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# **Contingency approach to supply chain management**

Design and an empirical test of a contingency model

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**ABSTRACT :**

**Purpose** – The complex business environment challenges organizations to streamline their operations and focus on core competencies. Resulting from this, organizations compete against each other as integrated business entities rather than as individual organizations. This increases the importance of supply networks and efficient supply chain management. The purpose of this study is to explore the application of the contingency approach to supply chain management, which could facilitate organizations to optimize purchasing operations and supplier relations, thus increasing the efficiency of supply chain management. This study examines the contingency fit of supplier integration and purchasing complexity and its effect on operative performance. The aim is to provide insight into how the supply chain can be managed from the contingency perspective.

**Framework** – The study combines research from supply management and strategic purchasing, focusing on supplier integration and purchasing portfolio models. In the literature review, critical elements of supplier relationships that influence the level of integration are discussed, and the strategic purchasing and purchasing portfolio model literature is reviewed. These theories are applied with the contingency perspective to examine supply chain management. Based on the literature review, a contingency model is developed.

**Methodology** – The research is conducted as an explorative embedded case study. The data was collected from both buyer and supplier representatives by using electronic surveys. A total of 13 supplier relationships was analyzed. This study analyzes the data in a comparative manner and tests the developed model.

**Findings** – This thesis increases the understanding of applying the contingency fit to supply chain management and effectively managing supplier relationships while considering the internal and external supply environment. The findings indicate that supplier integration positively affects operative performance. The results also demonstrate a connection between the contingency fit of integration and purchasing complexity and operative performance. However, this requires further research.

**Contribution** – The study contributes to the supply chain management literature by emphasizing the relationship between supplier integration and performance and developing a contingency model that can be utilized when determining the correct supply management activities and strategies. This thesis further emphasizes the strategic importance of supply management and purchasing and the criticality of aligning supplier relationship and purchasing strategies with the environmental and situational context to create efficient supply chain operations.

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**KEYWORDS:** supply chain management; supply management; strategic purchasing; supply network; contingency theory

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# **1 Introduction**

Over the past decades, activities related to supply chain management has gained a great amount of attention from scholars as outsourcing operations in business has increased immensely. In a competitive and complex business environment, supply chain management has emerged as a solution, and a means to achieve strategic objectives, increase flexibility, and maximize competitive advantage (Wadhwa, Saxena & Chan, 2008). As outsourcing operations have been linked to affecting organizations' performance, leveraging inter-firm networks is emerging as a strategic activity (Huggings, 2010). Resulting from this, the attitudes towards purchasing and suppliers have changed, and supply chain management has shifted its focus to knowledge transfer mechanisms, learning, co-innovation, and cooperation activities (Dyer & Nobeoka, 2000). Moreover, purchasing and supply management, has been given strategic recognition in supply chain management as suppliers are recognized to have a vital role in the value creation processes (Paulraj & Chen, 2007). Hence, the management of the supply chain and supplier relationships (i.e., supply management) has been emphasized as the foundation for sustainable competitive advantage (e.g., Chen, Paulraj & Lado, 2004; Paulraj, Chen & Flynn, 2006; Paulraj & Chen, 2007; Kraljic, 1983). This chapter provides an introduction to the research by explaining the background and motivation for the study, the research objectives, the research gap, and the structure of the paper.

## **1.1 Motivation and background for the research**

The motivation for this research arises from the interest to explore supply chain management and supply network performance. In the modern business environment, it has become evident that organizations do not compete as individual organizations against each other, but rather the supply chains and supply networks compete against each other (Chen & Paulraj, 2004). Considering the current turbulent environment where organizations operate, increasing the performance and ensuring the supply chain's viability is critical.

According to Tan, Kannan, Handfield & Gosh (1999), supply chain management concerns the management of activities related to integrating internal processes, upstream supplier performance, and customer requirements. Supply management and purchasing are essential parts of supply chain management that concentrate on efficient cost management and the utilization of resources (Kocabasoglu & Suresh, 2006). Research from this field suggests that the way organizations manage their supply chain activities and the supply management and purchasing strategies it implements can significantly impact the organization's performance and competitive advantage (Lawson, Cousins, Handfield & Petersen, 2009). Therefore, for this research, these two concepts (supply management and purchasing) were chosen as the basis for the theoretical framework.

To increase supply networks' performance, organizations need to correctly manage their relationships with the other network parties (Helander, 2004). Thus, examining the performance of the supply network requires a relationship perspective. Moreover, scholars have identified many different supplier relationship types (Cannon & Perreault, 1999; Ritter, 2007; Saccani & Perona, 2007). The different relationships connect to the different outsourcing and purchasing situations. For example, to procure an item vital for the value proposition requires a different approach to relationship management than procuring a generic item not vital for the buying organization's core activities (Sarkar & Mohapatra, 2006). Hence, it is necessary to study if and how different supplier relationships and their specific relational characteristics connect to supply network performance.

The literature review of relevant topics justified selecting buyer-supplier relationships and strategic purchasing with a contingency approach as the basis for this research. Networks are constructed from dyadic relationships. Hence, to examine networks, it is needed to examine the individual relationships within them. As mentioned previously, the performance of a supply network stems from individual relationships' performance (Helander, 2004). Therefore, examining the relationships closer is justified. The contingency approach is applied as supplier relationships should be developed depending on what situation they are used in as, in certain circumstances, too close relationships can

be wasteful, and in other situations, a distant and remote relationship could provide a competitive advantage if developed further (Hausman, 2001; Saccani & Perona, 2007).

The idea of developing supplier relationships derives from the collaborative advantage obtained from close buyer-supplier relationships. Dyer and Singh (1998) discuss how organizations can achieve sustainable competitive advantage by effectively managing supply chain partners. They note that close buyer-supplier relationships can result in dynamic capabilities as they form idiosyncratic resource configurations, resulting in non-imitable and non-tradable resources. This approach requires that the organization develops a strategic collaboration mindset to creating its strategic advantage (Ohmae, 1989). Moreover, relational capital, also referred to as relational capabilities (Lorenzoni & Lipparini, 1999) or relational resources (Sanchez, 1995), that exists in the collaborative supplier relationships enables access to complementary resources which act as the foundation of competitive advantage (Dyer & Nobeoka, 2000; Kale, Singh & Perlmutter, 2002).

A contingency approach argues that no theory or method can be suitable for every situation. It emphasizes that the environment where an organization operates influences the organizational design and structure of the organization. (Flynn, Huo & Zhao, 2010; Hambrick, 1983.) Flynn et al. (2010) note that suppliers are a critical part of an organization's environment. Hence, the degree to which organizations strategically collaborate with suppliers should be aligned with the environmental and situational aspects (Flynn et al., 2010; Saccani & Perona, 2007).

Moreover, the contingency perspective to buyer-supplier relationships indicates that a particular buyer-supplier relationship type fits a specific purchasing context (Saccani & Perona, 2007), implying that the level of supplier integration should be determined based on the situational factors regarding the purchasing scene. It is essential to evaluate the supplier relationships individually and see if it is strategically appropriate to further develop the relationships. This approach requires the purchasing function to have a strategic role. Strategic purchasing is required if an organization desires to increase its supply

network performance as it enables the development, management, and creation of a supply base that aligns with the organization's strategy. (Chen et al., 2004; Paulraj et al., 2006; Kraljic, 1983.)

To further examine the interconnection of supplier integration and purchasing situation, this thesis applies purchasing portfolio theory. Purchasing portfolio models assume that there is always an imbalance in power and dependence between buyer and supplier (Caniëls & Gelderman, 2005; Caniëls & Gelderman, 2007), emphasizing the importance of different purchasing strategies and supply management activities. Purchasing portfolio models offer a broader network perspective by segmenting suppliers according to what type of products, items, or services they supply, thus providing a means to supply base optimization (Wagner & Johnson, 2004). Applying the portfolio model makes it possible to determine the purchasing situation's complexity and apply it with the contingency approach. Through these concepts this research explores, analyzes, and creates understanding of the phenomenon of contingency approach to supply chain management.

## **1.2 Research gap**

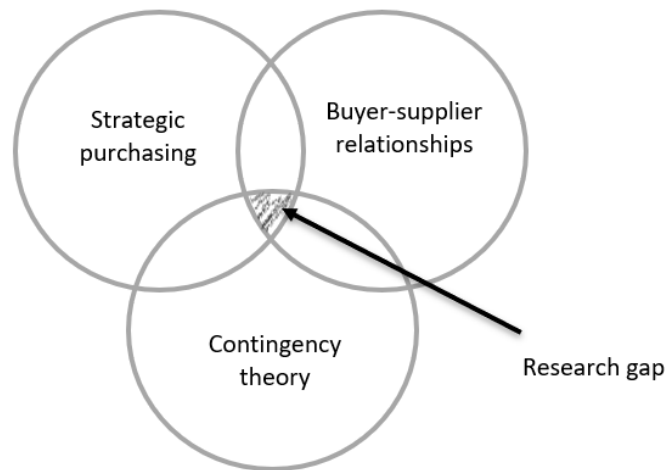
Supply chain management thinking grew attention in management literature when supply chains were seen to yield in competitive advantage if managed efficiently (Chen & Paulraj, 2004). Thus, supply chain management has been studied extensively from many perspectives such as the integration and collaboration in supply chains (Cooper & Ellram, 1993; Krause, Handfield & Tyler, 2007), green supply chains (Srivastava, 2007), and different supply chain strategies (Frohlich & Westbrook, 2001).

Supply chain management encompasses, for example, strategic purchasing, supply management, supply network coordination, and logistics integration (Chen & Paulraj, 2004). Supply management, a critical element of supply chain management, considers the management of supplier relationships and has interested scholars' through out the decades

(e.g., Carr & Pearson, 1999; Goffin, Szejczewski & New, 1997; Paulraj & Chen, 2007; Shin, Collier & Wilson, 2000). A specific issue regarding supply management has gained a great amount of discussion. Although some previous research has been carried out, scholars have increasingly examined the level of buyer-supplier cooperation and the correct degree of supplier integration in supply networks (Das, Narasimhan & Talluri, 2006; Flynn et al., 2010; Kraljic, 1983; Vesalainen & Kohtamäki, 2015).

Similarly, to supplier relationship management, the research concerning strategic purchasing has been abundant (e.g., Carr & Pearson, 1999; Krause, Pagell & Curkovic, 2001; Leenders, Nollet & Ellram, 1994; Montgomery, Ogden & Boehmke, 2018; Paulraj et al., 2006). One essential paper of strategic purchasing concerned the development of the purchasing portfolio model (Kraljic, 1983), which gained a tremendous amount of attention when it was developed and continues to be used in organizations for supplier or item segmentation and purchasing strategy development purposes (Knight, Tu & Preston, 2014; Wagner & Johnson, 2004). Both concepts mentioned above have also been studied in terms of their impact on firm performance (Carr & Pearson, 1999; Chen et al., 2004; Shin et al., 2000).

However, there is a lack of theoretical perspective to supply chain management that simultaneously considers both (supplier relationship management and strategy purchasing) approaches from the contingency perspective. This offers a possibility to conduct a novel study to test a theoretical concept that considers these theories with a contingency approach when managing the supply chain operations. It also creates an opportunity to explore if the contingency fit between supplier relationship integration and purchasing complexity leads to better supply network performance. The research gap is illustrated in Figure 1.



**Figure 1.** The research gap.

### 1.3 Research objectives

As presented in the research gap, this thesis aims to examine supply chain management by applying the theories of supplier relationship management and strategic purchasing with the contingency perspective. The purpose of the thesis is to analyze how the fit between supplier integration and purchasing complexity affects an organization's supply network's performance. The phenomenon is studied from a dyadic inter-organizational relationship perspective as if organization desires to influence the supply network performance, it needs to focus on the individual relationships it has within the network (Helander, 2004).

The main objective of this paper is to provide new insight on the theory of applying the contingency approach to supply chain management. Hence, the following research question is set:

*How can the contingency approach be applied to supply chain management?*

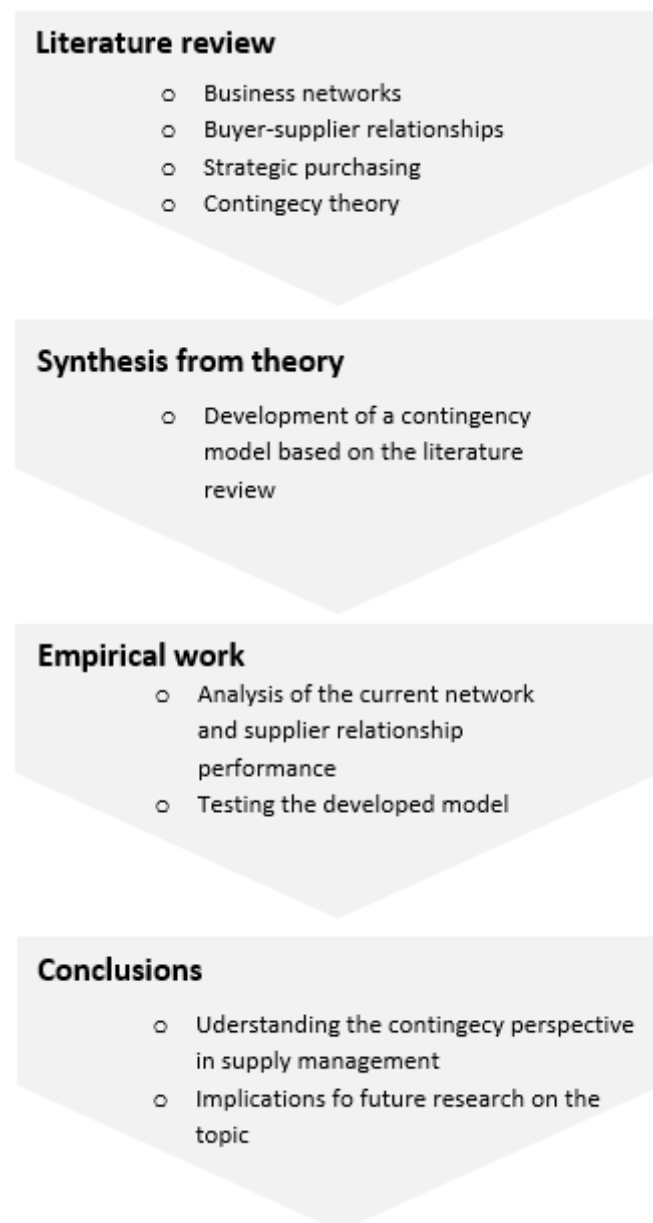
To fully reach the objective and understand how the contingency theory with strategic purchasing and supplier relationship management can be applied to supply chain management, this thesis aims to create more understanding of the relationship of supplier integration, purchasing complexity, and performance and examine the connection of these factors. Hence the following supporting research questions are set:

1. What is the role of integration in supply network performance?
2. How does the contingency fit between integration and purchasing complexity affect performance?
3. How can organizations manage the supply from the contingency perspective?

By answering these research questions, this research seeks to provide new insight regarding the contingency fit of integration and purchasing complexity and its influence on supply network performance. This paper aims to contribute to the theory development of the contingency approach to supply chain management by fulfilling the objectives.

#### **1.4 Structure of the thesis**

The structure of the thesis is presented in Figure 2. The thesis begins with a review of the relevant literature on networks, buyer-supplier relationships, and strategic purchasing with the contingency theory perspective. A synthesis from the contingency fit between relationship integration and purchasing is provided based on the literature review, and a model to test the theory is developed. An empirical study is conducted to analyze the supply network and supplier relationships in terms of integration and performance and examine the contingency fit. Finally, based on the empirical analysis and literature review, discussion and conclusive marks provide an overview of the topic, and lastly, managerial implications, theoretical contribution, and suggestions for future research are presented.



**Figure 2.** The structure of the thesis.

## **2 Literature review**

In the modern business environment, characterized by high global competition and complex customer requirements, organizations cannot survive only with the resources and capabilities they hold within but increasingly rely on partners to perform essential activities (Wilkinson & Young, 2002). The literature review of this thesis focuses on the supply network, supplier relationships, and strategic purchasing and provides a detailed overview of these topics.

This chapter begins with an explanation of what are business networks and their typical characteristics. This is followed by an introduction to supply networks, which are the broader context of this study. Then, the concept of buyer-supplier relationships and the diversity and complex forms they possess are analyzed and discussed. Later, the concept of strategic purchasing is introduced. Finally, this chapter ends with a synthesis of the contingency fit approach to supplier integration and purchasing complexity, and the developed theoretical model is presented.

### **2.1 Business networks**

The following chapter discusses the basic elements of business networks and networking. The objective is to explain what business networks are, how they are defined in the academic context, and what are the motives to operate in them. After this, the chapter will introduce the concept of the supply network and its fundamental characteristics.

It is misleading to consider that organizations would operate in isolation, instead, they are connected to complex networks (Ritter, Wilkinson & Johnston, 2004) that consist of various organizations and the relationships they have within the network (Ford, Gadde, Håkansson & Snehota, 2002). In fact, Ritter et al. (2004) remark that organizations themselves are complex networks formed from internal relationships between people, departments, and units that together put the strategy into practice. In business networks,

heterogeneous organizations interact with each other and exchange, for example, goods, service, technology, and information to solve problems and achieve their objectives. The interaction between organizations shapes the relationships between the network actors and possesses elements of cooperation, integration, conflict, and separation. (Ford et al., 2002.)

How organizations perceive networks differ significantly. This is due to network pictures that define the way an organization sees the networks it operates in. There is no one way to define a network, but rather each organization and individual will form their own picture of the meaning, characteristics, and extent of the network from the basis of their own experience, relationships, and position in the network. The network picture is affected by the problems, uncertainties, abilities, and knowledge of the actors and organizations. The network picture is important because it forms the foundation for the actions of the organizations and individuals in the network. (Ford et al., 2002.)

