, $p = 0.194$). Thus, to summarise, the annual expenditure of the buying firm per supplying firm did not seem to influence supplier responsiveness to the survey.

Surveys were also sent out to buyers and internal other functions that are frequently involved and in contact with the supplier in question, after the supplier filled theirs out. Again, anonymity and confidentiality were guaranteed. Thus, for each supplier, one purchaser and one internal other employee filled in a survey. This was done so the relationship could be assessed less subjectively. The profiles of the participating buyers and internal others are summarised below, in table 4 and 5 respectively. 16 different buyers have participated with the surveys. The average work experience of the buyers is 23 years, and the average organisational tenure is 14 years. Regarding the internal others, 36 different people with other internal functions have filled out surveys. Their average work experience is 17 years, and the average work experience at their firm is 14 years.

Table 4. Profiles of participating buyers

N = 16	**Frequency**		**Frequency**		**Frequency**
Work experience		Function		Organisational tenure	
0-5 years	0%	Strategic	31%	0-5 years	38%
5-10 years	25%	Tactical	6%	5-10 years	13%
10-20 years	19%	Operational	31%	10-20 years	19%
≥ 20 years	56%	Managerial	13%	≥ 20 years	31%
		Generic position	19%		

Table 5. Profiles of participating internal others

N = 36	**Frequency**		**Frequency**		**Frequency**
Work experience*		Function / department		Organisational tenure*	
0-5 years	12%	Engineering	28%	0-5 years	18%
5-10 years	9%	Logistics	19%	5-10 years	15%
10-20 years	29%	Management & coordination roles	14%	10-20 years	38%
≥ 20 years	50%	Procurement	17%	≥ 20 years	29%
		Other roles	17%		
		Not answered	6%		

* 2 missing cases are excluded

4.3 Measures

In table 6 below the used measures to test the hypotheses are listed. Every item was measured on a seven-point Likert scale, which ranged from 1 ("strongly disagree") to 7 ("strongly agree"). *Supplier performance* was measured from the buyer's side by using the variable 'supplier performance', which consisted of four items. The measurement was based on the study conducted by Wu (2010). The internal others also filled out the same questions regarding supplier performance. However only the buyer's items were included for various reasons. The buyer is likely to know the most regarding the questions on supplier performance, and therefore could provide higher objectivity than the internal other. Moreover, the buyer can assess the complete set of performance methods. In addition, only the buyer was chosen as it is not sure how accurate the internal others could answer the questions. In addition, for the internal other two out of four items had to be deleted. For the purchaser, every item could be kept. Also, all items had a significant p-value (0.00). Additionally, the AVE of purchaser only items resulted in a value of 0.72, whereas including the internal other items resulted in an AVE of 0.42

The variable *aligned trust* was measured on both the buyer and supplier's side. The variable 'goodwill trust' was utilised for this, which is based on the paper of Pulles et al. (2014). Furthermore, the variable *aligned power* was also measured on both the buyer's and supplier's side. For this, the variable 'coercive power' was utilised. The measures for the variable power are also based on the paper of Pulles et al. (2014). Additionally, for the variable *aligned commitment* the variable 'embedded partnership logic' was used on the buyer's side. The items that were used to measure this is based on the work of Brattström & Faems (2020). On the supplier's side, the variable 'supplier commitment' was used. This measure was developed based on the research of Nyaga et al. (2010). Moreover, the impact of the *relationship length* was measured on both the buyer and supplier's side. The average answers of both parties are taken into consideration within the analysis; therefore, the loadings have the same value.

For the control variables *supplier size* and *supplier industry*, the measures number of employees and industry was used, which were both measured on the supplier's side. The item that was used to measure supplier employees were developed from a study from Wang (2010). Moreover, the item that was used to measure supplier industry were developed from a study from Pulles & Loohuis (2020).

To get the alignment of the variables trust, power, and commitment, the following was done. The answers of the items on both the buyer's side and supplier's side are subtracted from another, as the items were thus measured with a 7-point Likert scale. If a value was negative, it was recoded into the same value but positive. So, as an example -2 became 2. This is because with the new variables, the difference between the answers of the buyer and supplier is considered, which thus, would still be 2.

Therefore, absolute values were used, as the difference is what mattered. All values were rounded, so only ‘whole’ numbers were used, again ranging from 1 to 7. If a value was below 1, it was recoded into a value of 1 as this is the minimum value of the scale. Due to all of this, the variables were coded into ‘misaligned X’, as the difference between the answers actually indicates misalignment instead of alignment.

The new recoded variables (misaligned trust, aligned power, and aligned commitment) were subsequently used in SmartPLS. Hence, the factor loadings for goodwill trust on both sides (forming misaligned trust), coercive power on both sides (forming misaligned power), embedded partnership logic on the buyer’s side and supplier commitment on the supplier’s side (the latter two forming the misalignment of commitment) are the same in the table.