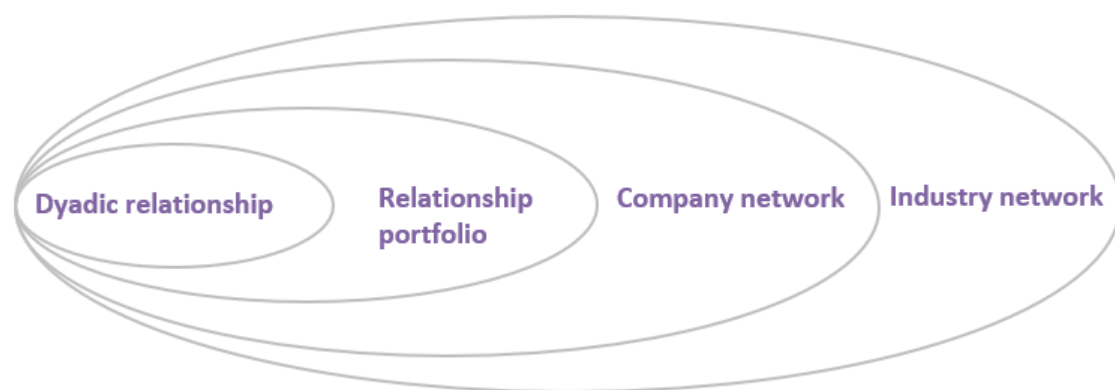
Ford et al. (2002) observe that a network is not limited to the companies an organization has relationships with or the companies that these other companies have relationships with. They continue by noting that networks are challenging to define as it has no objective boundaries, and the definition will always be affected by the analyzer's perspective. However, Anderson, Håkansson, and Johanson (1994) note that there can be identified a network horizon for the purpose of analysis. They continue by remarking that the network horizon delineates how the actor sees the network and how extended is the actor's view of it.

Vesalainen (2002, pp. 18–19) identifies three possible ways how an organization sees the networks it operates in. An organization can see other organizations as customers, suppliers, or other resource holders that it needs for practicing its business. In this perspective, the organization recognizes itself as the only builder of its success. An organization can also see the different organizations it operates with as enablers of its success and a means to achieve better performance and customer satisfaction. In this perspective, the

relationships in the network can develop to be much closer and integrated. Lastly, an organization can see itself as a member of a network, where success is realized together with others. Relationships with others in the network are close, and different parties feel as they are "all in this together".

The concept of network is abstract (Ebers, 1997) and thus can be difficult to fathom. Emerson (1981) identifies business networks as a collection of two or more business relationships where exchange relation occurs between organizations (Anderson et al., 1994). Thus, to manage networks, it is essential to manage the relationships within them. Therefore, this research focuses on the individual supplier relationships and their characteristics.

Managers can have an easier time understanding the essence of networks when presented in layers. Networks consist of single relationships, which then form portfolios of relationships. These portfolios then form broader entities of networks. (Helander, 2004.) Figure 1 below presents this idea. The different network layers have their own managerial challenges. The broadest network level is almost impossible to manage, but a chance to influence remains. If an organization desires to change the network it operates in, it needs to modify its dyadic relationships and relationship portfolio. (Helander, 2004.)



**Figure 3.** Network layers.

Business networks result from the continuous exchange between organizations (Ebers, 1997). Companies interact in business networks to seek solutions to their problems and resources to fulfill customer requirements. The companies operating in business networks are dependent on each other for technology, knowledge, supplies, and information. (Ford et al., 2002.)

Organizations create different relationships with the actors in the network. Therefore, operating in networks requires organizing and governing exchange relationships. Although the relationships can take different forms and depths, networking is initially based on the recurring exchange between the network parties. (Ebers, 1997.) The relationships developed in the networks enable access and exploitation of the resources held by other parties and facilitate linking the parties' activities together (Håkansson & Snehota, 2006).

Managing networks is a complex process and concerns the management of individual relationships (Ford et al., 2002). Networks offer a managerial challenge, as the organizations operating in them are unable to fully control the network, the relationships within the network, or predict the outcomes of others' actions. Furthermore, as organizations are rarely in full control of the relationships in the network but rather are under the influence of others within and around the relationship, the business networks cannot be entirely controlled by an individual organization. (Wilkinson & Young, 2002.) Ritter et al. (2004) and Wilkinson and Young (2002) identify networks as self-organizing systems where order emerges from a bottom-up manner, emphasizing the complex nature of networks and their management.

Although networks offer managerial challenges, organizations often desire to engage in them. The motives for involvement in inter-organizational networks are multifaceted. However, there can be identified two main motives for operating in networks. According to Vesalainen (2002, pp. 14–16) and Ebers (1997), these are related to supply chain efficiency and strategic thinking of network relationships and their value-adding

characteristics. These factors are also often the motives behind the development of an organization's network relationships.

Two advantages that can be obtained when operating in an efficient network are cost advantages and business growth that can lead to better positioning in the market (Ebers, 1997; Vesalainen, 2002, pp. 14–15). Other benefits, often related to these two before mentioned, and are, for example, extended information sharing, new knowledge acquisition, supply chain responsiveness and flexibility, and increased innovation ability (Caniëls & Gelderman, 2007; Vesalainen, 2002, pp. 15–16; Wu & Wu, 2015). In conclusion, organizations operate in networks to be more profitable, which emerges from increased efficiency and productivity, leading to cost reductions and increased profit margins or increased business volume, which yields better relative profitability and greater absolute profit (Vesalainen, 2002, p. 16).

Dryer and Singh (1998) employ a relational view when examining competitive advantage and suggest that an organization's critical resources are embedded in inter-organizational relationships. The authors discuss that competitive advantage is generated from the resource combinations and resource utilization beyond the organizational boundaries. Further, they recognize knowledge-sharing routines and complementary resources and capabilities as critical sources of competitive advantage.

Much discussion has been around the idea that organizations form idiosyncratic resource and asset combinations and link activities with other organizations in a network, resulting in a competitive advantage that can be difficult to imitate. This indicates that organizations do not compete against other organizations, but rather networks compete with other networks. A network that is more efficient in forming idiosyncratic interfirm linkages is more likely to succeed. (Dryer & Singh, 1998; Håkansson & Snehota, 1995, p. 36.)

It is perceived among scholars that organizations that can acquire rare, non-substitutable, and difficult to imitate resources and capabilities are more likely to achieve competitive

advantage over competitors (Teece, Pisano & Shuen, 1997). This results from efforts to combine resources in unique ways with partners. Organizations that succeed in this are able to form interfirm connections that can yield in competitive advantage and create relational rents. Relational rents are profits generated by two organizations that could not be achieved by either of them if working in isolation (i.e., a value that cannot be created by operating individually). Organizations can create relational rents when combining assets and resources, sharing knowledge, investing in relationship-specific assets, and employing governance mechanisms to increase efficiency and create peculiar interfirm ties. (Dyer & Singh, 1998.) In conclusion, the emphasis is on the advantage that can be created in deep collaboration with the other organizations in a network.

Furthermore, the relationships that organizations are able to create in the network are unique resources and offer capabilities that are difficult for competitors to imitate. Especially long-term strategic relationships form such configurations of processes, activities, resource exchange, and social relations between organizations that are extremely difficult for competitors to mimic. Hence, some relationships that an organization forms with others in the network can increase organizational capabilities and competitive advantages. (Dowlatshahi, 2000; Ebers, 1997; Goffin et al., 1997; Holmen, Aune & Pedersen, 2013.) It can be concluded that networks offer organizations great opportunities to increase their capabilities and better serve their customers.

Networking should thus be seen as a way to increase the profitability of an organization. Moreover, organizations can gain competitive advantage and be more responsive and agile when operating in networks and coordinating with other organizations as they gain access to resources and capabilities that are complementary to their own. (Ebers, 1997; Vesalainen, 2002, pp. 28–29.) In conclusion, networks are essential elements of business, as they offer organizations opportunities and possibilities to reach their objectives. They consist of relationships the parties' have with each other and can take multiple different configurations and depths depending on the importance of the activities to each organization (Ebers, 1997; Ford et al., 2002; Vesalainen, 2002).

Next, this thesis will discuss the concept of supply networks and why their management and development are essential for any organization. In the literature, supply base and supply network are often used as synonyms (Chen & Paulraj 2004; Cousins, 1999; Gadde & Håkansson, 2001; Goffin et al. 1997; Sarkar & Mohapatra 2006).

### **2.1.1 Supply networks**

As discussed previously, the supply side of organization's has changed enormously due to the environmental changes in the business markets, which have led to increased outsourcing activities (e.g., Chen et al., 2004; Gadde & Håkansson 2001, pp. 3–4; Ogden & Carter, 2008). These changes have affected different areas of purchasing. First, the focus has changed from single transactions to improving the performance of series of transactions. Second, the role of purchasing has changed from being a clerical function to having strategic importance and is now positioned as a strategic function. This is a result of the increasing portion of the costs of purchased goods and services in the total costs of an organization. (Chen et al., 2004; Gadde & Jonsson, 2007.) Furthermore, decades ago, Kraljic (1983) recognized the importance of purchasing by implying that purchasing should transform from an operational function to a strategic function.

Thirdly, as purchasing has been given more strategic value, the role of suppliers has changed. Suppliers and supplier capabilities contribute significantly to purchasing efficiency. Often the resources and capabilities provided by the suppliers are essential to the buying organization and its business. Hence, supplier relationship management has arisen to importance. Moreover, to obtain supplier capabilities and the potential that lies within supplier relationships the relationships need to be appropriately developed and effectively managed. (Chen et al., 2004; Gadde & Jonsson, 2007.) Thus, it can be concluded that suppliers and supply management have become increasingly important in a modern organization.

This chapter introduces the concept of a supply network, which has become a fundamental element of business. The development of supply networks has been one of the essential objectives in purchasing. An organization's competitive advantage is dependent on its suppliers' capabilities. Therefore, without a competent supply network that meets the organization's requirements for capabilities can decrease organization's competitiveness. (Hahn, Watts & Kim, 1990.)

In the recent decade, purchasing and supply chain management have increased in importance, and they are recognized as critical elements of an organization's strategy. A fundamental decision of supply chain management and procurement relates to creating, managing, and developing a competent supply base. (Ogden & Carter, 2008; Parmar, Wu, Callarman, Fowler & Wolfe, 2010.) Fisher (1997) notes that adjusting the supply base to the organization's strategy and the environment is crucial for an organization's supply chain performance. This requires that the purchasing function has a strategic focus (Chen et al., 2004).

The supply network can be identified as the supply base. Choi and Krause (2006) define the supply base as a specific supplier network managed actively by the buying organization. The design of the supply base concerns the number of suppliers included in it and the capacity to be invested in each supplier (Li, 2013). The more the buying organization decides to outsource its operations and production, the more dependent it will become on the supply base (Choi & Krause, 2006).

Developing a competitive purchasing strategy demands the identification and classification of the supply network. The Supply network represents a unique set of tangible and intangible resources from competencies, knowledge, and information to production plants and machinery. Thus, it is a critical strategic resource for any organization. (Gadde, Persson & Håkansson, 2010, pp. 20–22.) The creation, development, and management of the supply network are critical actions in the procurement function as there is an intense pressure from the environment to perform better and more efficiently (Cannon &

Perreault, 1999) and because organizations can only be as good as is their sources of supply (Rajagopal & Bernard, 1993).

Furthermore, organizations are more likely to succeed if the networks they have built succeed (Vesalainen, 2002, p. 21). Well managed suppliers and supplier performance are key factors in purchasing function. If organizations struggle with the management of their supply network, it might lead to significant losses. (Rajagopal & Bernard, 1993.) Thus, the decisions made regarding the supply network are vital as they determine the strength and the competitiveness of the network. These decisions should concern the intent of developing supplier capabilities to align with the organization's competitive strategy and with the characteristics of the purchasing situation and purchased goods. (Kraljic, 1983; Rajagopal & Bernard, 1993.)

In the next chapter, this paper will examine buyer-supplier relationships more closely. This thesis focuses on developing the management of supply and the level of supply network performance by examining individual buyer-supplier relationships. As mentioned before, if an organization desires to affect the network performance, they need to make changes in the dyadic relationship level. Next, the elements that cause the differences in buyer-supplier relationships, supplier integration levels, and relationship closeness are discussed.

## **2.2 Characteristics of buyer-supplier relationships**

As organizations carry out their activities, they develop relationships with a diverse set of organizations that directly or indirectly affect their performance. Business relationships are processes of exchange in which relationships of different strengths are formed over time to obtain mutual benefits. (Ritter et al., 2004.) As purchasing has been given strategic recognition and the role of purchasing has extended, supply management (i.e., the management of buyer-supplier relationships) has received exceptional interest in the supply chain management literature (Chen & Paulraj, 2004).

Organizations tie their resources, link activities, and form bonds between actors in various degrees by finding the desired balance of integration. This creates interdependency, and regardless of the organization's industry or position in the market, it always operates with certain interdependencies that affect its operations. (Håkansson & Snehota, 1995, p. 12.) The level of interdependency affects the depth and closeness of the relationship and is an important relational characteristic of a business relationship (Dubois & Wynstra, 2005, pp 65–68; Jap & Andersson, 2003; Wu & Wu, 2015).

The companies an organization has relationships with matter significantly. The more successful the partners are, the better it is for the organization's own success (Vesalainen, 2002, pp. 14–21). Furthermore, it is believed that the most valuable resources an organization can possess are the relationships it has with other business and nonbusiness operators (Dyer & Singh, 1998). Hence, it is important to make investments in these relationships and assign resources to develop them. The success of the supply network will affect the success of an individual organization and vice versa (Håkansson & Snehota, 2006). To emphasize the importance of supplier relationships, Trent (2005) remarks that relationships matter because organizations face pressure to improve operations continuously and because of the increased outsourcing operations and supply market constraints. Furthermore, competition is seen to take place between supply chains, which increases the importance of suppliers.

Several studies have examined buyer-supplier relationships and the attributes that cause the differences in the relationship characteristics. Some of these studies utilize a relationship continuum, where on one end is transactional relationships and, on the other end, integrated strategic partnerships and alliances. Here, the relationships often take place somewhere between the two extremes. (e.g., Golicic & Mentzer, 2005; Laing & Lian, 2005; Rinehart, Eckert, Handfield & Page Jr., 2004; Webster, 1992.)

Some scholars prefer a more complex cluster analysis perspective, where empirical evidence can be appointed to different clusters (Adler, 2001; Vesalainen & Kohtamäki, 2015)

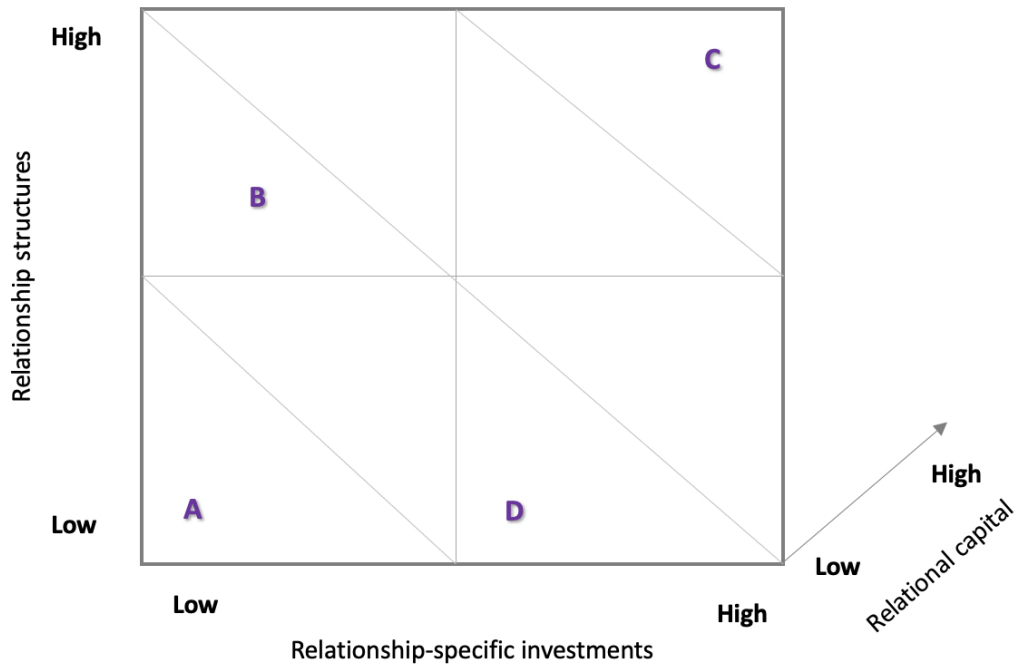
that allows the identification of prototypical patterns of business interaction that reflect the different types of business relationships (Cannon & Perreault, 1999). The unidimensional relationship continuum has been challenged by many scholars who are interested in understanding what factors influence the relationships' integration and coordination levels and hence, create diverse types of relationships (e.g., Adler, 2001; Cannon & Perreault, 1999; Ritter, 2007; Vesalainen & Kohtamäki, 2015).

Adler (2001) distinguished three ideal forms of organization and common coordination mechanisms. These are the hierarchy form that relies on authority, the market form that relies on price, and the community form that relies on trust. These mechanisms demonstrate how an organization is interacting with others and it is empirically shown that organizations often use a mix of these three mechanisms. Adler (2001) applies a three-dimensional framework of trust, price, and authority to examine the knowledge economy and management.

Vesalainen and Kohtamäki (2015) utilize a three-dimensional framework derived from Adler's (2001) research to study relationship governance in supply relationships. The three dimensions, which are used to examine the buyer-supplier relationships, are economic (relationship-specific investments), structural (relationship structures), and social (relational capital) dimensions. The scholars recognize the dimensions as the main elements of supply relationship integration. The dimensions developed by Vesalainen and Kohtamäki (2015) can form various combinations of integration and interact with each other with different degrees, thus providing multiple relationship configurations. This indicates that buyer-supplier relationships can take various forms and levels of integration and interaction. By adopting this perspective, it is possible to understand the essence of relationship integration, identify relationship clusters and illustrate various possible combinations of the elements that affect buyer-supplier relationships.

Below, the framework from Vesalainen and Kohtamäki's (2015) research is presented. The framework is constructed for examining buyer-supplier relationships and illustrates

how the various combinations of integration and interaction emerge. It illustrates how the different configurations are formed from the interplay of the three dimensions. As for an example, the letters A-D illustrate different positions that relationships can take in the framework. Here, relationship A could be interpreted as a traditional and transactional relationship and B as an operational or hierarchical relationship, relationship C represents a heavily integrated business partnership, and D, involving only the economic dimension, could be interpreted as a mutually adaptive relationship. (Vesalainen & Kohtamäki, 2015.)



**Figure 4.** The framework proposed by Vesalainen and Kohtamäki (2015) to identify buyer-supplier relationships.

The research results of Vesalainen and Kohtamäki (2015) indicate that social (relational capital), structural (relationship structures), and economic (relationship-specific investments) dimensions may explain the variations in relationship performance as these dimensions of integration allow various relationship types to exist, which then results in different conditions for relational interaction and ultimately affects the relationship performance.

Similarly, to Vesalainen and Kohtamäki (2015), other scholars have also observed that buyer-supplier relationships are varying. For example, Cannon and Perreault (1999) discuss that characterizing buyer-supplier relationships in various ways is rational. Furthermore, they remark that relationships with suppliers can be formed with formal contracts, and all information can be treated as a secret, or relationships can be based on trusting agreements and open communication. Hence, conceptualizing buyer-supplier relationships with multiple different profiles is logical.

In addition, Rinehart et al. (2004) note that the characteristics of the relationships differ based on the obstacles of procurement and the importance of the exchange to the buying organization. In a similar vein, Golicic and Mentzer (2005) observe that organizations are involved in supplier relationships that are constructed differently. Hausman (2001) reinforces this fact by observing that not all relationships are the same, but significant differences can exist. Hausman (2001) continues by noting that it is vital to recognize the need for various supplier relationships as it helps to analyze and understand the different natures of supplier relationships. Recognizing the various types of supplier relationships facilitates the correct management and development of the relationships.

Buyer-supplier relationship management plays a crucial role in efficient supply chain management as the suppliers have a direct effect on the operational performance (e.g., responsiveness, flexibility, cost, quality, operational efficiency) of the buying organization. Thus, the management of the various supplier relationships in the supply network should be recognized as a strategic operation. Next, this chapter will introduce the critical elements found in the literature to affect the buyer-supplier relationships and supplier integration and act as the antecedent for the different type of supplier relationships.

### **2.2.1 Elements of buyer-supplier relationships**

Several studies have examined the differences in supplier relationship integration (e.g., Bensaou & Venkatraman, 1995; Cannon & Perreault, 1999; Sacconi & Perona, 2007;

Vesalainen & Kohtamäki, 2015). As mentioned previously, Vesalainen and Kohtamäki (2015) recognize three dimensions that distinguish buyer-supplier relationships and influence the relationship integration and type-specific performance. These are structural, economic, and social dimensions.

Cannon and Perreault (1999), in turn, identified six different relationship connectors that illustrate the way buyers and sellers interact and do business. These six connectors are information exchange, operational linkages, legal bonds, cooperative norms, adaptation by seller, and adaptations by buyer. In a similar vein, Duffy (2008) examines the buyer-supplier relationships from three perspectives: the degree of coordination and integration, nature of interdependence, and the level of cooperative attitudes and sentiments.

The ARA-model, developed by the IMP (industrial purchasing and marketing) group, recognizes three aspects of business relationships. These are activity links, resource ties, and actor bonds (Håkansson & Snehota, 1995). Håkansson and Snehota (1995) use the ARA model to explain business relationships through a network perspective. The three layers of the ARA model define a business relationship. Activity links refer to technical, administrative, or other activities that an organization may connect with other organizations. Resource ties, in turn, refer to the connection of different resources. These can be, for example, technical, knowledge, machinery, or material. Actor bonds refer to the bonds created between the parties and reflect the interaction that takes place. (Håkansson & Snehota, 1995, pp. 26-27.) The interplay of the three layers represents the root of relationship development and can be used to analyze and define the importance of the relationship (Gebert-Persson, Mattson & Öberg, 2014). These three factors vary in every relationship. The more effect each element has, the stronger and connective the relationship is (Håkansson & Snehota, 1995, pp. 25-26).

On the other hand, Sacconi and Perona (2007) analyze buyer-supplier relationships from two dimensions: exchange criticality and operational impact of the exchange. These dimensions delineate the characteristics of the exchange context. Laing and Lian (2005)

examine the supplier relationships with a relationship closeness concept that comprehends factors such as time orientation, coordination, communication, socialization, customization, and nature of boundaries.

Håkansson and Snehota (1995) discuss the elements of business relationships found in empirical studies. They divide the factors into structural characteristics and process characteristics. The first includes factors such as continuity, complexity, symmetry, and informality. The latter possess elements that are not often evident for the outside observer. These are such as adaptations, cooperation and conflict, social interaction, and routinization. These factors create the way organizations interact and form and develop business relationships. For example, continuity and mutual adaptations are often pre-requirement for a business relationship to continue to develop and bind the parties tighter together. (Håkansson & Snehota, 1995, pp. 7-10.)

In turn, Bensaou and Venkatraman (1995) utilize a perspective embedded in information processing needs. They argue that information processing needs are a cause of a certain type of uncertainty (environment, partnership, or task uncertainty). Information processing capabilities are derived from three different mechanisms (structure, process, and information technology). The authors propose a conceptual model to inter-organizational relationships that considers the fit of these two factors. Thus, they recognize information processing needs and information processing capabilities as dimensions that can be applied to examine the differences in buyer-supplier relationships.

Rinehart et al. (2004), in turn, identify three distinguishing characteristics of buyer-supplier relationships. These characteristics are trust, interaction frequency, and commitment. Similarly, Zaefarian, Thiesbrummel, Henneberg, and Naudé (2017) identify relationship characteristics, such as trust, communication, commitment, and relationship-specific investment that affect the nature and structure of the relationships. The authors remark that the combination of the different relationship variables is crucial in terms of relationship performance. From the above, it can be concluded that seeking answers to

what brings the differences in buyer-supplier relationships and what configurations of these characteristics are the most preferred ones for a certain situation has been researched extensively utilizing several different concepts.

Next, this paper discusses the dimensions of buyer-supplier relationships and the factors and mechanisms that affect the level of supplier integration and relationship closeness. In this chapter, the dimensions are divided similarly to the typological research conducted by Vesalainen and Kohtamäki (2015). Their framework provides a holistic view of the possible relationship configurations, and the three dimensions identified as the building blocks of integration in buyer-supplier relationships cover a considerable portion of the relationship integration literature.

The dimensions developed by Vesalainen and Kohtamäki (2015) are structural, economic, and social. Structural dimension concerns relationship integration factors such as cooperation and joint activities, the use of IT and electronic business interfaces, supply chain integration (e.g., scheduling, forecasting, operations planning), and socialization (e.g., social events, on-site visits, joint workshops). This dimension can also be called relationship structures. The economic dimension includes relationship-specific investments and is mainly concerned with resource adaptations from both parties, asset specificity, and dependence in terms of the relationship-specific investments. The social dimension comprises factors such as interaction, communication, information flow, trust, commitment, relationship climate, norms and values. The social dimensions can also be referred to as relational capital. (Vesalainen & Kohtamäki, 2015.)

#### *Structural dimension*

The structural dimension refers to relationship structures applied in the relationship, which stem from the level of coordination in the relationship (Saccani & Perona, 2007). The structural dimension refers to structural integration and coordination of activities between the parties, analyzed through the inter-organizational system and process

integration and relationship structures (Bensaou & Venkatraman, 1995). The higher the coordination level, the more activities are performed jointly, and structures established to facilitate efficient cooperation. The need for cooperation can arise from the need to share competencies and information to perform logistics, product development, or other activities and operations successfully. (Saccani & Perona, 2007.) Relationship structures also facilitate relational governance as they build the governance structures that determine how control and coordination are managed in the dyadic relationship (Grover & Saeed, 2007).

Supply chain integration is an essential part when examining the buyer-supplier relationship structures and integration. Supply chain integration is understood as the process of interaction, cooperation, and collaboration where customers and suppliers are included in a cohesive supply network to obtain mutually beneficial outcomes (Huang, Yen & Liu, 2014; Pagell, 2004). Fawcett, Magnan, and McCarter (2008) describe supply chain collaboration as the way of working across organizational boundaries to deliver expectational value to customers. Correspondingly, Flynn et al. (2010) identify supply chain integration as the extend of actions taken to strategically collaborate with suppliers and cooperatively manage intra- and inter-organizational processes. They continue by remarking that supply chain integration is often conducted to enhance, for example, the flow of operations and services, information, decisions, and to offer the best possible value to the customers.

Further, Ragatz, Handfield, and Petersen (2002) argue that supply chain integration yields notable advantages regarding cost benefits, quality, and shortened life cycle. Moreover, Huang et al. (2014) identify supply chain integration to enable the buying organization to benefit from different specialized skills and know-how through extensive interaction and coordination. Furthermore, they recognize that this can increase economies of scale, for example, in production, purchasing, and logistics.

The degree of coordination and integration is extensively researched in the field of business and supplier relationship management (Duffy, 2008). It is suggested that the more extensively parties practice interaction and information exchange, and the more they link and interconnect activities and operations with each other, the higher the degree of coordination and integration can be (Jaspers & Van den Ende, 2006). The degree of cooperation and integration also refer to the relationship type. The higher the degree of integration and cooperation is in a relationship, the more likely the relationship is considered as a strategic and long-term relationship. The research suggests that when integration is increased in a relationship, it develops from an arm's length relationship towards a partnership. (Laing & Lian, 2005.)

Håkansson and Snehota (1995, p. 273) discuss the coordination of activities that links to the structural dimension of buyer-supplier relationships. Håkansson and Snehota (1995, pp. 52-62) define activity linking as a form of coordination. They continue by noting that linking activities require mutual adaptations and can yield economic benefits. When linking activities with suppliers, organizations can, for example, co-create new products and services, process information, improve customer satisfaction, operate supply chain activities more efficiently, reduce lead-times, and increase quality. However, the authors remark that activity links are also binding and create interdependence. They continue by noting that activity links affect the activities in both parties and activity patterns in a network and limit the opportunity to change the activity structures.

Similar to activity linking, Cannon and Perreault (1999) identify operational linking (operational linkages) as one structural element of business relationships. Operational linkages define the degree to which systems, actions, and routines have been linked and integrated between the buyer and seller to create efficient operations. Moreover, these linkages have been identified to promote information sharing and the flow of goods and services. In addition to operational linkages, Cannon and Perreault (1999) highlight the importance of legal bonds and their role in forming relationship structures. Legal bonds offer clear and specific rules, obligations, and boundaries to the relationships. The

authors continue by noting that legal bonds are contractual agreements that bind the parties to agreed specific roles in the relationship.

Furthermore, legal bonds and contracts offer a governance mechanism, a frame for the process exchange, and define behavioral boundaries and outline what type of behavior is expected and accepted. In addition, they describe sanctions if the relationship contract is violated. (Luo, 2002; Parkhe, 1993.) These types of transactional mechanisms are vital to decrease opportunistic behavior and to increase relationship performance (Liu, Luo & Liu, 2009).

Information exchange is another essential element of the structural dimension. Håkansson and Snehota (1995, p. 15) discuss the importance of processing information and information exchange in the context of coordinating activities. Similarly, Cannon and Perreault (1999) identify information exchange as an essential factor in business relationships. They define that open information sharing in practice implicates, for example, that the other party is involved in the early stages of product development. This can be linked to the activity linking discussed by Håkansson and Snehota (1995). Hence, a conclusion can be drawn that the more open the information sharing is, the higher is the level of activity coordination and linking in the relationship.

Information exchange and information sharing are discovered to have a crucial role in supply chain and buyer-supplier collaboration and inter-organizational integration. Furthermore, information exchanged has been identified to deliver multiple advantages such as inventory reduction, increased visibility, and cost savings. (Grover & Saeed, 2007; Hudnurkar, Jakhar & Rathod, 2014.) Anderson and Weitz (1992) suggest that open sharing of information is a prerequisite for a higher commitment level. However, there can be identified some issues revolving around extensive information sharing. The other party might be intrigued to act opportunistically with the information it receives (Cannon & Perreault, 1999).

Vesalainen and Kohtamäki (2015) see the concept of socialization to belong to the structural and social dimensions of dyadic relationship integration. Socialization includes numerous activities such as on-site visits, organizing supplier conferences, joint workshops, and team building events (Cousins & Menguc, 2006). Socialization also affects the formation of social bonds, which will be discussed later in the social dimension section. Cousins and Menguc (2006) argue that socialization plays a critical role and acts as a facilitator when strengthening supply chain integration processes and developing supplier relationships. Moreover, the author remark that socialization capabilities are intangible, hence providing valuable and rare resources for an organization.

Cousins and Menguc (2006) argue that together with integration and cooperation, socialization leads to a higher level of communication and operational performance. They continue by noting that these factors are also considered to reduce opportunistic behavior and the risks between buyer and supplier as they facilitate and increase information flow and relationship-specific investments between the parties. Relationship-specific investments will be discussed in the upcoming chapter. These investments and adaptations from both parties create interdependence in the relationship.

Lastly, this chapter will discuss the role of information technology (IT) in shaping buyer-supplier relationship structures. Information technology in supply chains has been discussed widely in academic literature (Cachon & Fisher, 2000; Fawcett, Wallin, Allred, Fawcett & Magna, 2011; Frohlich, 2002; Wu, Yeniyurt, Kim & Cavusgil, 2006). It has been argued that technology use in supply chains leads to superior performance compared to the traditional ways of doing business. Organizations can use IT for, for example, demand forecasting, order scheduling, and monitoring inventory levels. (Frohlich, 2002.)

Previous research indicates that using IT in supply chains provide considerable advantages. These are, for example, increase operational efficiency, faster new product development, shorter lead times and inventory turns, lower costs, and greater supply chain flexibility and agility (Cachon & Fisher, 2000; Fawcett et al., 2011; Frohlich, 2002). It

enables supply chain members to share information faster and coordinate activities efficiently. Organizations utilizing IT in supply chain management often experience increased information sharing, which leads to unique and rare supply chain configurations and collaboration activities. (Frohlich, 2002; Tippins & Sohi 2003.)

The use of IT in supply chains relates strongly to the sharing of information. An organization's information-sharing culture strongly affects its capability and willingness to connect with its suppliers (Fawcett et al., 2011). Hence, Frohlich (2002) argues that the internal barriers impede IT use in supply chain integration and collaboration much more than upstream supplier barriers. The adaptation and usage of IT do not by itself increase the information sharing, but often the organization's information-sharing culture is strongly affected by it and hence can lead to more open information sharing culture (Fawcett et al., 2011).

Above, the factors that shape the structure of business relationships were discussed. These were the level of coordination and integration, joint activities, legal bonds, information exchange, socialization, and the use of IT. These elements are listed in Table 1 at the end of this chapter.

#### *Economic dimension*

Several studies have indicated that business relationships develop when integration and coordination increases. Moreover, when information sharing and communication become more frequent, the level of collaboration increases, and the time orientation of the relationship becomes long-term (Laing & Lian, 2005; Mohr & Nevin, 1990) and organizations are required to invest in resources specific to the relationship (Mohr & Nevin, 1990). Resource-specific investments are viewed as assets and capabilities that have significantly less value if redeployed elsewhere than in the current relationship (Subramani, 2004; Wallace & Xia, 2015). Moreover, they are often complicated and costly to use in other relationships and may lose their value if used elsewhere (Bensaou, 1999). Woo

and Ennew (2004) claim that the lack of dedicated investments and adaptations suggests that an organization has a transactional approach to purchasing.

Relationship-specific investments are investments in products, processes, procedures, expertise, and know-how that are unique to a relationship and specifically fits the needs and capabilities of a particular exchange relationship (Cannon & Perreault, 1999; Subramani, 2004). Resource-specific investments thus can be tangible or intangible. Moreover, relationship-specific investments create value only in the context of a specific relationship (Cannon & Perreault, 1999; Nielson, 1998). Investments assigned to a specific relationship are common in business relationships, especially when the relationships are developed further (Laing & Lian, 2005; Nielson, 1998).

One aspect of relationship-specific investments is customization. Often, industrial machines, procedures, and tools are customized to the needs of a specific customer. This requires investments in, for example, machinery, manufacturing technology, human capital, and research and development. In contrast, a buying firm might have to adapt to a supplier and its offerings. (Cannon & Perreault, 1999.) Through investments to assets specific to a business relationship, products and services can be customized to fit the partner's specific long-term requirements (Laing & Lian, 2005).

Laing and Lian (2005) include the concept of time orientation to the economic and relationship-specific investment perspective of a business relationship. Time orientation refers to the thoughts and expectations of both parties regarding their future together. It encompasses the thought of the future length of the relationship. Time orientation is essential regarding relationship-specific investments as neither party is unwilling to invest or adapt to a particular relationship if there is no long-term future for it. When both parties embrace a long-term perspective, investments to relationship-specific assets are more likely. (Campbell, 1985; Laing & Lian, 2005.)

Research results indicate that the number of investments made to a specific relationship correlates directly with activities related to complex strategic, long-term oriented relationships that require trust, cooperation, and commitment (Bensaou, 1999). This indicates that when relationships develop, the amount of relationship-specific investment increases. It is essential to note that relationship-specific investments are influenced by negative factors as well. They often increase the supplier's bargaining power and create high exit barriers for the buyer (Ghosh & John, 1999). Nevertheless, relationship-specific investments are recognized to decrease opportunistic behavior and motivate the parties to continue the relationship and invest in it by creating interdependence (Jap & Anderson, 2003; Liu et al., 2009), and as a result of this, they offer an incentive to continue the development of the relationship (Liu et al., 2009).

Relationship-specific investments are one means to create interdependence and facilitate the formation of trust between the parties. By relationship-specific investments, the parties can be more certain that they are on the same page regarding the objectives and purpose of the relationship and the future and length of the cooperation (Liu et al., 2009), which can be seen as a direct effect to the depth of the relationship.

### *Social dimension*

The social dimension comprises relational capital, which takes multiple different configurations in buyer-supplier relationships. When discussing factors related to relational capital, interaction, trust, commitment, time orientation, norms and values, communication, and information flow arise to the center of attention (e.g., Day, Fawcett, Fawcett & Magnan, 2013; Elg, Deligonul, Ghauri, Danis & Tarnovskaya, 2012; Tangpong, Michalisin & Melcher, 2008). Håkansson and Snehota (1995, p.192) discuss that the events and activities in networks arise from the behavior of individuals who act based on their interpretations and intentions. The authors continue by remarking that business networks are social configurations handled by individuals who form social bonds with the other

network actors. Hence, the authors conclude that social bonds are essential to increase relational capital.