Table 6. Measurement items

Constructs (source, respondent)	Measurement items	Factor loadings
Supplier performance Buyer's side Wu (2010)	Compared with other suppliers, how does this supplier perform in the following areas: product quality, delivery performance, sales, service and/or technical support, overall cost performance.	 0.74 0.87 0.90 0.87
Goodwill trust Buyer's side (Pulles et al. 2014)	In dealing with this supplier … … they can rely on me to help them in ways not required by our agreement. … they can depend on me to always treat them fairly, … I take initiatives for mutual benefits that exceed the contractual agreement.	 0.71 0.99 0.60
Goodwill trust Supplier's side (Pulles et al. 2014)	We can rely on this buying firm to help us in ways not required by our agreement with them. We can depend on this buying firm to always treat us fairly. This buying firm takes initiatives for mutual benefits that exceed the contractual agreements.	0.71 0.99 0.60
Coercive power Buyer's side (Pulles et al. 2014)	In dealing with this supplier … … I make it clear that failing to comply with my requests will result in penalties against them. … I would make things difficult for them if they do not agree with my suggestions. … I withdraw certain services they need if they do not go along with me.	 0.80 0.90 0.86
Coercive power Supplier's side (Pulles et al. 2014)	This buying firm makes it clear that failing to comply with their requests will result in penalties against us. If we do not agree with this buying firm's suggestions, they could make things difficult for us. If we do not do as asked, we will not receive very good treatment from this buying firm.	0.80 0.90 0.86
Embedded partnership logic Buyer's side (Brattström & Faems)	In dealing with this supplier … … I seek to establish cooperative practices. … I am sharing information openly. … I seek to maximize joint benefits.	 0.97 0.96 0.93
Supplier commitment Supplier's side (Nyaga et al.)	We are committed to this buying firm. We expect the relationship with this buying firm to continue for a long time. We expect the relationship with this buying firm to strengthen over time.	0.97 0.96 0.93
Relationship length Buyer's side	Please indicate the relationship length with this supplier / buying firm (in years).	1.00
Relationship length Supplier's side	Please indicate the relationship length with this supplier / buying firm (in years).	1.00
Supplier size Supplier's side Wang (2010).	The number of employees working for this organisation is: Less than 100 100-499 500-999 1,000 and above	1.00
Supplier industry Supplier's side Pulles & Loohuis (2020)	The industry of the organisation is: Industrial machinery Consumer goods Automotive Chemicals/Pharmaceuticals Services Other	1.00

4.4 Data analysis and quality criteria

4.4.1 Loadings

For testing the reliability and validity of the used data in this PLS-SEM analysis, various methods were executed. To start, the loadings were analysed using two methods, confirmatory factor analysis and comparing the loadings to the recommended threshold of 0.708. The factor loadings can be seen in the table above (table 3). Firstly, confirmatory factor analysis was performed to determine the indicator reliability of the loadings. As stated by De Battisti & Siletti (2019, p.794) within PLS-SEM, the presence of a measurement model alone represents a confirmatory factor analysis. Indicator loadings above 0.708 are recommended, as this implies the construct explains more than 50 percent of the indicator's variance, thus providing acceptable indicator reliability (Hair et al., 2021, p.77).

4.4.2 Construct validity and reliability

After checking the loadings, the construct reliability and validity of the model was assessed. The construct reliability was determined with use of rho's c (for composite reliability) and Cronbach's alpha to assess this. As stated by Hair et al. (2021, p.77) reliability values for rho's c between 0.60 and 0.70 are considered, whereas values between 0.70 and 0.90 are preferred. Cronbach's alpha assumes the same thresholds as rho's c. Both measures are chosen, as the true reliability of the construct is typically reviewed using these two measures (Hair et al., 2021, p.78). In addition, AVE is used to review the construct validity. AVE determines the explained variance – the variance captured by a latent construct (Gefen & Straub, 2005, p.94). The square root of the AVE of each construct should be minimally 0.50 (Fornell and Larcker, 1981). The overview of the values can be seen in table 7 below. In addition, the means and standard deviations of the variables are presented as well.

Table 7. Construct reliability and validity values

Construct	M	SD	Cronbach's α	CR (rho's c)	AVE
1. Supplier performance	4.39	1.28	0.70	0.91	0.72
2. Misaligned trust	1.59	1.06	0.82	0.82	0.62
3. Misaligned power	1.77	0.96	0.81	0.89	0.73
4. Misaligned commitment	2.31	1.68	0.95	0.97	0.91
5. Relationship length	15.56	11.75	1.00	1.00	1.00
6. Supplier size	2.07	11.01	1.00	1.00	1.00
7. Supplier industry	5.14	1.26	1.00	1.00	1.00

4.4.3 Discriminant validity, multicollinearity, and overall model fit

The Heterotrait-monotrait ratio (HTMT) indicates if the model suffices to the criterion of discriminant validity. Preferably, all values should be below 0.8. As can be seen in table 8, this criterion is also met. The model also suffices to the criterion of multicollinearity, as all VIF values are below 5. The values can be seen in appendix A. Moreover, the saturated as well as the estimated model meet all criteria, meaning the model fit is sufficient. The SRMR measures how poor a model fit is. Therefore, the most desirable value is zero as it indicates a perfect reproduction of the empirical correlation matrix, while SRMR values that are higher reflect a poorer model fit (Goretzko et al., 2023, p.3). The SRMR values of the saturated model as well as the estimated model come close to zero, hence the model suffices to this criterion. This can be seen in table 9.

Table 8. The HTMT ratios

	Aligned trust	**Aligned power**	**Aligned commitment**	**Supplier performance**	**Relationship length**	**Supplier size**	**Supplier industry**
Misaligned trust							
Misaligned power	0.52						
Misaligned commitment	0.19	0.22					
Supplier performance	0.11	0.25	0.16				
Relationship length	0.08	0.10	0.55	0.16			
Supplier size	0.04	0.13	0.01	0.19	0.16		
Supplier industry	0.09	0.15	0.07	0.07	0.04	0.06	

Table 9. Model fit

	Saturated model	**Estimated model**
SRMR	0.07	0.07

4.5 Control variables

As stated by De Battisti & Siletti (2019, p.793), control variables are usually considered in causal models to rule out alternate explanations for findings, or to minimise error terms and maximise statistical power. *Supplier size* was included as one of the control variables, as it is a relatively objective measure, compared to the other measures, as well as that it has little correlation with the other measures included in the model. Therefore, the risk of multicollinearity was minimised. However, there might be a possibility that supplier size can influence supplier performance, but this effect is not expected to be significant. The other control variable that is concluded in the model is the *supplier industry*. Again, it is expected that this variable will have little correlation with the other variables included in the model, hence the inclusion.

5. RESULTS

5.1 Results of the main model

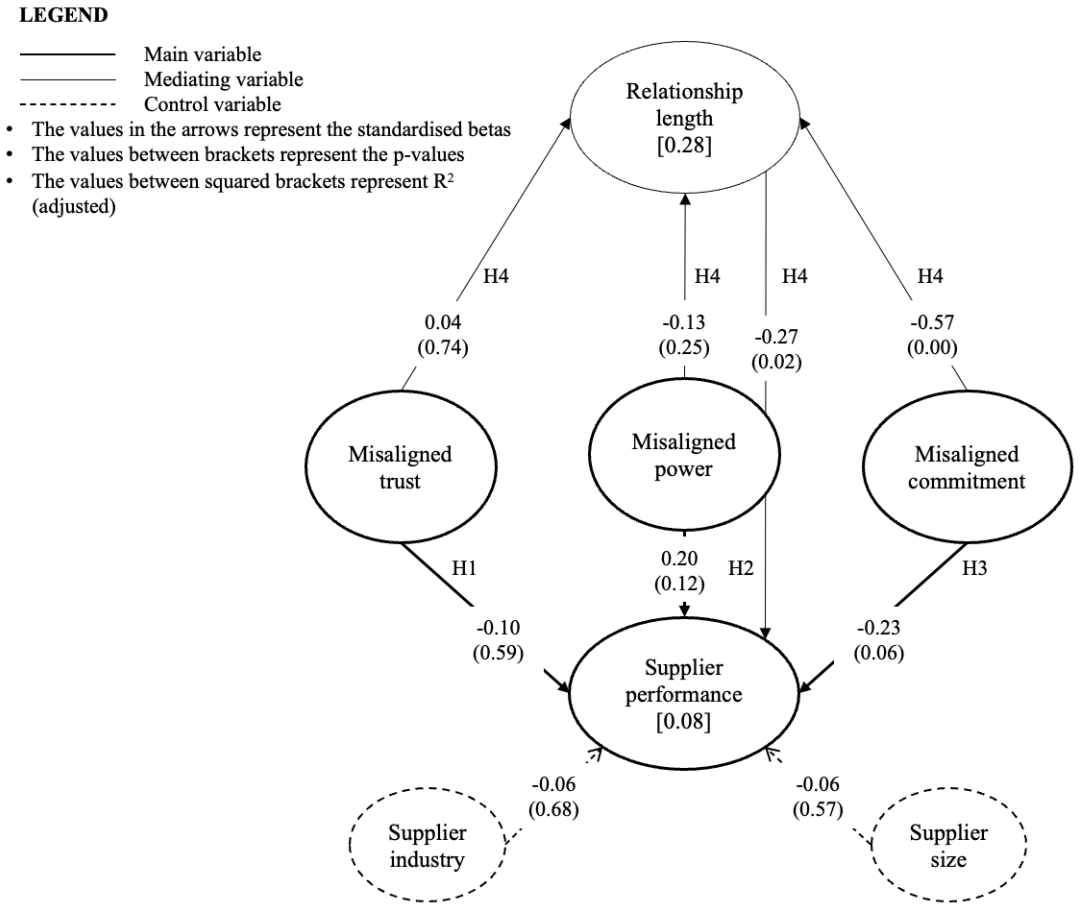

Figure 4. Results of the analysis – Main model

The study results are displayed in figure 4 and table 10, pictured here above. Figure 4 shows the results of the analysis, with the main variables (thick lines), mediator variable (thin line), and control variables included (interrupted lines). Moreover, in table 10 the results of the analysis of the main model are presented. The control variables are not considered, as there were no unforeseen relationships including the controls, thus there was no relevance to discuss these. The effects with a minimum absolute beta value of 0.10 will be discussed, as this indicates a slightly moderate strength in the relationship between variables. Therefore, the relationship is deemed strong and substantial enough to be relevant to discuss.

The misaligned relational attributes seem to exert no significant effect on supplier performance. To start, the relationship between misaligned trust and supplier performance seems to be negative which means the relationship between aligned trust and supplier performance is likely to be positive. Moreover, the p-value is insignificant ($\beta = -0.10$, $p = 0.59$). All in all, H1 is not supported, but the effect is deemed substantial.

The relationship between misaligned power and supplier performance does seem to be moderately strong and positive (β = 0.20, p = 0.12), however the p-value is not significant. H2 is then thus negative, but was hypothesised to be positive, so it is rejected.
The relationship between misaligned commitment and supplier performance is also shown to be negative (β = -0.23, p = 0.06), so aligned commitment and supplier performance is likely to be positive. In addition, the p-value is insignificant. Hence, H3 is rejected as well, but the effect seems substantial.