Cousins, Handfield, Lawson, and Petersen (2006) considers relational capital in supply chains to emerge from the social structure and configuration of a group, through which the resources and capabilities of the individual members (organizations) are accessed and jointly utilized. Further, they define elements of relational capital to be mutual respect, trust, and close interaction. Kale et al. (2000) argue that relational capital arises from the history (repeated exchange) of a relationship that supports trust, respect, and friendship through individual-level attachments. Moreover, Kale et al. (2000) suggest that relational capital creates a foundation for learning and transferring know-how and capabilities in the exchange relationship.

Cousins et al. (2006) suggest that investments in social procedures and socialization processes yield benefits that generate valuable advantages such as cost reductions, flexibility, and faster product innovations. The benefits result from open communication and information sharing, joint activities and training, value co-creation, and investments in each other's processes. These factors enforce the supplier's willingness to operate more efficiently and improve performance.

Previous studies indicate that continuous exchange between a buyer and a supplier builds relational assets and creates value emerging from the social connections and expectations of exchange continuity. Hence, the time orientation related to relation capital encompasses the degree of expected future exchange. When the future orientation is signaled to be long-term by both parties, social connections are likely to occur in increasing amounts, and the valuable relational assets developed. (Elfenbein & Zenger, 2014.)

As mentioned before, social bonds are an essential part of relational capital. For instance, they are vital for trust creation because trust-building is a social process (Håkansson & Snehota, 1995, p. 32). Trust is a critical factor of relational capital and is recognized to be

significantly affected by the closeness of the relationship (Laing & Lian, 2005). Trust is endorsed in buyer-supplier relationships by behaviors and activities such as information sharing, empathy, investments to the other party, and good interaction skills. When the degree of trust is high, the parties are more willing to invest in the relationship and take risks. (Elg et al., 2012.) Furthermore, early research on trust indicates that trust develops in an environment where agreed norms are enforced and risks are reduced (Colemann, 1988). Moreover, Gadde and Håkansson (2001, pp. 106-108) found that trust works as a means to reduce uncertainty and fear of disloyalty.

It is vital to remark that trust has a dual role in buyer-supplier relationships. Trust can act as an enabler as well as a constraint (Day et al., 2013). Day et al. (2013) found that trust at an incorrect level and in a fallacious relationship situation can result in sunken costs, wasted time, and lost opportunities. The authors concluded that inappropriate trust could cause vulnerability and decrease performance. It is vital to understand that although trust can facilitate relational embeddedness and increase advantages resulting from relational capital, it also has its downsides. Hence, organizations must think thoroughly about their intentions with the suppliers and with whom it is worth developing deeper relationships.

Socialization is regarded as an essential element in the social dimensions (Vesalainen & Kohtamäki, 2015). Social routines, actions, and events increase the social capital in a relationship. Further, socialization helps to increase relational capital by building trust and by increasing interaction and communication. Socialization connects individuals from both parties through interaction and the development of mutual respect. (Cousins et al., 2006; Kale et al., 2000.) Moreover, for the closeness of the relationship, socialization and social ties are seen as important antecedents (Laing & Lian, 2005).

Strongly related to socialization is communication, which should be formal and informal between the buyer and the supplier (Cousins & Menguc, 2006; Laing & Lian, 2005). In the context of buyer-supplier relationships, boundary-spanning employees have a crucial

role. They are critical when forming closer ties, social bonds, and transforming into a more informal communication. They act as the immediate link to the partner organization and enable effective communication. When communication increases and the business relationships develop, relationships become more socially embedded through increased socialization. (Laing & Lian, 2005.)

Formal and informal communication activities are, for example, regular supplier meetings, joint conferences, ad hoc telephone calls, exchange of information and knowledge, and regular general contacts. These interaction channels and activities are crucial in terms of the development and performance of a business relationship. Scholars have also found that communication positively affects knowledge sharing, development of relational assets, and improving governance structures. (Cousins & Menguc, 2006.)

Moreover, previous studies indicate that interaction and communication between a buyer and a supplier can improve the buyer's performance and enhance value creation due to the increased information sharing (Carey, Lawson & Krause, 2011; Cousins et al., 2006; Kale et al., 2000). Laing and Lian (2005) suggest that the degree of communication links directly to the closeness of a relationship. Informal and spontaneous communication indicates close relationships, and in turn, limited communication and information sharing is a primary characteristic of arm's-length type relationships. Moreover, the closeness of a relationship can be understood to emerge from the diverse aspects of the interaction process. The process aspects of interaction consist of, for example, time orientation of the relationship, relationship-specific investments and customization by both parties, the level of activity coordination and the degree of communication, social bonds, and socialization. (Laing & Lian, 2005.)

Routines, which Håkansson and Snehota (1995, p. 10) identify as explicit and implicit rules of behavior, work to solve possible issues emerging between buyer and supplier. Routines enhance an organization's capabilities to manage strategic relationships efficiently, and they stem from the need to decrease transactional costs related to business

relationships (Håkansson & Snehota, 1995; Zollo, Reuer & Singh, 2002). Communication and continuous interaction are mechanisms to develop and maintain inter-organizational routines (Zollo et al., 2002).

Lastly, commitment and interdependence are relevant aspects of relational capital. For example, Day et al. (2013) argue that collaborative relationships require mutual commitment based on trust to co-create value. In a similar vein, Dubois and Wynstra (2005, p. 66) conclude that partnership style relationships are often associated with long-term commitments (e.g., relationship-specific investments), and further, Donaldson and O'Toole (2000) identify that the relationship type is dependent on the level of commitment. Moreover, Donaldson and O'Toole (2000) argue that a partnership-type relationship requires a higher level of commitment and involvement from both parties. Håkansson and Snehota (1995, p. 12-18) observe interdependence to emerge from the situation where the buying organization recognizes that either the switching costs to another supplier are too high or that the suppliers' products and services are critical for the organization's success. Moreover, they recognize interdependence as a central element for relationship development and the closeness of a relationship.

It can be concluded that the factors related to social dimension and relational capital are interrelated. Transactional relationships focus on the terms of individual transactions and are characterized by, for example, low relational norms, communication, and interaction. Long-term oriented business relationships are defined by high relational norms where organizations share information and cooperate to create value repeatedly over time in a continuous close exchange relationship (Tangpong et al., 2008). When information is shared openly, and communication and interaction are frequent, parties in a relationship can broaden their knowledge and understanding of the surrounding business environment, competition, and each other (Chen et al., 2004; Makkonen & Olkkonen, 2013; Terpend, Tyler, Krause & Handfield, 2008).

It is vital to understand the causalities of the dimensions and factors of the buyer-supplier relationships. For example, when the degree of a factor increases, it often affects other factors to increase as well. The elements related to buyer-supplier relationships are necessary to understand as they directly influence the supply network's performance (Cousins et al., 2006). Table 1 below presents the elements of the buyer-supplier relationships that were identified from the literature review.

**Table 1.** Elements of buyer-supplier relationships.

<b>Structural dimension</b>	<b>Economic dimension</b>	<b>Social dimension</b>
Integration	Relationship-specific investments	Communication and interaction
Coordination	Customization	Information exchange
Joint activities	Adaptations	Socialization and social bonds
Legal bonds		Commitment
Information flow		Involvement
Socialization		Interdependence
Information technology		Norms

### **2.2.2 Contingency approach to buyer-supplier relationships**

Although long-term oriented partnership type relationships are advocated in the business press and buyer-supplier relationship literature and recognized to result in improved relationship performance (e.g., Duffy, 2008; Golicic & Mentzer, 2005; Vesalainen & Kohtamäki, 2015), Cannon and Perreault (1999) observe that buyers do not always desire to form close ties with suppliers. Thus, the authors emphasize that various types of inter-organizational relationships exist.

Furthermore, Sacconi and Perona (2007) point out that albeit buyer-supplier partnerships are recognized to result in numerous benefits, such as improved quality levels, increase responsiveness, and advanced innovations (Ogden & Carter, 2008) there is no “one best way” of buyer-supplier relationship configuration. However, they continue by noting that there can be a best type of relationship for a specific exchange situation. In a similar vein, Bensaou and Venkatraman (1995) detected various ways to develop effective buyer-supplier relationships, emphasizing that no one best exists.

Bensaou and Venkatraman (1995) conducted a study to examine inter-organizational relationships from the information processing needs and information processing capabilities perspective and analyzed the fit between these two factors. They identified that the information processing needs change based on the complexity and uncertainty of the situation, and managers should focus on matching the needs with the available information processing mechanisms. These results indicate that inter-organizational relationships form various fits between information processing needs and information processing capabilities. The authors emphasize that the fit between the two dimensions is crucial in terms of performance.

Correspondingly, Huang et al. (2014) emphasize the importance of the fit. They use environmental and supply chain integration perspectives and identify the fit between these two factors to affect the relationship performance. The scholars suggest that a higher level of integration is not always necessary. This was also proposed by Gimenez, van der Vaart and van Donk (2012), who discovered that the supply chain integration is dependent on the contexts where buyer-supplier relationships operate. They note that only under high supply complexity a high level of supplier integration is effective.

In their research, Sacconi and Perona (2007) combine the operational impact of the exchange and exchange criticality with integration and cooperation. From the interplay of these factors, the authors constructed a framework that presents the ideal type of relationships. Bensaou and Venkatraman (1995) recognized five distinctive relationship

configurations depending on the fit between information processing needs and capabilities (remote relationships, electronic control, electronic interdependence, structural relationship, and mutual adjustment). Similarly, Saccani and Perona (2007) propose four relationship types (traditional relationships, operational relationships, project-based partnerships, and evolved partnerships) depending on the levels of operational impact and exchange criticality. Below, the contingency model of Saccani and Perona (2007) is presented.

<b>Exchange criticality</b>	High	Project-based partnerships	Evolved partnerships
	Low	Traditional relationships	Operational relationships
		Low	High
		<b>Operational impact</b>	

**Figure 5.** The contingency model for buyer-supplier relationship (Saccani & Perona, 2007).

The contingency model proposes a way to manage and develop buyer-supplier relationships in the manufacturing context. Saccani and Perona (2007) identified that relationships that were positioned accordingly to the model enjoyed superior performance. The contingency model can be utilized to determine the right relationship configuration for a specific exchange context. The model suggests that the operational impact of the exchange affects the level of interaction, and the exchange criticality influences the level of cooperation. Hence, the authors argue that relationships should always be matched with exchange context to attain greater performance.

Similarly, Trent (2005) divides buyer-supplier relationships into four categories based on their behavioral characteristics. These four categories are counterproductive, competitive, cooperative, and collaborative. These different types of buyer-supplier relationships

often exist in different purchasing contexts. For example, competitive relationships are also referred to as adversarial relationships and applied with suppliers that provide standard or low-value items. On the other hand, collaborative relationships are held with only a few suppliers that supply critical items for an organization's success. (Trent, 2005.)

Many scholars have recognized the logic behind the diverse set of supplier relationships that one organization might have. One reason behind it is the difficulty to pursue, for instance, partnership relationships with many suppliers as the costs of time, money, and other resources are too extensive and can be irrelevant for a given relationship situation. (Lambert, Emmelhainz & Gardner, 1996; Mentzer, Min & Zacharia, 2000). Furthermore, Mentzer et al. (2000) remark that the most effective supplier relationship type is dependent on the operating context. Hence, organizations are required to manage and develop a diverse set of supplier relationships that match their strategic goals (Golicic & Mentzer, 2005).

For instance, Bensaou and Venkatraman (1995) identify that close and strong relationships are often formed with suppliers that supply components and products close to the buying organization's core competencies. In contrast, Hausman (2001) comments that too strong and close inter-organizational relationships can be wasteful in certain circumstances, thus indicating that supplier relationships should be developed based on the situation in which they occur. Therefore, managers must assess the nature of the relationships in detail and accuracy to develop appropriate and relevant interaction strategies (Duffy, 2008).

In conclusion, the studies applying a contingency perspective to buyer-supplier relationships identify multiple effective ways to organize and form buyer-supplier relationships. These studies suggest that applying the contingency approach to buyer-supplier relationships is fruitful as organizations possess numerous supplier relationships and interact with suppliers in various degrees.

### **2.3 Contingency approach to purchasing**

As the competitive environment has increased in complexity and the customers have become more demanding, organizations have started to rely on supply management to meet customer requirements (Tan et al., 1999). As a result, purchasing has been given strategic recognition, and the role of suppliers has increased in importance. Due to the intensive global competition, companies have increasingly focused on core competencies and activities. The focal factor in achieving a competitive edge is by conducting efficient purchasing operations, managing the supply network, and developing accurate relationships with suppliers (Chen & Paulraj, 2004; Tan et al., 1999).

Purchasing and supply management has interested scholars increasingly over the past decades. There is a mutual understanding that purchasing and supply management activities enable organizations to fulfill their strategic objectives (Wynstra, Suurmond & Nullmeier, 2019). Kocabasoglu and Suresh (2006) remark that supply management and purchasing are part of supply chain management that concentrates on efficient cost management and utilization of resources, tackling the issue of reducing costs and improving quality simultaneously. In addition, Kraljic (1983) argued that purchasing should move towards strategic supply management to achieve better performance.

Supply management is especially vital when the procured items are critical, and the purchasing situation occurs under complex conditions. Further, it is essential to practice accurate supply management when the level of uncertainty of technological developments, supplier relations, and availability of items is high. (Kraljic, 1983.) Prior studies indicate that organizations can attain numerous benefits when focusing on managing their supplier relationships and having a strategic approach to purchasing (Chen et al., 2004; Gelderman & van Weele, 2005).

Recent evidence suggests that purchasing strategies and supplier relationship management significantly impact an organization's overall performance (e.g., Montgomery et al., 2018; Padhi, Wagner & Aggarwal, 2012). Purchasing having a strategic role has been

identified to provide a sustainable competitive advantage, and the scientific evidence supports the link between strategic purchasing, supplier integration, and performance (Carr, Keong Leong & Sheu, 2000; Chen et al., 2004; Cousins, Lawson & Squire, 2006; Montgomery et al., 2018). Moreover, to effectively manage the different supply situations and suppliers and recognize when competitive or cooperative methods are required, the purchasing function needs to have a strategic perspective (Carr & Pearson, 1999).

Strategic purchasing is crucial for conducting supply initiatives for increasing relational integration. Furthermore, a strategic approach to purchasing is linked to enabling increased supplier integration and improved interaction and collaboration between the buying organization and its key suppliers. (Paulraj et al., 2006.) Moreover, strategic purchasing is vital if an organization desires to develop long-term, cooperative relationships with its suppliers as it fosters the development of greater communication and trust, which are key factors for relationship development (Chen et al., 2004). Organizations should develop towards strategic purchasing as it has an influential role in delivering superior supply chain performance (Paulraj et al., 2006).

### **2.3.1 Purchasing portfolio theory**

To reach the objective of changing purchasing from a tactical to a strategic function, the purchasing portfolio approach has become a widely accepted approach both in academia and within organizations (Gelderman & van Weele, 2003; Gelderman & van Weele, 2005; Wynstra & ten Pierick, 2000). A study by Gelderman and van Weele (2005) indicates that the use of purchasing portfolio models implies purchasing sophistication. They conclude that purchasing sophistication is formed by two dimensions, which are purchasing professionalism and purchasing position within the organization. Thus, the authors would characterize the use of purchasing portfolios as an indication of sophisticated purchasing actions and function.

Saccani and Perona (2007) discuss that the portfolio management literature examines and reviews the different exchange context characteristics that influence the configurations of buyer-supplier relationships. Purchasing portfolio models provide a means to differentiate and segment products, services, and suppliers (Olsen & Ellram, 1997; Padhi et al., 2012). The portfolio perspective takes the notion of strategic supplier portfolio management, which includes managing a collection of different supplier relationships. Organizations are required to manage supplier relationships with specific activities and methods related to the relationships' specific features and characteristics. This way, organizations can optimize the supplier base. (Wagner & Johnson, 2004.)

Portfolio models often focus on categorizing products, customers, or suppliers (Olsen & Ellram, 1997). Portfolio models offer a broader network perspective instead of an individual relationship approach, which can be especially useful when dealing with supply management issues. Creating a strategic purchasing portfolio allows an organization to consider the various interdependencies among its supplier relationships and the trade-offs in terms of risk and dependence. (Wagner & Johnson, 2004.)

In their study, Wagner and Johnson (2004) found that a vast number of managers recognized the portfolio approach to supply management as an essential element in the success of the organization. Moreover, supplier relationship management research identifies the management of supplier relationships to influence sustainable competitive advantage (Chen et al. 2004). Wagner and Johnson (2004) point out that as the supplier actions can significantly impact an organization's performance and success, a strategic portfolio approach could bring a real advantage.

Portfolio management literature recognizes the need to address the issues of different purchasing situations and their effect on buyer-supplier relationships. The most used and referenced model in this field is Kraljic's (1983) purchasing portfolio model (Saccani & Perona, 2007). Kraljic's (1983) purchasing portfolio model categorizes purchases according to profit impact and supply risk, hence, illustrating the different natures of

purchases and how different exchange situations should be managed. Other scholars have also developed purchasing portfolio models for supply management (e.g., Olsen & Ellram, 1997). Nevertheless, they resemble much of Kraljic's model, which therefore is recognized as the standard model in the field (Gelderman & van Weele, 2003).

Portfolio models have been criticized. They are argued to be too simplified versions of reality and for not consider the effects of networks (Dubois & Pedersen, 2002). In addition, the measurement issues surrounding the categorization of products or suppliers on a high-low scale have been recognized (Gelderman & van Weele, 2003). Nevertheless, purchasing portfolio models have been identified to be useful and to provide several benefits. The identification of the exchange context is recognized to facilitate the correct management of the exchange situations, and here, the purchasing portfolio can be fruitful. Moreover, classifying the exchange situation facilitates setting up the needed cooperation and interaction requirements in the given relationship. (Saccani & Perona, 2007.)

Furthermore, the study conducted by Gelderman and van Weele (2003) highlights that purchasing professionals identify as one of the main benefits of using purchasing portfolio models being the in-depth discussion within cross-functional teams. Furthermore, Olsen and Ellram (1997) argue that portfolio models can effectively allocate scarce resources by identifying which items and suppliers require greater attention. Selectively assigning resources across the relationship portfolio permits the optimization of the organization's limited resources (Wagner & Johnson, 2004).

The idea behind Kraljic's (1983) purchasing portfolio is to maximize buying power and minimize supply market vulnerability. The purpose is to align the external resources and capabilities provided by suppliers with the organization's internal needs. (Dubois & Pedersen, 2002; Kraljic, 1983.) Kraljic examines the purchasing situation from an internal and external perspective. The internal perspective relates to the importance of the purchase (Montgomery et al., 2018). By this, Kraljic (1983) refers to, for example, how important the product is in terms of value added by product line, the percentage of raw

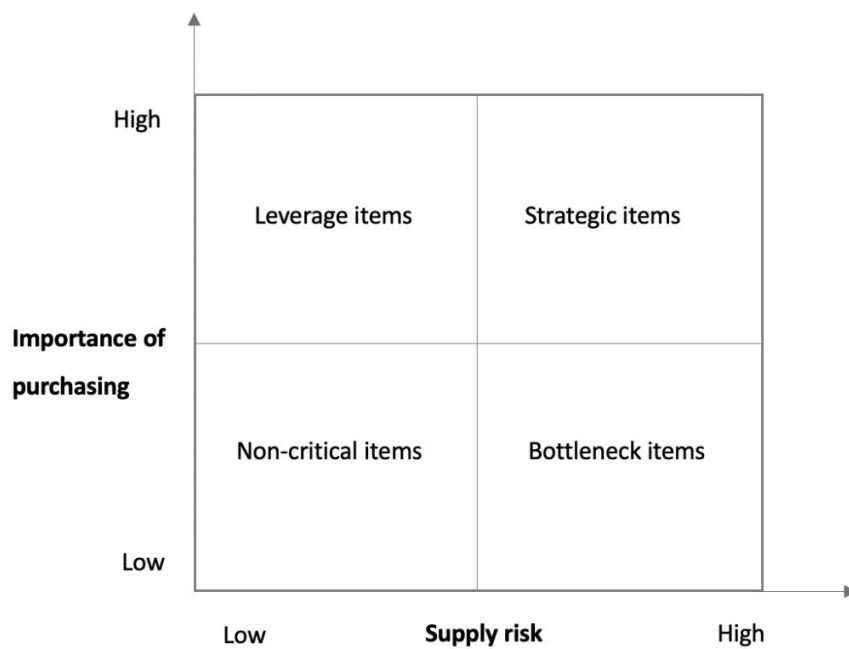
materials in total costs and their impact on profitability, or the impact of the purchase to the buying organization's capabilities. With the external perspective, Kraljic (1983) refers to the complexity of the supply market, measured against, for example, supply scarcity, supply environment complexity, the pace of technology, materials substitution, entry barriers, and logistics costs.

A resembling framework developed by Olsen and Ellram (1997) recognizes similar dimensions as proposed by Kraljic. The purchasing situation is assessed against two dimensions that are related to external and internal factors. The internal dimension concerns the importance of the purchase for the organization. It is measured against factors such as the extent to which the purchase is part of the organization's core competencies, volume or monetary value of the purchase, the extent to which the purchase is part of a final product, or potential environmental and safety concerns. The second dimension is related to external factors and identified as the difficulty of managing the purchase situation. Factors pertinent to this dimension are related to the product, supply market, and environmental characteristics and, for example, are product novelty and complexity, supplier's competence and power, and environmental uncertainty. (Olsen & Ellram, 1997.)

Evaluating the organization's purchasing situation by these two dimensions, the purchasing executives can determine the organization's purchasing strategies to exploit its purchasing power and reduce supply risk to the minimum level. The purchasing portfolio model allows forecasting supply scenarios, identify available purchasing options and develop individual supply strategies for critical items. (Kraljic, 1983.)

Kraljic's (1983) purchasing portfolio model can be divided into four phases. First, the purchased products are analyzed and divided into a matrix with four quadrants. These quadrants are strategic, bottleneck, leverage, and noncritical. The first phase is crucial as purchasing managers take part in in-depth discussion and create a consensus on the importance and criticality of the suppliers and products categorized (Olsen & Ellram, 1997).

Second, the relationships between the buyer and the suppliers are evaluated in terms of bargaining power. For this, Kraljic proposes ten evaluation criteria. Third, the best-suited strategy is chosen (exploit, balance, diversify), and fourth, suitable purchasing strategies are developed for each item combining the purchasing situation and product characteristics with the division of the bargaining power. (Kraljic, 1983.) The matrix is presented below.



**Figure 6.** Illustration of the Kraljic's (1983) purchasing portfolio matrix.

Figure 6 illustrates Kraljic's purchasing portfolio model that applies a 2 x 2 matrix consisting of four quadrants. Products and suppliers can be categorized according to the internal and external features (Gelderman & Semeijn, 2006; Kraljic, 1983; Montgomery et al., 2018). Montgomery et al. (2018) argue that positioning purchased items to Kraljic's purchasing portfolio does not only visualize the trade-offs between the items but also allows the organization to develop distinctive managerial approaches (supplier relationship management, purchasing strategies) for each category. Furthermore, Bensaou (1999) found that firms benefit from engaging in various relationships with different suppliers as directed by the purchasing portfolio approach.

Although Kraljic's matrix has been criticized extensively, it has obtained tremendous popularity. Moreover, it has been identified through empirical studies to be a useful tool to analyze purchasing situations (Montgomery et al., 2018). Scholars have identified that Kraljic's purchasing portfolio approach offers a tool for managing different supplier relationships, developing relevant purchasing strategies, and managing a global supply base (e.g., Caniels & Gelderman, 2007; Gelderman & Semeijn, 2006).

It is important to note that Kraljic's purchasing portfolio model focuses heavily on strategic items and strategic partnerships regarding the suggested supply strategies (exploit, balance, diversify). It is vital to note that long-term strategic partnerships are only developed with a limited number of suppliers. These suppliers should be critical in terms of the end customer value and supply items vital for the buying organization's core activities. Here, the relationship should result in a win-win situation where both parties benefit from extensive cooperation and interaction. Suppliers should be incorporated, for example, early on to product development and the design cycle. This approach differs greatly from the traditional bid-and-buy approach to supplier management. (Lambert & Cooper, 2000.)

It is acknowledged, by several studies, that not all supplier relationships should be or can be strategic partnerships (e.g., Gadde & Senothena 2000; Sacconi & Perona, 2007). Thus, other scholars have filled the gap by providing strategies to each quadrant. For non-critical items, it is essential to ensure efficient purchasing by, for example, e-procurement systems and systems contracting. For bottleneck items, assuring supply and continuity are critical activities. In the leverage quadrant, the buyer should exploit its purchasing power and use competitive bidding. (e.g., Caniels & Gelderman, 2007; Gelderman & van Weele, 2003; Olsen & Ellram, 1997.)

Utilizing the portfolio perspective, an organization can better differentiate and focus on the supplier relationships critical for its success. To succeed in the efficient utilization of the portfolio model, organizations must develop and utilize tools and methods that focus

on supplier evaluation, selection, development, and integration (Wagner & Johnson, 2004).

## **2.4 Contingency fit between relationship integration and purchasing complexity: a synthesis**

Previously, theories and models related to buyer-supplier relationship characteristics, contingency approach to supplier relationships, purchasing portfolio, and segmentation of supplier relationships were introduced. Despite its critics, the purchasing portfolio model is a useful tool for segmenting suppliers and moving towards strategic purchasing. The contingency approach to buyer-supplier relationships is understood as an efficient perspective to manage supplier relationships and supply networks in today's complex business environment. In this chapter, these before mentioned theories are interlinked for analyzing the fit between internal and external situational factors of purchasing context and the level of supplier integration.

From the literature review above, it can be concluded that certain purchasing situations require long-term, close, and strategic relationships as others call for more competitive approaches in managing the relationship. For example, Lambert and Cooper (2000) note that the closeness of supplier relationships will differ throughout the supply chain, suggesting that not all relationships should be closely integrated and coordinated. Moreover, they remark that strategic partnerships should be developed only with suppliers that supply items vital for the buying organization's core activities.

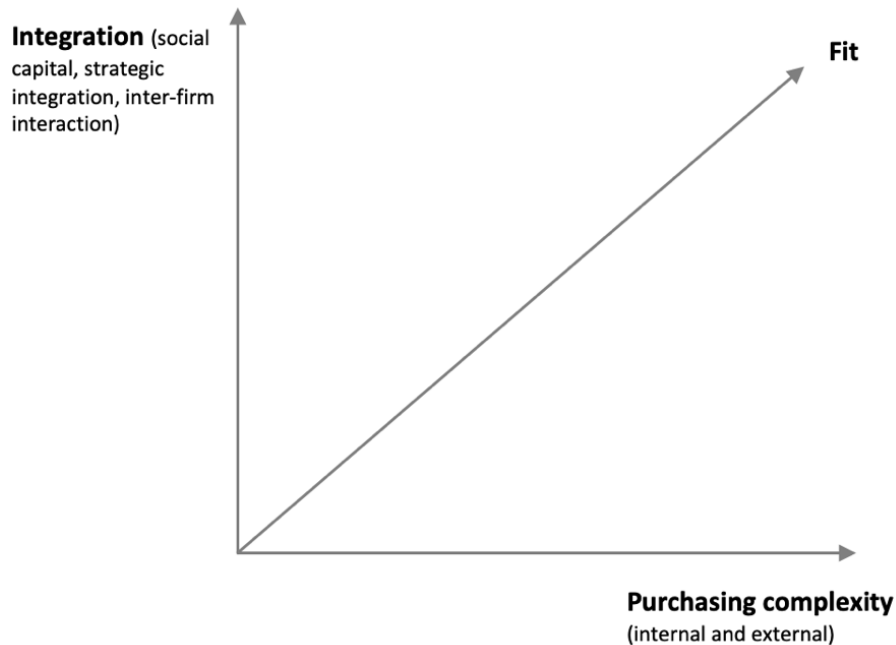
The contingency approach suggests that an ideal type of relationship can be identified for a specific exchange context. The theory proposes that there is no one best supplier relationship type, but rather, multiple effective relationship configurations exist. The contingency perspective to buyer-supplier relationships proposes that supplier relationships should always match with the specific exchange context in which they are used to enjoy superior performance. (Bensaou & Venkatraman, 1995; Sacconi & Perona, 2007.)

In Saccani and Perona's (2007) contingency model, the ideal fit is in each quadrant (Figure 5). When the fit is found based on the two factors, the operational impact of the exchange and exchange criticality, the relationship can enjoy superior performance. The authors present four different fits in buyer-supplier relationships. Bensaou and Venkatraman (1995) emphasize that organizations need to find the fit between information processing needs and information processing capabilities. When the needs and capabilities match, the fit is found, and the relationship can enjoy superior performance. The contingency models highlight the criticality of the fit, i.e., the match between the different factors.

In the purchasing portfolio model developed by Kraljic (1983), the fit is in each quadrant. In the purchasing portfolio model, the fit should be found between the dimensions of supply risk and the importance of the purchase. Each purchasing strategy presents the ideal fit of the two factors for each purchasing situation. Depending on the product and situational characteristics, the purchasing strategy should be matched and defined accordingly. The utilization of the purchasing portfolio approach facilitates the alignment and comparison of the supply base to the purchasing situation and product characteristics and enables the development of efficient purchasing strategies (Kraljic, 1983).

As discussed earlier, Reinhart et al. (2004) identified the attributes of buyer-supplier relationships to differ depending on the importance of the exchange and impediments and difficulties of the purchasing situation. From Kraljic's (1983) purchasing portfolio matrix can be derived that the more risk is related and the greater the impact on profit is, the closer and strategic should the supplier relationships be. A similar approach is applied in the models developed by Saccani and Perona (2007) and Bensaou and Venkatraman (1995). For example, Saccani and Perona (2007) propose that when the exchange criticality and operational impact are high, the relationship should be developed towards evolved partnership. Therefore, from the literature review, it can be concluded that the more complex the purchasing situation is, the more closer and collaborative the supplier relationship should be. Further, from the discussion above, it can be detected that

finding the ideal fit between the dimensions is critical to obtain the best performance. By applying the contingency perspective together with purchasing portfolio model and supplier integration, this study combines the theories and develops a model presented below.



**Figure 7.** The contingency model for examining the fit between supplier integration and purchasing complexity.

The model above ties the purchasing portfolio model and supplier relationship integration together with the contingency perspective. The ideal fit is situated on the "fit" segment of a line. Here, the fit acts as the performance, and the closer the relationship is to the line, the greater the relationship performance is. The model illustrates that as the purchasing complexity increases, integration between the buyer and supplier should simultaneously increase. When these two factors are matched, the relationship should be situated somewhere on the "fit" line.

The purchasing complexity concerns Kraljic's purchasing portfolio model elements and encompasses both the internal and external dimensions. The integration factor

encompasses three entities, which are strategic integration, inter-firm interaction, and social capital. Strategic integration consists of relationship-specific investments, network structures, and information transparency. Inter-firm interaction includes supplier and customer involvement, relational behavior, and inter-organizational learning. Social capital consists of trust, commitment, shared view, values, and norms. These elements were discussed in chapter 2.2.1. Integration is believed to affect operative performance, which is identified to impact network performance, which again impacts an organization's overall performance (Vesalainen & Autio, 2017).

Figure 7 presents the model derived from the literature review. This model is tested in the empirical part of the thesis. The model presents the logic of the contingency approach where the complexity of the exchange situation affects the level of integration. The more complex the purchasing situation is, the more integration is required between the buyer and the supplier. This idea is illustrated with the "fit" line in the model. The model presents the idea that buyer-supplier relationships perform better when the level of integration and purchasing complexity are matched, and the relationship is situated on the "fit" line.

### 3 Methodologies

The following chapter highlights the methodological procedures applied to answer the research questions and objectives. This chapter discusses the research approach and strategy of the empirical study and describes the case, data collection, and data analysis methods. Lastly, this chapter discusses the validity and reliability of the research.

#### 3.1 Research approach and strategy

The research was conducted as an explorative, embedded case study. A case study is a common method in business research as it is suitable for understanding complex social phenomena. A case study tries to understand the elements of a problem or situation in a particular setting and explore past or present issues and their effects (Eisenhardt, 1989; Yin, 2014, pp. 4–5). Yin (2014, p. 16) defines a case study as "*an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context*" and further elaborates that a case study is conducted to understand a real-life situation (Yin, 2014, p. 16).

A case study attempts to answer research questions such as "why" or "how." It allows understanding how and why contemporary situations and problems are or take place as they do. It is used in situations where the researcher has no control over the occurring events. (Yin, 2014, p. 14.) The case study approach allows generalizing and testing theories (Adams, Khan & Raeside, 2014, p. 99). This research's explorative nature enables it to examine if the assumption that supplier integration affects performance is valid and if the proposed model of the fit between integration and purchasing complexity and performance is rational. Explorative studies often focus on providing new insight into a phenomenon that has not been studied extensively before. Moreover, explorative studies are inductive in nature as the aim is to generate new theory by analyzing, examining, and testing something in order to discover patterns and generalizations that create a better understanding of the studied phenomenon. (Stebbins, 2001, pp. 4, 52–53.)

Case studies are often used in business research as they can be used to study many different situations and utilize multiple sources of evidence (e.g., interviews, surveys, observations). In addition, case studies can exploit qualitative as well as quantitative data together or separately. These are seen as the strengths of this method. (Dubois & Gibbert, 2010; Yin, 2014, p. 4.) A case study can be a single case study, multiple case study, or an embedded case study (Dubois & Gibbert, 2010; Scholz & Tietje, 2002).

This research was conducted as an embedded case study, which refers to a study that consists of more than one unit of analysis. In an embedded case study, there can be identified one main unit of analysis and subunits of analysis (Scholz & Tietje, 2002, pp. 9–10; Yin, 1994, p. 121). In this research, the main unit of analysis was the case organization's supply chain management, and the embedded units of analysis were the case organization's supplier network, the six different units' networks, and the supplier relationships. In an embedded case study, the starting and ending point is the case as a whole. However, during the analysis, the case can be divided and analyzed in smaller entities such as different perspectives or subunits (Scholz & Tietje, 2002, pp. 9–10). An embedded case study also enables a comparative approach in analyzing the results, which will be applied in this study (Adams et al., 2014, p. 98).

As case studies are used to understand real-life situations and events, the results are rarely generalizable. Moreover, case study research requires greater rigor to avoid sloppiness. These factors weaken the effectiveness of case studies. (Quinton & Smallbone, 2006, p. 133; Yin, 2014.) Despite the weaknesses, case studies are recognized as appropriate means to gain in-depth insight from current and complex real-life issues and problems (Scholz & Tietje, 2002, pp. 9–11; Yin, 2014, pp. 16–17). Applying the embedded case study approach for this research was fruitful as it allowed the examination of the supply network from a broader perspective and in more detail. It enabled the analysis of individual supplier relationships separately and together to form a comprehensive picture of the case organization's supply network.

### 3.2 Research method

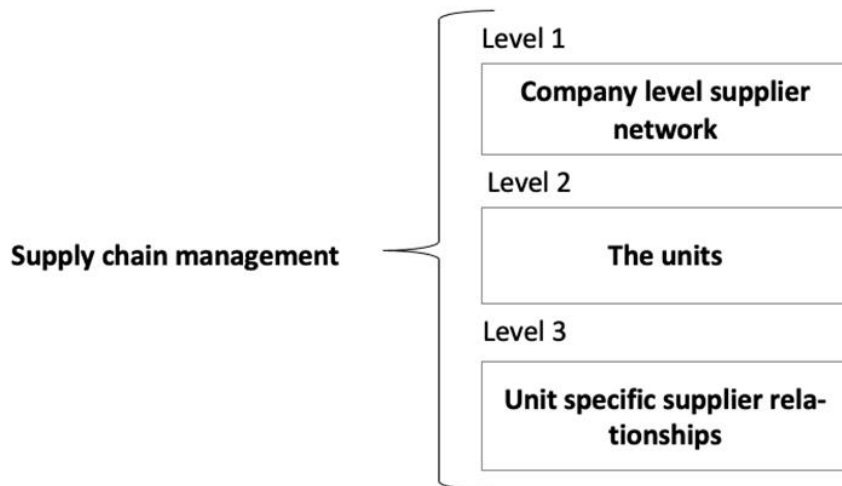
There can be identified three common ways to gather data for research. These are qualitative, quantitative, and mixed methods. A research method is chosen based on the researcher's assessment of what data is needed to answer the research questions. This thesis utilizes the quantitative data collection method. Quantitative data is numerical, and it builds on existing theories. In quantitative research, the data is used objectively to measure a real-life phenomenon. (Williams, 2007.) The aim of quantitative research, according to Leedy and Ormrod (2001, p. 102), is *"to establish, confirm, or validate relationships and to develop generalizations that contribute to theory."* The results of quantitative research and analysis can either be predictive, confirming, or explanatory (Williams, 2007). In this research, the quantitative approach was used in order to test the theoretical model developed in chapter 2.4 and to examine the connection of integration and performance.