When looking at the results of the relationship length on the relational attributes, the following has been determined based on the analysis. The relationship between misaligned power and relationship length as well as misaligned commitment and relationship length is negative (β = -0.13, p = 0.25 and β = -0.57, p = 0.00 respectively). The relationships of aligned power and relationship length as well as aligned commitment and relationship length were also hypothesised to be positive. This indicates that indeed, there might be a positive relationship between aligned power and relationship length as well as aligned commitment and relationship length. To add onto this, the relationship between misaligned trust and relationship length is also negative, but the beta value is determined too weak to explicitly discuss. So, to summarise, H4 is not supported, based on the fact that not all p-values are significant. The results of the PLS-SEM analysis are presented in the table below (table 10).

Table 10. Overview of the analysis – Main model

Variable relationships (hypothesis)	β	p	Result
Misaligned trust → supplier performance (H1)	-0.10	0.59	Not supported
Misaligned power → supplier performance (H2)	0.20	0.12	Not supported
Misaligned commitment → supplier performance (H3)	-0.23	0.06	Not supported
Relationship length → supplier performance (H4)	-0.27	0.02	Not supported
Misaligned trust → relationship length (H4)	0.04	0.74	Not supported
Misaligned power → relationship length (H4)	-0.13	0.25	Not supported
Misaligned commitment → relationship length (H4)	-0.57	0.00	Not supported

In addition, table 11 here below shows the effects between the misaligned relational attributes and supplier performance without the inclusion of the mediating variable, relationship length, in the model.

Table 11. Beta and p-values of variables without influence of the mediating variable relationship length

Construct	Beta (β)	P-value
Misaligned trust	-0.15	0.29
Misaligned power	0.25	0.06
Misaligned commitment	-0.06	0.42

When relationship length was not included in the model, the betas, and p-values of the misaligned relational attributes on supplier performance did not change the outcomes of the hypotheses. This means that the mediating effect of relationship length between aligned trust, aligned power, and aligned commitment on supplier performance does not appear to exist, based on the PLS-SEM analysis.

5.2 Results of the additional model

Furthermore, an additional model is presented below in figure 5, which takes the effects of cognitive compatibility on supplier performance and relationship length into consideration. Additionally, in table 13 the correlation coefficients of this model are presented.

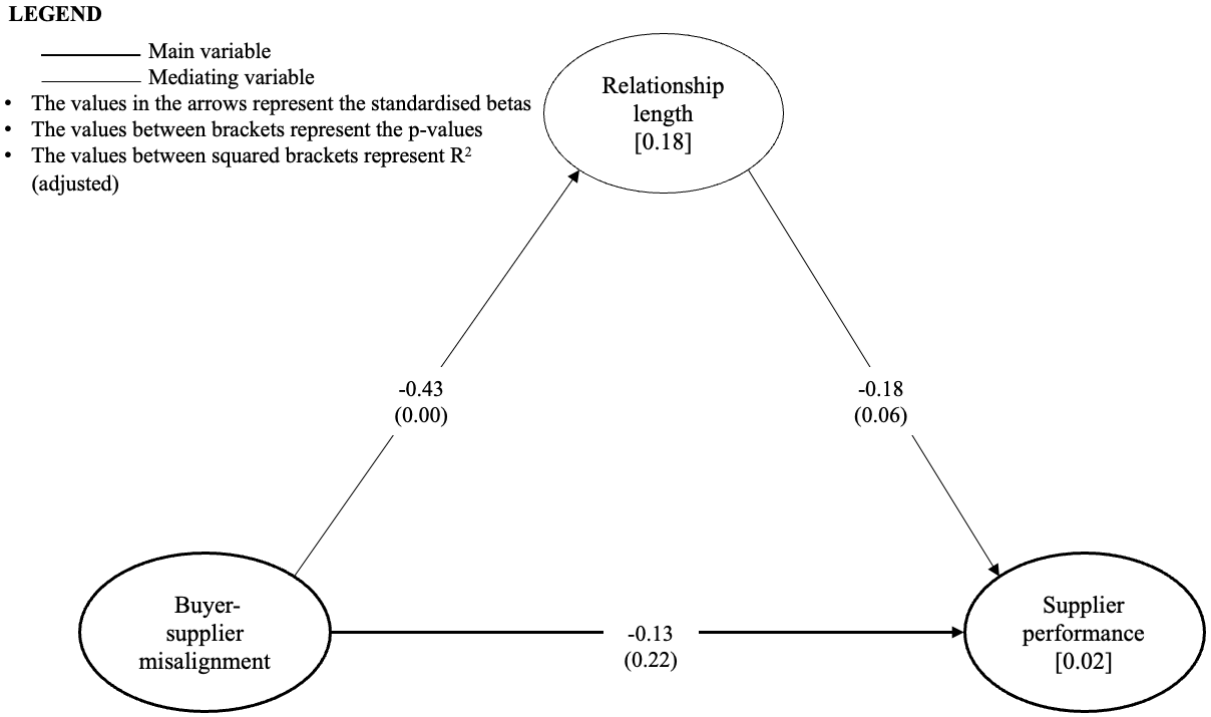

Figure 5. Result of cognitive compatibility – Additional model

The additional model in figure 5 is thus created to see what the effect is of buyer-supplier misalignment is on supplier performance and what the mediating relationship of the variable relationship length looks like under this circumstance. It was hypothesised that the effect of cognitive compatibility on supplier performance would be positive. The effect of buyer-supplier misalignment is on supplier performance seems to be negative ($\beta = -0.13$, $p = 0.22$), which can indicate that cognitive compatibility will cause the opposite, thus have a positive relationship on supplier performance. Moreover, the effect of cognitive compatibility on buyer-supplier relationship length was expected to be positive as well. When using buyer-supplier misalignment as a measure in this relationship, it is shown that the effect on buyer-supplier relationship length is negative ($\beta = -0.43$, $p=0.00$). This again can indicate that the effect of cognitive compatibility on buyer-supplier relationship length is positive.