This study utilizes primary quantitative data and comparative data. Primary data is the original data collected for the purpose of a specific research problem and research questions. When primary data is collected, it always adds to existing knowledge. (Hox & Boeijs, 2005.) This study utilized the survey method to gather quantitative data. Surveys are a quantitative data gathering method used when the information and data needed to collect concerns, for example, behavior, attitudes, feelings, or opinions of a specific target group. The survey questions must be carefully designed and tested to ensure the validity of the survey responses. (Hox & Boeijs, 2005.)

The survey method was selected in order to compare the new data with comparative data. The questionnaire surveys used in this research were already tested and used previously. By utilizing the same questionnaire, the data of this research is equivalent to the data from the previous research and, thus, enables the comparison.

### 3.3 Case introduction and selection

This study examines the supply chain management of a global Finnish technology organization. The supply chain management is analyzed in three different levels. The analysis is done at the supply network level, at the unit level, and at the supplier relationship level, as presented in Figure 6. This research aimed to conduct an embedded case study to explore how contingency perspective can be applied to supply chain management. In order to succeed in it, it was needed to analyze and examine the buyer-supplier relationships and purchasing operations from the contingency perspective and identify the characterizes of the network. More precisely, it was needed to identify the relationship between supplier integration, performance, and purchasing complexity. The three embedded levels of the case were selected to analyze the supply network and supplier relationship performance, compare the networks and relationships across the organizational divisions and examine the connection between supplier integration, performance, and purchasing complexity.



**Figure 8.** The main unit and subunits of analysis.

The case organization's supply chain analysis is limited to the case organization's specific operational division. For the analysis, six different units from the division were selected. The division's supply chain management performs as the main case for this research, as

it covers the supplier relationship management practices and procurement and purchasing practices in the organization. The supplier network, supplier relationships, and the different units perform as the subunits (embedded units) of analysis. The scope of the research is limited to first-tier supplier relationships. From each unit, a few supplier relationships were selected for closer analysis. The selected suppliers supply different items and products, varying in the criticality for the case organizations' core operations.

### **3.4 Data collection**

This research was done as a cross-sectional case study, where the data was collected at a single point in time (Levin, 2006). The study utilizes primary quantitative data, which was collected through questionnaire surveys. According to Groves, Fowler, Couper, Lepkowski, Singer, and Tourangeau (2009, p. 2), a survey is a systematic method used for gathering data and information to establish quantitative descriptions of the characteristics of a larger population. A standard way to use surveys is in the form of questionnaires (Groves et al., 2009, p. 2). The survey used in this study utilized pre-made and pre-used questions and answer scale options. The questions were already designed and tested, which decreased the possibility of validity issues (Hox & Boeije, 2005). The questionnaires' objective in this research was to collect information from the attributes and characteristics of specific buyer-supplier relationships and, thus, form a comprehensive picture of the supply network.

The data for this research was collected through electronic, self-completion questionnaires from the case organization's purchasing professionals and its suppliers' representatives. The questions were slightly differing for the purchasing professionals and for the supplier representatives, nevertheless concerning the same themes and issues. The questionnaires had the same questions for each purchasing professional and for each supplier representatives. The questionnaires were not anonymous since they were sent to specific pre-determined respondents. The language used was English, as the respondents were from a variety of countries. The questionnaires were created by utilizing the

Webropol system and were sent via the system to each respondent's email. All the email links were responded to; thus, a total of 13 supplier relationships were analyzed.

The questionnaires mainly used close-ended questions. These questions require the respondents to choose an answer from a set of provided alternatives (Krosnick, 1999). The most common question type used was a close-ended question with a 1-7 scale answer option. Close-ended questions are often perceived as easy to process and answer. These questions also reduce variability in the analyst's interpretation and enhance the comparability between cases (Adams et al., 2014, p. 123). In addition to scale answer options, a few different styles of questions concerning, for example, the annual turnover and number of employees in the units were used. The questionnaires can be found in appendix 1 and 2. The questionnaires gathered an extensive amount of data and information, which was not all utilized in this research but can be exploited in future research by the case organization.

Additional data were collected from the case organization's documents, files, and representatives regarding their supplier management and purchasing policies, operations, and activities. For example, this method was utilized to determine the analyzed suppliers' position in the Kraljic's matrix. The suppliers' position in the matrix was ranked on a 1-5 scale in order to use it in testing the model. The comparative data was gathered by previous research and consists of network data regarding supplier integration and operative performance.

### **3.5 Data analysis**

The data analysis was planned to answer the research questions and bring insight to the studied phenomenon. The data were analyzed in several different ways. First, the case network was analyzed as a stand-alone entity in a comparative analysis. This allowed the data gathered and the case network to be compared with other networks that have been examined previously with similar means. It also enabled analyzing the connection

between integration and performance with the two data sets together. Second, the case organization's subunits were analyzed separately and compared with each other, which enabled identifying differences and similarities between the supplier relationships in each unit, thus, creating a more detailed view of the network (Eisenhardt, 1989). In the last analysis chapter, the developed contingency model was tested with the case data.

The data collected was quantitative, which allowed the use of averages and enabled the comparison with comparative networks. The results were analyzed in averages from answers to a 1-7-point scale. Numerical data is often analyzed by utilizing statistical methods (Blaikie, 2003, pp. 20–21). In this research, the results were analyzed primarily by utilizing Microsoft excel and the Webropol system. The data gathered from the surveys were grouped regarding the themes it concerned (e.g., strategic integration, inter-firm interaction, social capital, operative performance), thereby forming various entities that could be analyzed.

Cross-table analyzes were made to compare the case and comparative data, illustrate any differences between the data sets, and identify if the case data follows any tendency in terms of integration and performance. The significance threshold in this analysis was set at 0,05. This indicates that if  $p \leq 0,05$ , the result is statistically significant.

### **3.6 Validity and reliability**

To ensure the quality of the research, reliability and validity need to be considered. Reliability concerns the consistency of the results and the absence of random error. Validity concerns the accuracy of a measure and the absence of nonrandom (i.e., systematic) error. (Dubois & Gibbert, 2010; Quinton & Smallbone, 2006, pp. 126–130.) Validity concerns whether the measure measures what it is intended to measure (i.e., internal validity) and is the analysis of the data accurate (Winter, 2000; Quinton & Smallbone, 2006, pp. 126–127). Internal validity in this research is increased by utilizing pre-made and pre-

used questionnaires and metrics which have been created by a research team and, thus, have been tested to measure the right factors (Hox & Boeije, 2005).

Another aspect of validity is external validity. External validity refers to the generalization of the results and can also be understood as to what extent or whether the results apply in other contexts or situations (Quinton & Smallbone, 2006, p. 129). This study generalizes the case study results by comparing them with existing theory (Dubois & Gibbert, 2010) and comparing the case data with existing data to examine the possibility for generalization. However, in case studies, generalization is always limited (Dubois & Gibbert, 2010; Quinton & Smallbone, 2006, p. 133).

Reliability concerns the consistency of the measure and relates to the repeatability of the study (Dubois & Gibbert, 2010). It refers to the research findings and the assessment that if the research would be repeated, would the findings be consistent (Quinton & Smallbone, 2006, pp. 129–130). The reliability of this study is increased by demonstrating that similar results can be obtained by utilizing the measures used and data collection means of this research. This was done by applying previously developed measures and questionnaires successfully and obtaining data and results similar to the comparative data.

Further, reliability can be increased, especially in case studies, when each step of research is explained in detail, from the data collection to the use of resources and to the process of analyzing the data as done in this paper (Quinton & Smallbone, 2006, pp. 130–131). Thus, similar research can be conducted by utilizing the methods and means used in this thesis. With these factors, reliability ought to increase. In addition, when the process of the research is given careful attention, and it is documented accordingly, the quality of the research increases (Yin, 2014, p. 199).

Reliability is considered high if the chance of random error is minimized (Quinton & Smallbone, 2006, p. 130). The random error can be caused by the researcher or

respondents. The respondent error can occur from a misapprehension of the questions or dis-honest answers from the respondents. (Alkula, Pöntinen & Ylöstalo, 2002, p. 94.) For example, as the data collection phase in this study was not anonymous, the respondent could have answered dishonestly to illustrate the supply relationships to be better performing, more crucial, or such which they understand it “should” be. The error caused by the researcher often refers to, for example, typing and measurement errors (Alkula et al. 2002, p. 94; Trafimow, 2013). In this research, the random error has been minimized by using statistical tools and conducting each analysis and calculation twice to ensure correctness and minimize typing errors.

## **4 Findings**

This chapter presents the results and findings of the empirical study. First, a comparative analysis is done between the case organization and the comparative network data. In this section, the supply network and supplier relationships are analyzed in terms of integration and operative performance. This analysis illustrates the case organization's data with the comparative data. Second, a comparative analysis is done between the case organization's six units to examine in more detail the critical factors that affect operative performance. Third, an explorative analysis is conducted and the premade assumption of the fit between supplier integration, purchasing complexity, and performance is empirically tested.

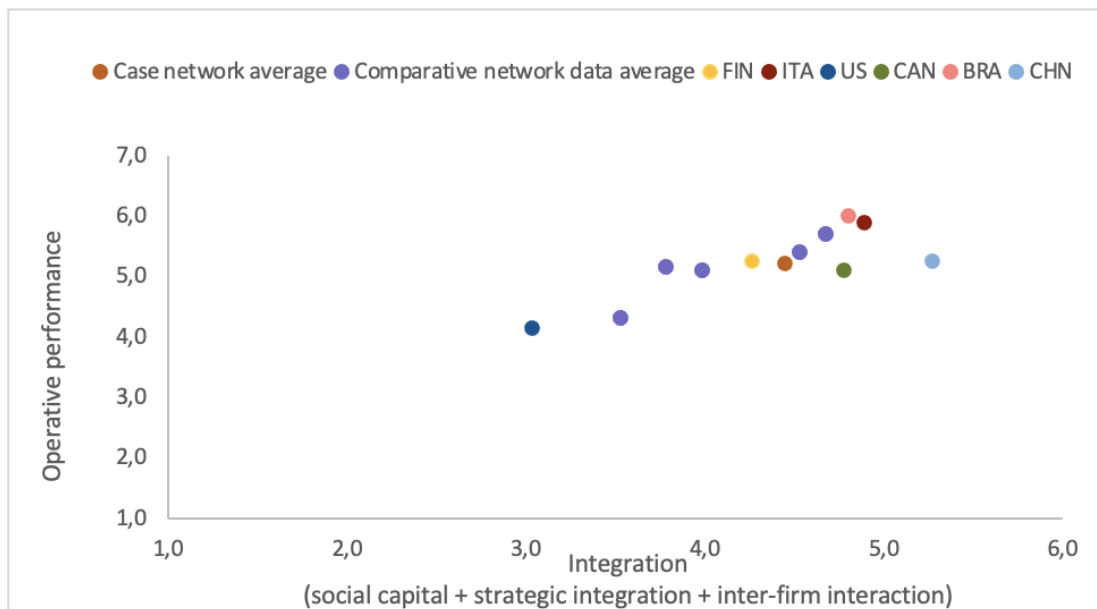
### **4.1 Integration and performance: a comparative analysis**

This chapter analyzes the case organization's supply chain management in the supply network and individual relationship level. The relationship data is used to illustrate the relationship between the level of integration and operative performance. Cross-table analyzes are provided to demonstrate the case network's structure with relation to the comparative data and to illustrate if the case data's integration and performance level follow any tendency. Comparative data is utilized as it performs as a benchmark when interpreting the results and because such a "soft" issue such as integration, social capital, or interaction requires comparative data to gauge the measures and determine the level of good performance (Vesalainen & Autio, 2017).

Operative performance is analyzed with six factors: product quality, delivery accuracy, speed of operations (lead time, delivery time, response time), cost development, operational efficiency, and flexibility. The study utilizes operational performance measure as operative performance reflects the competencies in the supply chain and the efficiency of the supply chain operations (Chen & Paulraj, 2004). It is assumed that a higher level of operative performance results from a higher level of integration. Integration is

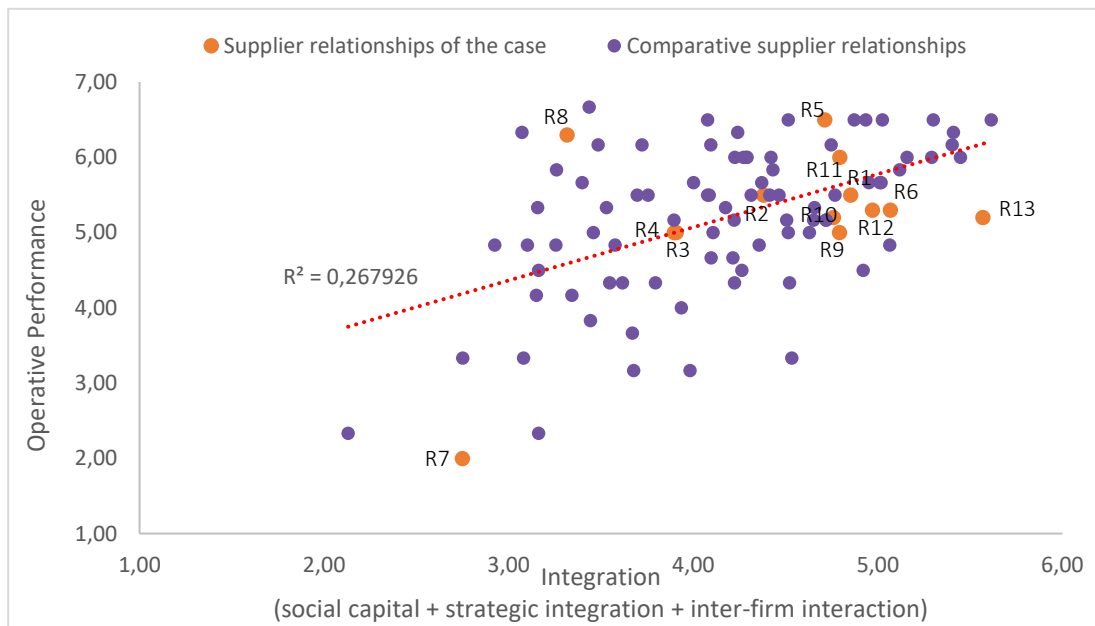
measured against factors of social capital, strategic integration, and inter-firm interaction. The integration level is believed to influence operative and supply network performance (Vesalainen & Autio, 2017). The analysis begins with an overview by presenting the case organization's unit networks in comparison with the comparative data in Figure 9 and the relationship scorecard in Figure 10 and continues with a more detailed examination of the case network and comparative data.

The figure below presents the case organization's network average, the units' networks, and the comparative networks. The position of the case organization's network average illustrates that the case network is well-performing and relatively high-integrated. The units' networks are more widely scattered than the comparative networks, indicating a more significant variation between the highest and lowest values regarding integration and operative performance. For example, the US unit receives the lowest value in both dimensions. In addition, the Figure 9 visually illustrates a relationship between the level of integration and performance, as the case organization's units and comparative networks are positioned in an upward rising diagonal form.



**Figure 9.** Unit view comparison in terms of network performance and level of integration.

When the case network is viewed at the relationship level (Figure 10) it is evident that the supplier relationships in the case organization's network are highly relational (integrated) in terms of social capital, strategic integration, and inter-firm interaction, and well-performing. However, there can be identified a relationship that needs closer examination due to its low score in both dimensions. The relationship R7 is much lower in integration and operative performance than the other relationships. Thus, the relationship R7 requires further analysis.



**Figure 10.** Network scorecard: relationship view.

When examining the relationship R7 closer, it reveals that the relationship is low in strategic integration and inter-firm interaction. When reviewing the inter-firm interaction factor of integration, the relationship R7 scores low in supplier and customer involvement and supplier's relational behavior. In strategic integration, the relationship scores low in information transparency from both sides and in relationship structures. Moreover, the relationship scores lowest in social capital compared to other relationships. In the social capital factor, the R7 scores the lowest in supplier commitment.

Furthermore, the relationship R7 receives lower values in delivery accuracy, speed of operations (lead time, delivery time, response time), cost development, operational efficiency, and flexibility regarding operative performance. Only product quality has a high score. These results can be expected. Low relational capital and social and structural ties in a relationship indicate that the interaction, communication, and information flow remain somewhat absent from the relationship and can affect the performance of the relationship.

When comparing the case organization's supplier relationships with the comparative data, they illustrate similar characteristics. The case and comparative data are both rather widely scattered throughout the figure. Figure 10 shows a positive relationship between integration and operative performance, as the data sets in an upward rising form as illustrated by the linear trendline. The Pearson correlation coefficient ( $r$ ), which measures the association of two variables (Schober, Boer & Schwarte, 2018), can be calculated by using the r-squared value. The results indicate a moderate positive correlation ( $r = 0,52$ ) between supplier integration and operative performance. In other words, a low level of integration is associated with low-performance levels, and a high level of integration is associated with high performance.

When comparing the two data sets, the figure also visually demonstrates the similarity of the data sets. The figure illustrates that the values spread across it are weighted to the upper end. That is, the levels of integration and performance are high. Only a few relationships from both data sets can be found in the lower corner of the figure. These observations indicate that the supplier relationships are relatively integrated and high performing within these samples of supplier networks. This finding can be due to the fact that often in studies, the most important and critical supplier relationships are selected for the data.

From the Figure 10, it is possible to identify relationships that do not perform as good as others and should be examined closer. In addition, the figures above generate a

significant amount of data and information from the focal network and supplier relationships, which can be utilized for different purposes. For example, the relationship R7 could be taken under analysis in the case organization regarding the factors related to integration to enhance its performance or alternatively look for new suppliers.