6. DISCUSSION

6.1 Contributions

The aim of this study was to investigate if buyer-supplier cognitive compatibility any effect on supplier performance, by answering the research question *how does cognitive compatibility influence the performance of the suppliers in the buyer-supplier relationship?* This was measured by looking at the impact of the aligned relational attributes trust, power, and commitment on the performance. Additionally, this research also studied if relationship length mediated the proposed relationship between cognitive compatibility and supplier performance. This study contributes to literature various ways. To start, the concept of cognitive compatibility was developed. Moreover, even though none of the effects perceived in this study were significant, they contribute to the literature that include various cases and definitions of compatibility and alignment to influence supplier performance (e.g., Corsaro, 2011; Azadegan, 2011). Moreover, it added onto literature that focusses on buyer-supplier relationships in general (i.e., Dwyer et al., 1987; Maloni & Benton, 2000; Morsy, 2017), as the study showed how aligning relational attributes could impact the relationship length, next to supplier performance.

6.2 Findings and implications

Implications for managers of both supplier and buying firms are provided due to the findings of this research. The buying firm is highlighted, as in this paper they are seen as initiators for the alignment with the supplying firm, to try to accomplish improved supplier performance. Moreover, this research has revealed that there is no real relationship between cognitive compatibility and supplier performance, by analysing the attributes separately. No findings were concluded significant; however, it can still be relevant to discuss the apparent relationships that exist between the variables. For instance, as quite a few relationships differed from what was hypothesised, it could provide interesting insights.

To start, aligned trust and commitment seem to have a positive impact on supplier performance, which was not hypothesised. It is thus discovered that there is a positive relationship between aligned trust and supplier performance. This is in line with previous research, as Poppo et al. (2016) found out that different types of trust have a positive effect on supplier performance. Moreover, the more trust the supplying firm has in the buying firm, the more likely the supplier is to aspire to perform well (Poppo et al., 2016, p.737). As trust can have a positive impact on supplier performance, and buyer-supplier alignment in general tends to be beneficial, the buying firm should aim to align their views on trust with the supplying firm.

Moreover, it is alleged that there is a positive relationship between aligned commitment and supplier performance. This is in line with previous research. For instance, Anderson & Weitz (1992) found that

buyers and suppliers base their commitment on perceptions of the other party's commitment. Additionally, the buying firm's commitment positively influences the supplier's commitment (Anderson & Weitz, 1992). This means that if the buying firm is committed to the supplying firm, the supplying firm tends to reciprocate this commitment. Moreover, the other way around, the buying firm's perceptions of the supplier's commitment positively impacts the buying firm's commitment to the supplier (Krause, 1999). So, if the supplying firm is committed to the buying firm, the buying firm will reciprocate this. Therefore, buying firms should aim to align their views on commitment with the supplying firm, to aim for increased supplier performance. After all, when the buying firm credibly commits to the relationship and the supplying firm reciprocates this goodwill, supplier performance increases (Srinivasan and Brush, 2006).

Aligned power does seem to have a moderately negative effect on supplier performance, which was not hypothesised. This indicates that when buyers and suppliers discuss their views on the exertion of power and align these, supplier performance doesn't appear to improve. It is important to note that this study took coercive power into account, so no conclusions can be drawn on the usage of other types of power. However, research has shown that buyer bargaining power has a negative relationship with supplier performance (Chang et al., 2022). Therefore, for managers it is advised to steer away from using this type of power as it has been proven to be ineffective for improved supplier performance. Moreover, this is not in line with what was discovered in a previous study by Chang et al. (2022), who discovered that compatible views between buyers and suppliers can mitigate the negative effect of a buyer's power on supplier performance.

Moreover, it is discovered that there is a negative relationship between aligned trust and relationship length. The relationship is too weak to draw accurate conclusions, however this finding raises the speculation that mutual, aligned, trust does not necessarily help with developing longer buyer-supplier relationships. Moreover, There is a moderately positive relationship between aligned power and relationship length. There is also a seemingly positive relationships between aligned commitment and buyer-supplier relationship length. Both relationships were hypothesised.

6.3 Limitations and future research

6.3.1 Limitations

There are limitations to this study. To start, the most obvious and apparent limitation to this study is the sample size. As alignment is quite a complex construct to study in general, having a small sample size makes it even more challenging. A too small sample size may prevent the findings from being extrapolated (Faber & Fonsesca, 2014, p.27). A larger sample size increases the accuracy of the study and allows thus a higher probability for the results to be generalised.

In addition, the data collection took place around the summer holidays in Europe. Therefore, a lot of people that were knowledgeable on the topics asked in their survey and could fill it in with more ease – applying it to their firm of course – were on summer vacation. This led to, for instance; non-responses and half-filled in surveys that could not really be used, or people that were not too knowledgeable filling in the surveys. The latter in particular can influence the accuracy of the study. Hence, the period of sending out surveys should be taken more into consideration, to prevent similar issues from happening.

Next, another limitation of this study is that buyer-supplier relationships are very complex, and focussing on three relational attributes solely does not give the 'full picture'. However, it does give an indication on the alignment between the buying firm and supplying firm, by 'zooming in' on specified aspects – trust, power, and commitment in this case.

Moreover, embedded partnership logic was used to measure supplier commitment on the buyer's side. This is not exactly the same, which could have played an influence on the outcome. Therefore, for instance measuring the buyer's perception of the supplier's commitment could have been more accurate to compare supplier commitment on both sides.