The cross-table analysis between the case and comparative data illustrates the structural similarity of the data sets. The categories in Tables 2 and 3 for both data sets are formed from the averages of the integration and performance factors. Under-integrated and underperformed include relationships that receive below-average values, and over-integrated and overperformed include relationships that receive values above average. As previously examined in Figure 10 above, Tables 2 and 3 confirm that there is no significant difference between the case and comparative data. This shows that the case data corresponds to the comparative data in terms of statistical distribution in both integration and operational performance.

**Table 2.** Cross-table analysis of integration: case and comparative data.

	<b>Under-integrated</b>	<b>Over-integrated</b>	Total
<b>Case data</b>	38 %	62 %	100 % n = 13
<b>Comparative data</b>	46 %	54 %	100 % n = 83

$$X^2 = 0,24; p = 0,622$$

**Table 3.** Cross-table analysis of performance: case and comparative data.

	<b>Underperformed</b>	<b>Overperformed</b>	Total
<b>Case data</b>	46 %	54 %	100 % n = 13
<b>Comparative data</b>	46 %	54 %	100 % n = 83

$$X^2 = 0,001; p = 0,980$$

The cross-table analysis below includes only the case organization's data. The categories are formed from the averages of the factors. The underperformed and under-integrated form a category of relationships that rank below average, and overperformed and over-integrated form a category with relationships that receive above-average values.

Table 4 illustrates the relation of over and under integrated and over and underperformed relationships. The table shows that the case data follows a tendency where an over integrated relationship performs better than average and under integrated performs worse than average. The result is not statistically significant, as the size of the data set is limited, and class frequencies are not adequate. However, the results are aligned with the expectation that the more integrated a relationship is, the better it performs.

**Table 4.** Cross-table analysis of integration and performance.

	<b>Underperformed</b>	<b>Overperformed</b>	Total
<b>Under-integrated</b>	60 %	40 %	100 % n = 5
<b>Over-integrated</b>	25 %	75 %	100 % n = 8

$$X^2 = 1,59; p = 0,207$$

The analysis in this section indicates that the case network is overall high-performing and highly relational. It also presented that the case network data and the comparative data are statistically similar. Furthermore, the analysis demonstrated a relationship between supplier integration and operative performance, indicating that the level of supplier integration affects the network performance. Next, the case units are analyzed closer to examine the differences and similarities in the case network at a more detailed level and identify the critical elements of integration.

## 4.2 Unit level comparison

In this section, the units of the case will be analyzed and compared against each other. The units are analyzed in terms of the level of integration and operative performance. The analysis enables finding the differences in the factors that influence integration and operative performance in the case network and identifying the case network's characteristics at the unit level. This section provides greater insight into the relational characteristics that affect operative performance.

The six units of analysis are located in Finland (FIN), Italy (ITA), United States (US), Canada (CAN), Brazil (BRA), and China (CHN). Four buyer-supplier relationships were analyzed from the unit in Finland, one buyer-supplier relationship from the unit in Brazil, and two buyer-supplier relationships from the other units. With the size of the case data, a statistical test is not possible. Therefore, this analysis delves into the most significant numerical differences between the values given for the factors in each unit and to the possible reasons behind the differences. The values are presented in averages from minimum and maximum values.

Table 5 shows that the values of the social capital factors differ among the units. Customer commitment differs from the lowest value of 3,4 to the highest value of 4,8. The unit in China has the highest customer commitment value. When analyzing the supplier relationships in China more closely it becomes evident that the analyzed suppliers perceive that the case organization distinguishes the relationships as continuous long-term partnerships and that the case organization is highly ready to assign resources to the relationship development. The opposite is for the Finnish unit, where the suppliers give these factors lower values.

Supplier commitment varies across the units as well. Especially in the US, this factor receives a low value compared to the other units. This finding can indicate that the case organization perceives the suppliers as easily replaceable or supplying items that are not critical for the case organization's core value proposition. Although the first two social

capital factors vary notably among the case organization's units, the customer's trust and shared views are relatively similar across all units. However, here as well, the US unit differs most from the rest.

**Table 5.** Factors of social capital.

<b>SOCIAL CAPITAL</b>	<b>FIN</b>	<b>ITA</b>	<b>US</b>	<b>CAN</b>	<b>BRA</b>	<b>CHN</b>
Customer commitment	3,4	3,7	4,0	3,8	4,3	4,8
Supplier commitment	5,5	6,3	3,8	4,8	6,0	6,0
Customer's trust	6,2	6,6	5,7	6,1	6,0	6,0
Shared views	5,7	6,6	4,0	5,6	5,6	5,5

Table 6 presents the factors of strategic integration. As evident from the table, the values differ significantly between the units. When focusing on the most significant differences in the values, one can see that the customer's and supplier's relationship-specific investments and relationship structure factors vary the greatest between the highest and lowest values.

The highest value in customer's relationship-specific investment is 5,3 (ITA), while the lowest is 3,4 (FIN). This large difference indicates that the case organization's units have made decisions in varying degrees of how much they tie their resources with the suppliers long-term or how much they have made investments towards developing the suppliers' activities. High values in these dimensions can indicate that the supply network consists of close and strategic relationships. The supplier's relationship-specific investments indicate the level of investments made towards a specific customer relationship. The highest value is 6,3 in China and the lowest 2,9 in the US. This factor is measured against elements such as supplier's investments made in machinery specific to the customer's supplies and investments to specific knowledge relevant to the customer. A higher value

indicates a greater amount of investments towards a specific customer. A low value indicates that the supplier does not need to make investments toward the customer, which can indicate that, for example, the supplied items are generic and, thus, not crucial for the customer's core activities, which also indicates that the relationship is not vital for the customer.

The last factor of strategic integration is relationship structures. Relationship structures facilitate inter-organizational learning, knowledge sharing, and communication and, thus, can improve performance (Kohtamäki, Vesalainen, Henneberg, Naude & Ventresca, 2012). Relationship structures receive the highest value of 3,8 in the unit in China and the lowest value of 2,1 in the units in Italy and US. This factor is measured against elements such as the level of upper-level managerial interaction, the degree of joint problem-solving, joint development projects, and IT-based collaboration and is analyzed from the supplier side of a relationship. As evident from the table, this factor is relatively low across the units. The low value in the US is not surprising as the social capital in the unit was found to be the lowest. However, the low value in the unit in Italy is surprising as the other factors of strategic integration are relatively high, as well as the factors of social capital.

**Table 6.** Factors of strategic integration.

<b>STRATEGIC INTEGRATION</b>	<b>FIN</b>	<b>ITA</b>	<b>US</b>	<b>CAN</b>	<b>BRA</b>	<b>CHN</b>
Customer's relationship specific investments	3,4	5,3	4,5	4,3	4,0	5,0
Supplier's relationship specific investments	4,1	4,5	2,9	5,3	5,3	6,3
Supplier's information transparency	3,0	4,3	2,8	3,8	4,0	3,6
Customer's information transparency	2,6	2,6	2,4	2,9	2,3	3,0
Relationship structures	2,8	2,1	2,1	3,5	3,4	3,8

Table 7 below shows that the inter-firm interaction factor is overall the lowest in the US unit. The most significant differences between the values can be found in the factors of customer involvement, supplier involvement, and supplier's relational behavior. Suppliers measure customer involvement against factors such as the customer's ideas and proposals for developing products or production methods, customer involvement in development meetings, customer involvement in testing and experimenting prototypes, and customer involvement in developing management systems and practices. This factor receives significantly low values in the units in Italy and US compared to the other units. Concerning the high social capital and relatively high strategic integration in the ITA unit, it could be argued that there seems to be a possibility for greater customer involvement in the supplier relationships or there is a possibility that the relationships are unnecessarily integrated.

Contrary to the customer involvement factor's low value, the supplier involvement factor receives the highest value in the ITA unit. Supplier involvement is measured against the supplier's participation in new product development and supplier's participation in continuous improvement of the customer's products and services. Here, the US receives the lowest value. This can indicate that the relationships in the supply network are more transactional type relationships.

Relationship learning refers to, for example, knowledge sharing, feedback, discussions, and operations related to development activities. The case data differs from the highest value of 6,6 to the lowest value of 4,7 in relationship learning. A high value indicates that co-learning and co-innovation, and other cooperative development activities are seen as essential and understood as methods to achieve a competitive advantage in the buyer-supplier relationships. As the unit in China receives relatively high values in all aspects of inter-firm interaction, it is no surprise that the relationship learning in that unit is relatively high compared to the other units.

Customer relational behavior refers to the relational behavior styles utilized by the buying organization's boundary role employees (Vesalainen & Autio, 2017). This factor differs somewhat among the units. Between the units, the lowest value is 4,8, and the highest value is 6,8. The highest value in CAN unit suggest from a long-term relationships orientation and indicates that the suppliers perceive that the case organizations representatives search for mutually beneficial solutions, take part in the supplier's development activities, and avoid searching for the reasons of problems only from supplier side. However, all the values are relatively high and indicate that the case organization's representative's relational behavior is well developed.

The supplier's relational behavior in the US unit is significantly lower than in the other units. The supplier's relational behavior refers to the supplier's representatives' behavioral styles. This factor increases when the customer feels that the supplier's representatives assure that the customer will receive all the necessary support for the development of its operations, supplier's representatives avoid searching for the reasons for problems only from the customer's side and when the supplier's aim to examine the situation as a whole and discover mutually beneficial solutions. However, the US unit's low value is not surprising. It scores low in customer and supplier involvement in inter-firm interaction and in most of the strategic integration factors, reinforcing that the network's supplier relationships are more transactional than the other units' supplier relationships.

**Table 7.** Factors of inter-firm interaction.

<b>INTER-FIRM INTERACTION</b>	<b>FIN</b>	<b>ITA</b>	<b>US</b>	<b>CAN</b>	<b>BRA</b>	<b>CHN</b>
Customer involvement	3,2	1,4	1,7	3,3	5,2	6,3
Supplier involvement	4,4	7,0	2,8	5,0	4,0	5,0
Relationship learning	4,7	5,0	4,6	5,3	5,6	6,6
Customer's relational behavior	4,8	5,5	4,9	6,8	4,8	6,1
Supplier's relational behavior	5,4	6,6	3,5	6,0	6,0	5,5

The supplier integration is overall the highest in China, indicating that this case organization's unit is closely involved in the activities of the suppliers. The unit in China also receives high values in terms of operative performance, which further emphasizes the connection of supplier integration and operative performance. Interestingly, the strategic integration receives the lowest values in the network compared to the other two dimensions. This can indicate that the structural integration and coordination in the relationships and network could be enhanced and, thus, the case organization could attain more benefits, such as specialized know-how, capabilities, and critical information, from the relationships and obtain greater performance.

The operative performance is presented in Table 8. It is evident that the values of the factors related to operative performance differ somewhat but not as significantly as the factors of integration above. Only the US unit differs most from the rest. The high values of operative performance indicate, as mentioned before, that the case network is well-performing. The most similarities among the scored values can be found in product quality, which has a high value in all the relationships and delivery accuracy, which only receives a lower value in the US unit. Thus, it can be said that the case network performs very well in terms of quality and delivery accuracy. Regarding flexibility, the case network is also high performing. However, here as well the unit in the US makes an exception.

The most significant differences between the units can be found in operational efficiency, cost development, and speed of operations. Operational efficiency between the units varies between the values of 3,5 (US) and 6,5 (ITA), cost development varies between the values of 3,5 (US) and 6,0 (BRA), and speed of operations between the values of 4,0 (US) and 6,0 (ITA and BRA). Table 8 shows that the US unit obtains the lowest values in each factor, thus having the lowest operative performance. As evident from above, it also scores the lowest in terms of the relational factors and the level of integration.

**Table 8.** Factors of operative performance.

<b>OPERATIVE PERFORMANCE</b>	<b>FIN</b>	<b>ITA</b>	<b>US</b>	<b>CAN</b>	<b>BRA</b>	<b>CHN</b>
Quality	6,0	5,5	5,5	6,5	6,0	5,5
Delivery accuracy	6,0	6,0	4,5	6,0	6,0	6,0
Operational efficiency	5,3	6,5	3,5	4,0	6,0	5,0
Cost development	4,0	5,5	3,5	4,0	6,0	4,5
Flexibility	5,5	6,0	4,0	5,0	6,0	5,0
Speed of operations	4,8	6,0	4,0	5,0	6,0	5,5

The low performing relationship identified in Figure 10 is a supplier relationship from the US unit. The relationship scored the lowest in operative performance, and thus, due to the limited size of the data, can affect the unit's overall performance significantly. The results suggest that the US unit has the lowest performing supply network, especially in terms of operational efficiency and cost development. The lowest-performing unit receives the lowest values regarding integration in supplier commitment, supplier relationship-specific investments, relationship structures, customer and supplier involvement, and supplier's relational behavior. Thus, it can be argued that these factors particularly influence the operative performance.

In this section, the case organization's six units were analyzed and compared in more detail. The analysis revealed that the units are overall in a relatively similar position in terms of integration and operative performance, but some differences can be found. Next, this paper continues by testing the contingency fit between relationship integration and purchasing complexity model.

### **4.3 Testing the contingency model**

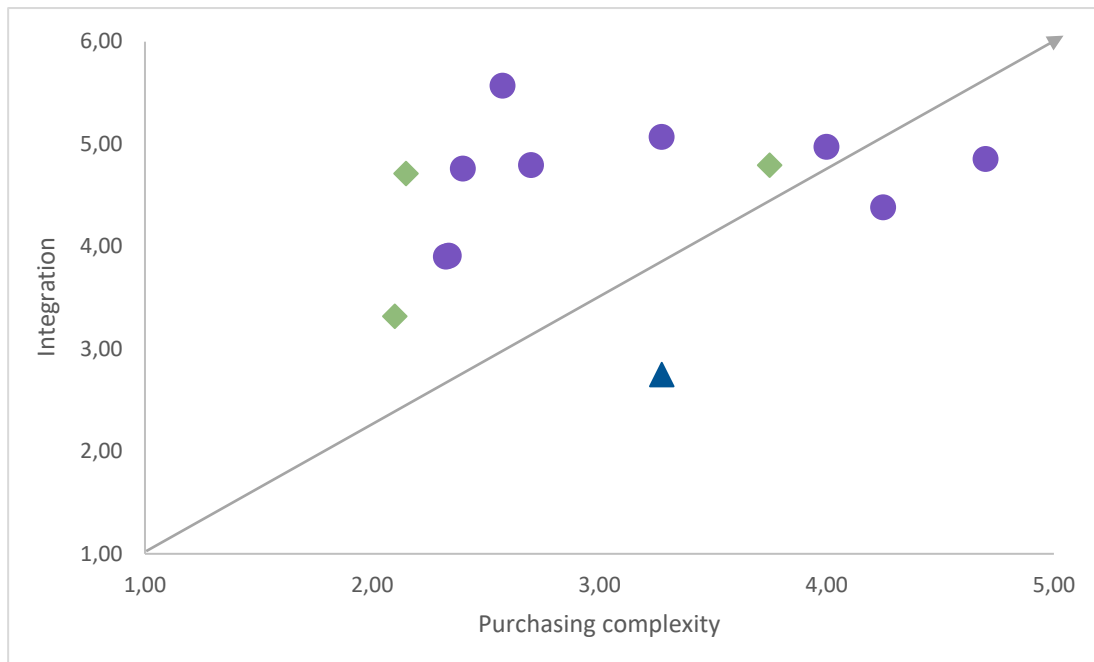
This chapter empirically tests the contingency fit between supplier integration and purchasing complexity and its relationship on performance. The contingency model was derived from the literature review and presented in chapter 2.4. The integration dimension is determined from the analysis above, and the purchasing complexity is measured by utilizing Kraljic's matrix. Since there is no significant difference in the structure of integration and performance between the case data and the more extensive comparison data ( $p > 0,05$ ), the case data can be utilized to represent a generic supply network and test the model.

The case organization has utilized Kraljic's matrix (1983) previously in its purchasing operations. It recognizes the two dimensions as financial impact and supply risk. The first refers to the strategic importance of the purchasing, and the latter refers to the complexity of the supply markets and criticality from a risk and supply availability perspective. The financial impact dimensions include spending, suppliers' stability, ability to share the risk, innovation capacity, and quality. Factors impacting the supply risk dimension are technical complexity, number of potential suppliers, and sustainability risk. Kraljic's matrix is used in this study to determine the purchasing complexity dimension in the contingency model. The supplier relationships are evaluated across the two dimensions of the matrix, enabling the formation of the purchasing complexity measure. This measure is the average of the two dimensions.

Building the model to three-dimensional and adding the fit perspective requires linking the relationship performance measure to the model. This is done by applying different colors to illustrate the level of performance of each relationship. The performance of the relationships is divided into three categories by utilizing average and standard deviation so that the middle category includes relationships that situate around the average of the amount of the standard deviation. The high-performing category includes values above the middle category, and the low-performing category includes values below the middle category. The performance categories are formed as follows: green is the high-performing category, purple is the average performing category, and blue is the low-performing category.

Figure 11 below presents the case data in the contingency model. As evident from the figure, the relationships are situated relatively close to the “fit” line. Hence, some level of connection between the integration, purchasing complexity, and performance can be found. More interestingly, the figure illustrates that the highest performing relationships are situated above the “fit” line, indicating that a high integration level yields on average in better performance. Therefore, it can be concluded that a high level of integration leads to better relationship outcomes and thus is not deleterious. The previous observation is supported by the fact that the low-performing relationship is situated below the “fit” line. This supports the argument that a low level of integration in relation to the complexity of the purchase leads to poor relationship performance and undesirable outcomes.

Furthermore, two out of the three relationships in the high performing category are situated close to the “fit” line. This fact can further indicate from a connection between purchasing complexity and integration. For example, the relationship with the lowest purchasing complexity has the lowest level of integration when excluding the low-performing relationship from the analysis. This relationship, however, performs better than average. From this, it can be concluded that some level of connection between the complexity and integration exists.