Lastly, in hindsight, using the variable relationship length (between the buyer and supplier) as mediating variable did not make a lot of sense. This can also be seen based on the results, as the effects more or less stayed the same, whether the variable was included or not.

6.3.2 Recommendations for future research

The first and foremost recommendation for future research is that the importance of buyer-supplier alignment, compatibility, and similar should have a higher focus for future research, as limited research on this topic has been performed (Holmund & Strandvik, 1999, p.693).

Moreover, buyer-supplier relationships are complex which makes buyer-supplier alignment difficult. This research has focussed on aligning the relational attributes trust, power, and commitment in particular. For future research it is good to take into consideration which other variables can play a role in buyer-supplier alignment and in which way this can influence it.

In addition, in this paper everything is theorised with the buying firm taken into consideration as initiator for buyer-supplier alignment, to improve performance. Future studies could look at what happens if the supplying firm is regarded as initiator of alignment strategies. Additionally, previous research on alignment and misalignment had the tendency to focus on the perspective of either the buying party or the supplying party, without considering the transaction between and perception of the

two (Corsaro & Snehota, 2011, p.1042; Holmund & Strandvik, 1999, p.693). Therefore, for future research it can be helpful to gain knowledge on what happens if both perceptions simultaneously of the buyer and supplier perspective are considered.

ACKNOWLEDGEMENTS

First of all, I would like to thank people close to me that supported me throughout my academic career. Secondly, I would like to thank my supervisors dr. ir. Niels Pulles as well as dr. Frederik Vos for their guidance and input in developing this master thesis. Thirdly, I am very appreciative of the hosting company to provide me with the opportunity to gather data for this thesis and I want to thank my department and direct colleagues for their participation and aid. Lastly, I would like to thank all firms that participated with the surveys.

REFERENCES

Ahmed, S., Asim, M., & Manzoor, S. (2020). The Determinants and Outcomes of Supplier Satisfaction. *European Journal of Business and Management Research, 5*(1). https://doi.org/10.24018/ejbmr.2020.5.1.189

Anderson, E., & Weitz, B. (1992). The use of pledges to build and sustain commitment in distribution channels. *Journal of Marketing Research, 29*(1), 18–34.

Azadegan, A. (2011). Benefiting from supplier operational innovativeness: The influence of supplier evaluations and absorptive capacity. *Journal of Supply Chain Management, 47*(2), 49–64.

Bläsing, D., Bornewasser, M. & Hinrichsen, S. (2022). Cognitive compatibility in modern manual mixed-model assembly systems. *Zeitschrift für Arbeitswissenschaft, 76*, 289–302. https://doi-org.ezproxy2.utwente.nl/10.1007/s41449-021-00296-1

Brattström, A., & Faems, D. (2020). Interorganizational relationships as political battlefields: How fragmentation within organizations shapes relational dynamics between organizations. *Academy of Management Journal, 63*(5), 1591-1620. https://doi.org/10.5465/amj.2018.0038

Bromiley, P., & Cummings, L.L. (1995). Transaction costs in organizations with trust.

Brown, J. R., Lusch, R.F., & Nicholson, C.Y. (1995). Power and Relationship Commitment: Their Impact on Marketing Channel Member Performance. *Journal of Retailing, 71*(4), 363–92.

Carr, L. T. (1994). The strengths and weaknesses of quantitative and qualitative research: What method for nursing? *Journal of Advanced Nursing, 20*(4), 716-721. http://dx.doi.org/10.1046/j.1365-2648.1994.20040716.x

Chae, S., Choi, T.Y., & Hur, D. (2017) Buyer Power and Supplier Relationship Commitment: Cognitive Evaluation Theory Perspective. *Journal of Supply Chain Management, 53*(2), 39-60. https://doi-org.ezproxy2.utwente.nl/10.1111/jscm.12138

Chang, H., Liu, S., & Mashruwala, R. (2022). Customer Bargaining Power, Strategic Fit, and Supplier Performance. *Production and operations management, 31*(4), 1492-1509. https://doi-org.ezproxy2.utwente.nl/10.1111/poms.13627

Chen, Y., & Chen, I. J. (2019). Mediated power and sustainable supplier management (SSM) linking power use, justice, and supplier performance. *International Journal of Physical Distribution and Logistics Management, 49*(8), 861–878.

Connolly, P. (2007). Quantitative data analysis in education: A critical introduction using SPSS. London & New York, NY: Routledge.

Corsaro, D., Snehota, I. (2011). Alignment and Misalignment in Business Relationships. *Industrial Marketing Management, 40, 1042-1054.*

De Battisti, F. Siletti E. (2019). On the Use of Control Variables in PLS-SEM. In: G. Arbia,S. Peluso, A. Pini, & G. Rivellini. Smart Statistics for Smart Applications: Book of Short Papers, 793-798. Pearson

Dwyer, F. R., Schurr, P. H., & Oh, S. (1987). Developing Buyer-Seller Relationships. *Journal of Marketing, 51*, 11-27.

Ellram, L. M. (1990). The supplier selection decision in strategic partnerships. *Journal of Purchasing and Materials Management, 26*(4), 8–14.

Faber J, Fonseca, L.M. (2014). How sample size influences research outcomes. *Dental Press Journal of Orthodontics, 19*(4), 27-29. http://dx.doi. org/10.1590/2176-9451.19.4.027-029.ebo

Fink, R.C., Edelman, L.F., & Hatten, K.J. (2007). Supplier performance improvements in relational exchanges. *Journal of Business & Industrial Marketing, 22*(1), pp. 29-40. https://doi-org.ezproxy2.utwente.nl/10.1108/08858620710722806

Fornell, C. and D. Larcker (1981a). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*(1), 39-50.

Ganguly, K.K., & Roy, S. (2021). Supplier Satisfaction in Buyer–Supplier Relationships: Assessment from Supplier Perspective, *Journal of Business-to-Business Marketing, 28*(3), 247-264. 10.1080/1051712X.2021.1974167

Gattorna, J.L, & Walters, D.W. (1996). Managing the Supply Chain: A Strategy Perspective. MacMillan: Basingstoke.

Gefen, D., & Straub, D.W. (2005). A practical guide to factorial validity using PLS-graph: tutorial and annotated example. *Communications of the Association for Information Systems, 16*, 91-109.

Gligor, D.M., Gölgeci, I, Newman, C, & Bozkurt, S. (2021). Performance implications of the buyer-supplier market orientation fit. *Industrial Marketing Management, 93*, 161-173. https://doi.org/10.1016/j.indmarman.2021.01.010

Goretzko, D, Siemund, K., & Sterner, P. (2023). Evaluating Model Fit of Measurement Models in Confirmatory Factor Analysis. *Educational and Physiological Measurement,* 1-22. https://doi-org.ezproxy2.utwente.nl/10.1177/00131644231163813

Gorton, M., Angell, R., Dries, L., Urutyan, V., Jackson, E., & White, J. (2015). Power, buyer trustworthiness and supplier performance: Evidence from the Armenian dairy sector. *Industrial Marketing Management, 50*, 69-77.

Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M., Danks, N.P., Ray, S. (2021). Evaluation of Reflective Measurement Models. In: Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. Classroom Companion: Business. Springer, Cham. https://doi-org.ezproxy2.utwente.nl/10.1007/978-3-030-80519-7_4

Han, Z., Handfield, R.B., Huo, B., & Tian, Y. (2022). Effects of power use in buyer–supplier relationships: The moderating role of communication. *Industrial marketing Management, 102*, 45-57. https://doi.org/10.1016/j.indmarman.2022.01.001

Han, S., Wilson, D.T., & Dant, S.P. (1993). Buyer-Supplier Relationships Today. *Industrial Marketing Management, 22*, 331-338.

Handfield, R.R., & Nichols Jr., E.L. (1999). *Introduction to Supply Chain Management*. Prentice-Hall, Upper Saddle River, NJ.

Hsiao, M.J., Purchase, S., & Rahman, S. (2002). The impact of buyer-supplier relationship and purchasing process on the supply chain performance: a conceptual framework. The 18th IMP-conference in Perth, Australia.

Humphreys, P.K., Li, W.L., & Chan, L.Y. (2004). The impact of supplier development on buyer–supplier performance. *Omega, 32*(2), 131-143. https://doi.org/10.1016/j.omega.2003.09.016

Inkpen, A.C., Tsang, E.W.K. (2005). Social Capital, Networks, and Knowledge Transfer. *Academy of Management Review, 30*(1), 146-165.

Ireland, R. D., & Webb, J.W. (2007). A multi-theoretic perspective on trust and power in strategic supply chains. *Journal of Operations management, 25*(2), 482-497.

Jain, M., Khalil, S., Johnston, W. J., & Cheng, J. M.-S. (2014). The performance implications of power–trust relationship: The moderating role of commitment in the supplier–retailer relationship. *Industrial Marketing Management, 43*(2), 312–321.

Jiwa Husada Tarigan, Z.., Siagian, H., Sutjianto, A., & Wiliater Soaloon Panjaitan, T. (2020). The Effect of Supplier Trust, Supplier Innovation, and Buyer-Supplier Relationship in Enhancing the Supplier Performance on the Death Service Companies in Surabaya, Indonesia. *KnE Life Sciences, 5*(3), 238–259. https://doi.org/10.18502/kls.v5i3.657

Kahn, K. B., & Mentzer, J. T. (1996). Logistics and interdepartmental integration. *International Journal of Physical Distribution & Logistics Management, 26*(8), 6-14. https://doi.org/10.1108/09600039610182753

Kanter, R. M. (1994). Collaborative advantage: The art of alliances. *Harvard Business Review, 72*, 96-108.

Kaplan, S. (2008). Framing contests: Strategy making under uncertainty. *Organization Science, 19*(5), 729-752.

Kim, Y., & Choi, T.Y. (2015). Deep, Sticky, Transient, and Gracious: An Expanded Buyer-Supplier Relationship Typology. *Journal of Supply Chain Management, 51*(3). https://doi-org.ezproxy2.utwente.nl/10.1111/jscm.12081

Krause, D.R. (1999). The antecedents of buying firms' efforts to improve suppliers. *Journal of Operations Management, 17*(2), 205–224.

Lambe, C. J., Wittmann, C. M., Spekman, R. E. (2001). Social Exchange Theory and Research on Business-to- Business Relational Exchange. *Journal of Business-to-Business Marketing, 8*(3), 1-36.

Lawrence, J. (2004). The case for measuring supplier satisfaction. *Academy of Information and Management Sciences Journal, 7*(2), 115–25.

Lee, H. L. (2002). Aligning Supply Chain Strategies with Product Uncertainties. *California Management Review, 44*(3), 105–119. https://doi.org/10.2307/41166135

Leminen, S. (2001). Gaps in buyer–seller relationships. *Management Decision, 39*(3), 180-189.