**Figure 11.** The developed contingency model presented with the case data.

Cross-table 4 illustrated that there is a positive relation between integration and performance. Although the result was not statistically significant due to the limited amount of the case data, it can be considered an indicative result of the connection between integration and performance. Further, the relationship between integration and performance was visually present in Figure 10, where the correlation was found to be positive ( $r = 0,52$ ) and can also be seen in Figure 11 above as all the high-integrated relationships are close or above the performance line.

The findings of this study indicate that there is a positive relation between supplier integration and performance. Furthermore, the findings suggest that by increasing supplier integration, the performance level can be improved, implying that in order to increase the network performance, factors affecting integration should be considered and enhanced (as illustrated more in detail in section 4.2). In addition, this study explored if the contingency fit between purchasing complexity and supplier integration would have a positive relationship with performance. As discussed above, there can be seen some

degree of relation between the factors. Thus, a presumption can be made that to increase network performance, the level of integration should not only be examined and enhanced but matched with the complexity of the purchase.

## 5 Discussion

The main purpose of this thesis was to examine how the contingency perspective can be applied to supply chain management. Supply chain management was analyzed from the strategic purchasing and supply management perspective with the contingency approach to fulfill the objective. To study the contingency approach to supply chain management, a contingency model was developed to examine the fit between supplier integration and purchasing complexity and if the fit of the two factors would lead to better operative performance. The empirical part of the thesis analyzed the connection of integration and operative performance in comparative and detailed analysis and tested the developed contingency model. This chapter will discuss the results, theoretical contributions, managerial implications, and limitations of the study and provide suggestions for future research.

Previous studies have recognized the need for a variety of supplier relationships and the level of supplier integration. For example, Sarkar and Mohapatra (2006) note that items with low supply risk, such as leverage and routine items, do not require organizations to assign resources towards developing and maintaining collaborative and integrated relationships with these suppliers. Furthermore, Lambert and Cooper (2000) and Trent (2005) identify that organizations often form collaborative and strategic relationships with a few suppliers that supply items vital for the buying organization's core competencies.

Moreover, as illustrated by Kraljic (1983) and further emphasized by other scholars (Olsen & Ellram, 1997; Caniels & Gelderman, 2007; Sarkar & Mohapatra, 2006), organizations should apply different purchasing strategies towards the items they supply and suppliers they use in order to maximize efficiency and minimize costs. Therefore, it can be concluded that purchasing strategies and supply management activities should be aligned with the environmental and situational characteristics of the purchase. Thus, the previous research reasoned to study these subject matters from the contingency perspective.

To fully reason the contingency approach to supply chain management, the performance measure was included to demonstrate the criticality of finding the right contingency fit between supplier integration and purchasing complexity. Therefore, the supporting research questions of this study were focused on examining the role of integration in network performance and the effect of the contingency fit between integration and purchasing complexity on performance. The last supporting research question concerned how organizations can manage the supply from the contingency perspective and was set to reach the main objective of this thesis.

Several prior studies have researched the level of integration in supply networks and supplier relationships (Frohlich & Westbrook, 2001; Huang et al., 2014; Vesalainen & Kohtamäki, 2015) as it is understood that supplier integration affects the efficient flow of supply chain operations and increases the capabilities of the buying organization thus affecting customer satisfaction (Huang et al., 2014). In previous studies, integration has been found to influence supply chain and firm performance (Carr & Pearson, 1999; Chen et al., 2006; Flynn et al., 2010; Prajogo & Olhager, 2012). The findings of this study support this by indicating that there is a positive correlation between the level of supplier integration and operative performance.

The relationship between integration and operative performance was illustrated in Figure 10 and further emphasized in the cross-table analysis. The case data was found to follow a tendency where relationships integrated above-average level were found to perform better than the average performance level. These findings demonstrate that supplier integration affects operative performance and suggests that a higher level of integration results in a higher level of operative performance. When this connection was examined closer, it was found that the elements of supplier relationships such as commitment, relationship-specific investments, involvement, and relational behavior affect the relationship's performance and, thus, affect the network performance.

The contingency theory has been applied to studies regarding supplier integration and buyer-supplier relationships (Flynn et al., 2010; Saccani & Perona, 2007). However, the research of applying the contingency approach to purchasing and supply management is scarce (Bals, Laine & Mugurusi, 2018). This research extends this approach. The results of the empirical test of the contingency model indicate that a fit between supplier integration and purchasing complexity can be seen to influence performance. Thus, the results indicate that supplier integration should be aligned with the importance and complexity of the purchase. However, it should be noted that the data size used to test the model was limited, and hence further work is required to determine the significance of the connection. Nevertheless, the test provided more understanding for applying the contingency approach to supply chain management and from the contingency fit between integration and complexity.

## **5.1 Theoretical contribution**

This thesis conducted an explorative study to create insight on how contingency perspective can be applied to supply chain management. The objective was studied from the buyer-supplier relationship perspective, focusing on the supplier integration, and from the strategic purchasing perspective, where the focus was on utilizing the purchasing portfolio model to identify and analyze the purchasing situations.

Often, supply chain performance is measured primarily against financial factors (Chen & Paulraj, 2004) and not operative. Thus, this study contributes to the literature by extending the research examining the role of integration in supply network performance in terms of operative performance, which directly indicates the efficiency of an organization's operations (Chen & Paulraj, 2004). Suppliers affect the buying organization's capabilities and can increase its competitive advantage by enabling, for example, co-innovation and the sharing of know-how and information (Huang et al., 2014). Hence, supplier integration is an important aspect when developing supply chain capabilities.

From previous studies, it can be concluded that the buyer-supplier relationship management activities which influence the level of integration have a crucial role in supply chain management and the performance of the supply network. This work contributes to existing knowledge by providing more evidence of the importance of strategically managing supplier relationships and supply networks by emphasizing the relationship between supplier integration and performance. The findings suggest that the elements of supplier integration, such as close collaboration and involvement, relationship structures, commitment, and investments made in the relationship, influences, for example, operational efficiency, flexibility, and the speed of the supply chain operations. This research thus extends our knowledge on the impact of integration to supply network performance. The relationship between supplier integration and performance is vital to recognize as Johnson, Leenders, and Flynn (2011, p.259) remark that customer satisfaction is dependent on the supplier and supply network performance. Further, this study adds richness to the research concerning supplier integration and performance by including data from supplier representatives and purchasing professionals of the buying organization, thus applying a broader perspective.

Scholars argue that purchasing needs to have a strategic role in organizations to conduct efficient supply management and supply network coordination activities (Chen & Paulraj, 2004). Moreover, Chen and Paulraj (2004) remark that supply management and strategic purchasing are critical elements of supply chain management. The contingency theory was applied as the research on supply chain management, especially in the context of strategic purchasing and supply management, recognizes the need for different supplier relationships, supply management approaches, and purchasing strategies when managing the supply operations (Caniëls & Gelderman, 2007; Kraljic, 1983; Sacconi & Perona, 2007; Sarkar & Mohapatra, 2006).

Furthermore, prior studies argue that the supplier relationships differ due to the difficulty of the purchase situation and the criticality of the purchase and as close supplier relationships require time and resources, it is not rational to have only close relationships

with suppliers (Lambert et al., 1996; Mentzer et al., 2000; Rinehart et al., 2004). By adopting the contingency perspective to supply chain management, this study contributes to the supply chain management literature by providing insight into a new approach to managing supply operations efficiently that considers the management of supplier relationships and aligning them with the external and internal aspects and situational characteristics of the purchase.

To examine the contingency fit between integration and purchasing complexity and if the fit affects performance, this study developed a model based on prior research. Kraljic's (1983) purchasing portfolio model was adopted to study the purchasing situation's complexity from internal and external aspects. The level of integration was measured against several factors relevant to the buyer-supplier relationship. Based on the literature review and the measures established, a contingency model was developed. The developed model can be used to analyze the contingency fit between supplier integration and purchasing complexity and its effect on performance. Hence, the present study extends the literature by developing a model to examine the contingency fit. The correlation between the situational characteristics of purchase and supplier integration can be explored by utilizing the model. Moreover, the model demonstrates that if a fit is found between the two factors, it can lead to better performance. The model can be further developed or used as is to examine the effect of the contingency fit between integration and purchasing complexity on supply network performance.

The evidence from the empirical test of the model provides a new understanding of aligning the supplier relationships with the purchasing context. The findings provide evidence that finding the fit between integration and purchasing complexity can positively influence performance. Additionally, the results of this study enhance understanding about the level of needed integration as it identifies that high supplier integration is not always required and greater performance can be achieved when the level of integration is matched with the purchasing complexity.

## 5.2 Managerial implications

From the managerial perspective, this study offered a new aspect to supply chain management and highlights the strategic importance of purchasing and supply management. One of the study objectives was to provide insight into how organizations can manage the supply from the contingency perspective. Prior studies provide evidence of the criticality of managing supply. For example, Johnson et al. (2011, p. 6) note that supply operations, especially in manufacturing organizations, cover 50-80 % of revenue, representing the largest spend category. Supplier related costs being the largest single spent category illustrates the financial impact of supply and emphasizes the criticality to consider purchasing as a strategic function. Therefore, it is vital to manage supplier relationships and purchasing operations correctly and efficiently so that the buying organizations can minimize costs, maximize profits, and satisfy customer needs.

The present study emphasizes the pivotal role of purchasing and supply management by providing evidence that supplier integration leads to greater performance. As identified by Johnson et al. (2011, p. 360), organizations increasingly focus on creating close and strategic relationships with few key suppliers to leverage the benefits yielding from collaborative relationships. Integrating suppliers closely can result in numerous benefits, such as, enhance quality, increase innovation and product development, shorten development time, reduce costs, increase revenues and customer satisfaction (Elg et al., 2012; Lau, Tang & Yam, 2010; Pardo, Missirilian, Portier & Salle, 2011). Thus, creating a collaborative supply network where an organization can utilize complementary resources increases its competitiveness and success. This study provided insight into the relational factors that influence the level of integration and are especially critical in terms of performance. Managers should focus on those when desiring to increase integration. However, as the prior research shows, it is not always necessary or viable to integrate supplier extensively (Sarkar & Mohapatra, 2006).

Acknowledging the facts mentioned above, this research provides managerial implications for managing the supply and supply chain operations. The present study highlights

the necessity to align supplier integration with the purchasing context by demonstrating a relation between supplier integration and purchasing complexity and by providing insight into how the internal and external environment uncertainty influences the level of integration. This study proposes that purchasing and supply chain managers should find the fit between supplier integration and purchasing complexity to obtain maximum returns and benefits from the supplier relationships and not waste resources on noncritical relationships. The findings of this study indicate that supplier integration should be matched with the purchasing context. Thus, managers should consider the strategic importance and financial impact of the purchase when managing supplier relations. Supply chain and purchasing managers should focus on creating supply management strategies that correspond to the purchasing needs and organizational objectives.

It needs to be taken into account that there are different practices for different purchasing situations and best ways to conduct activities and manage suppliers. Here, the contingency approach can facilitate the management of supply and enhance the supply chain's performance. The contingency approach to supply chain management enables the optimization of purchasing activities and supplier relations so that the resources used in these activities correspond to the importance of the purchase and its complexity.

Furthermore, managers should be conscious that multiple types of effective interfirm relationships exist, and thus, the supply network should be representative of this. To succeed in this requires examining the supply base and aligning the relationships with the context they are applied in. When the supply network characteristics are identified, it provides knowledge and information of the network status and creates insight into what relationships should be developed and if some should be terminated. This also increases purchasing maturity and enables to take strategic actions and initiatives to manage the supply network and supply chain operations more efficiently. These initiatives can be, for example, finding purchasing synergies among the organizational units and divisions. This requires, however, that the supply network is first identified and analyzed, and objectives for the supply network are set.

### **5.3 Suggestions for future research**

This study exposes interesting avenues for future research. Areas and subjects of relevant research interest arising from this study could concern identifying the relational factors of integration that are most critical for increasing the level of integration and thus enhancing performance level. Other research avenues could concern assessing whether integration affects the suppliers' financial performance and how to integrate suppliers successfully and get the most benefits from supplier relationships.

Since there are not many studies that apply the contingency model to supply chain management, the contingency approach to supply management could be explored further. Moreover, the empirical findings illustrate an opportunity to examine the theoretical model further. The findings of this study increase understanding of the contingency fit of integration and complexity by demonstrating that there can be identified a relationship between the contingency fit and performance. However, the presumption that the supplier relationships are more high-performing when the supplier integration and purchasing complexity are matched requires further work to determine the significance of the connection between the studied factors. Hence, further studies could explore the developed contingency model further. In addition, the model tests the fit in terms of operative performance, therefore, future studies could explore the contingency fit in terms of operative and financial performance.

### **5.4 Limitations**

The findings of this study are subject to at least three limitations. First, the limited sample size hinders the generalizability of the findings. Although the data was compared to a more extensive data set and showed a similar structure regarding integration and performance, the developed contingency model is needed to be tested with a more extensive data set to confirm the connection between integration and purchasing complexity on a broader basis. Additionally, this study was conducted within a single large

organization in a manufacturing context. Thus, a cross-industry study including different company sizes would be fruitful and offer more comprehensive findings.

Second, this study applied a cross-sectional design, and as identified by prior studies, supplier relationships and the level of integration develop over time. Hence, a longitudinal study could offer interesting insight into supplier integration and performance and how supplier relationships evolve in their criticality. Third, the developed contingency model utilized a purchasing complexity dimension measured with purchasing portfolio matrix, which has received criticism of its measurement difficulty. This should be carefully considered if testing the model and when determining the complexity of the purchasing situation.

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## Appendices

### Appendix 1. Survey for buyer organization's representatives

#### Customer background information

From what perspective do you assess the supply network? \*

- Independent company  
 Subsidiary of the group  
 Large organization's individual business unit

If you evaluate a business unit's or profit unit's supplier network, what is the business or profit unit's \*

a. annual turnover (M€)

b. number of employees

What competition factors are crucial for the success in your company's target market?

Split 100 points between the competition factors below so that each number (0-100) illustrates the factor's relative importance (answers total = 100 points). \*

Direct price of the product or service	<input type="text"/>
Total costs (price + indirect costs)	<input type="text"/>
Speed and flexibility	<input type="text"/>
Product and operational quality	<input type="text"/>
Innovativeness and technical characteristics	<input type="text"/>
Extent / diversity of product and service portfolio	<input type="text"/>
Credibility and reputation	<input type="text"/>

What is the amount of your company's (business unit's) annual direct purchases? \*

(in millions)

**Network assessment**

**What kind of business relationship do you have with the suppliers mentioned below?**

**Place your assessment between two extremes.**

**1 = This supplier is the one of many from whom we make an order based on the offers**

**5 = This supplier is a single sourcing supplier from whom we order all the similar types of products/services \***

	1	2	3	4	5
Supplier X *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**What was the amount of purchases from Supplier X in year 2019? \***

- Below 100 000
- 100 000 - 200 000
- 200 000 - 400 000
- 400 000 - 600 000
- 600 000 - 800 000
- 800 000 - 1 million
- 1M - 1,2M
- 1,2M - 1,4M
- 1,4M - 1,6M
- 1,6M - 1,8M
- 1,8M - 2,0M
- 2,0M - 2,2M
- 2,2M - 2,4M
- 2,4M - 2,6M
- 2,6M - 2,8M
- 2,8M - 3,0M
- 3,0M - 3,2M
- 3,2M - 3,4M
- 3,4M - 3,6M
- 3,6M - 3,8M
- 3,8M - 4,0M
- 4,0M - 4,2M
- 4,2M - 4,4M
- 4,4M - 4,6M
- 4,6M - 4,8M
- 4,8M - 5,0M
- Over 5 million













Below you can find a collection of general customer values listed in three groups. Please indicate the relative importance of each of the individual values in a group by giving 0-100 points so that the total sum of the category does not exceed 100 points.

**7. What kind of customer values seem to be important for this customer?**

**Direct financial values**

**Give the value between 0-100 (the sum of the five choices (a-e) = 100) \***

- a. Direct price of the product or service
- b. Total costs (price + indirect costs)
- c. High quality product
- d. Delivery reliability
- e. Cost development

**8. What kind of customer values seem to be important for this customer?**

**Values related to supplier's activities**

**Give the value between 0-100 (the sum of the five choices (a-e) = 100) \***

- a. Flexibility and agility
- b. Ecology, ethics and safety
- c. Trust and commitment
- d. Innovativeness and reform capability
- e. Speed (throughput time, delivery time, response time)

**9. What kind of customer values seem to be important for this customer?**

**Values related to supplier's resources**

**Give the value between 0-100 (the sum of the five choices (a-e) = 100) \***

- a. Extent / diversity of machinery and product portfolio
- b. Efficiency and common level of manufacturing resources
- c. Customer specific resources
- d. Geographical proximity of the supplier
- e. Sufficiency of resources (critical mass)

**10. Rate the importance of each category evaluated above.**

**Give the value between 0-100 (the sum of the three choices (a-c) = 100) \***

- a. Direct financial values
- b. Values related to supplier's activities
- c. Values related to supplier's resources

**11. Assess how transparently this customer shares the following information. \***

	1 = Not at all transparent	2 = Slightly transparent	3 = Moderately transparent	4 = Very transparent	5 = Extremely transparent
The market prices of purchased products and services *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The activity of customers and the market demand based on offers made *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production/delivery forecasts based on the orders *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customer's buffer stock of components or other products *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**12. How well the following descriptions about collaboration occur in real life in this relationship?**

**Scale: 1 = it is not correct at all <--> 5 = it is fully correct \***

	1	2	3	4	5
In this relationship, the upper-level managerial interaction is an intense and continuous practice *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In this relationship, we very frequently use common expert groups for development and problem-solving purposes *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In this relationship, we continuously have different common development projects *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In this relationship, several our people are continuously interacting with several people from the customer firm *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In this relationship, we have integrated IT-systems so that all the customer's order information flows automatically through our IT-systems (ERP- integration) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In this relationship, we have integrated IT-systems so that all the customer's product information flows directly to our IT-system (PDM -integration) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In this relationship, we use IT-based collaboration platform for creating, sharing and managing information *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**13. Assess the customer's commitment to this relationship based on the following propositions.**

**Scale: 1 = it is not correct at all <--> 5 = it is fully correct \***

	1	2	3	4	5
The customer is ready to invest in the development of our relationship *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The customer sees this relationship as a continuous long-term business relationship *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The customer sees our relationship as a partnership *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