Lusch, R.F., & Brown, J.R. (1996). Interdependency, Contracting, and Relational Behavior in Marketing Channels. *Journal of Marketing, 60*(4), 19–38. https://doi-org.ezproxy2.utwente.nl/10.1177/002224299606000404

Maloni, M., & Benton, W.C. (2000). "Power Influences in the Supply Chain," *Journal of Business Logistics, 21*(1), 49-73.

Maloni, M, & Benton, W.C. (2005). The influence of power driven buyer/seller relationships on supply chain satisfaction. *Journal of Operations Management, 23*(1), 1-22. https://doi.org/10.1016/j.jom.2004.09.002

Maunu, S. (2003). Supplier satisfaction: the concept and measurement system. University Press, Oulu

McKinsey. (2020). Taking supplier collaboration to the next level. Retrieved from https://www.mckinsey.com/capabilities/operations/our-insights/taking-supplier-collaboration-to-the-next-level on 7 June 2023.

Morgan, R.M., & Hunt, S.D. (1994). The Commitment–Trust Theory of Relationship Marketing. *Journal of Marketing, 58*(3), 20–38. https://doi-org.ezproxy2.utwente.nl/10.1177/002224299405800302

Morsy, H.M. (2017). Buyer-Supplier Relationships and Power Position: Interchaning. *International Journal of Supply and Operations Management, 4*(1), 33-52.

Mueller, R.O, & Hancock, G.R. (2010). International Encyclopedia of the Social & Behavioral Sciences. Pergamon Press, Oxford.

Nahapiet, J., & Ghosal, S. Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review, 23*(2), 242-266.

Nyaga, Whipple, J.M., & Lynch, D.F. (2010) Examining supply chain relationships: Do buyer and supplier perspectives on collaborative relationships differ? *Journal of Operations Management, 28*(2), 101-114. https://doi-org.ezproxy2.utwente.nl/10.1016/j.jom.2009.07.005

Patatoukas, P. N. (2012). Customer-base concentration: Implications for firm performance and capital markets. *The Accounting Review, 87*(2), 363– 392.

Patnayakuni, R., Rai, A., Seth, N. (2006). Relational Antecedents of Information Flow Integration for Supply Chain Coordination. *Journal of Management Information Systems, 23*(1), 13-49.

Poppo, L., Zhou, K.Z., & Li, J.J. (2016). When can you trust "trust"? Calculative trust, relational trust, and supplier performance. *Strategic Management Journal, 37*(4), 724-721. https://doi-org.ezproxy2.utwente.nl/10.1002/smj.2374

Pulles, N. J., & Loohuis, R. P. (2020). Managing Buyer-Supplier Conflicts: The Effect of Buyer Openness and Directness on a Supplier's Willingness to Adapt. *Journal of Supply Chain Management, 56*(4), 65-81.
Pulles, N.J., Veldman, J., Schiele, H., & Sierksma, H. (2014). Pressure or Pamper? The Effects of Power and Trust Dimensions on Supplier Resource Allocation. *Journal of Supply Chain Management, 50*(3), 16-36.

Prahinski, C., & Benton, W. (2004). Supplier evaluations: communication strategies to improve supplier performance. *Journal of Operations Management, 22*(1), 39-62.

Shahzad, K., Ali, T., Takala, J., Hero, P., & Zaefarianc, G. (2018). The varying roles of governance mechanisms on ex-post transaction costs and relationship commitment in buyer-supplier relationships. *Industrial Marketing Management 71*, 135–146. https://doi.org/10.1016/j.indmarman.2017.12.012

Shin, H., Collier, D.A., & Wilson, D.D. (2000). Supply management orientation and supplier/buyer performance. *Journal of Operations Management, 18*(3), 317-333.

Srinivasan, R, & Brush, TH. (2006). Supplier performance in vertical alliances: The effects of calculative trust and enforceable contracts. *Organization Science, 17*(4), 436–452.

Rasinger, S. M. (2013). Quantitative research in linguistics: An introduction. A & C Black.

Scherpereel, C. M. (2006). Alignment: The duality of decision problems. *Management Decision, 44*(9), 1258-1276.

Terawatanavong, C., Quazi, A. (2006). Conceptualising the link between national cultural dimensions and B2B relationships. *Asia Pacific Journal of Marketing and Logistics, 18*(3), 173-183.

Terpend, R., & Ashenbaum, B. (2012). The intersection of power, trust and supplier network size: Implications for supplier performance. *Journal of Supply Chain Management, 48*(3), 52-77.

Vachon, S., Halley, A., Beaulieu, M. (2009). Aligning competitive priorities in the supply chain: The role of interactions with suppliers. *International Journal of Operations and Production Management 29*(4), 322–340.

Walter, A., Müller, T.A., Helfert, G., & Ritter, T. (2003). Functions of industrial supplier relationships and their impact on relationship quality. *Industrial Marketing Management, 32*(2), 159-169.

Wu, Z. (2010) Supplier–supplier relationships in buyer–supplier–supplier triads: Implications for supplier performance. *Journal of Operations Management, 28*(2), 115-123. https://doi-org.ezproxy2.utwente.nl/10.1016/j.jom.2009.09.002

Yang, Y., & Jiang, Y. (2023). Buyer-supplier CSR alignment and firm performance: A contingency theory perspective. *Journal of Business Research, 154*. https://doi.org/10.1016/j.jbusres.2022.113340

Zhao, X., Huo, B., Selen, W., & Yeung, J. H. Y. (2011). The impact of internal integration and relationship commitment on external integration. *Journal of Operations Management, 29*(1), 17-3