The impact of electronic procurement on buyer-supplier relationships

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I. Preface

This thesis is written as the final part of the Master's programme in Industrial Economics and Technology Management at the University of Agder, spring 2022.

The thesis is written in collaboration with ABB AS of Norway and investigates how the use of e-procurement impacts buyer-supplier relationships. After searching on Google Scholar for the most relevant topics within supply chain management, I got a sense that e-procurement is highly relevant and therefore decided to investigate this topic. Because e-procurement is highly relevant, I assumed that buyers and suppliers have started interacting with each other more and more using e-procurement and less with face-to-face communication. Since face-face communication between buyers and supplier is important for building buyer-supplier relationships, this made me curious about how e-procurement may have impacted buyer-supplier relationships. I finally decided to investigate how e-procurement impacts buyer-supplier relationships after a meeting with Associate Professor Torbjørn Bjorvatn, who confirmed that this would be an interesting topic to research.

I would like to thank my supervisor, Naima Saeed for her guidance and support. Furtherly, I would like to thank my contact man within ABB for guidance and for linking me with interview respondents at ABB. In this regard, I would finally like to thank the interview participants at ABB for their valuable insights.

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Petter Pham

II. Abstract

Increased globalisation and global sourcing over the past 30 years have made the Internet and information technology (IT) along with the procurement role within companies more and more important. Electronic procurement (e-procurement) and various e-procurement applications have therefore become important both for procurement and communication between buyers and suppliers. While the use of the Internet and IT in the interaction between buyers and suppliers have increased, face-to-face communication between buyers and suppliers has decreased. It is therefore assumed that buyer-supplier relationships may be impacted by using e-procurement. The purpose of this thesis is therefore to investigate how e-procurement impacts buyer-supplier relationships and add to the literature regarding the impact of e-procurement on buyer-supplier relationships. Thus, the main problem statement of this thesis is:

How does e-procurement impact buyer-supplier relationships?

The research starts with a deductive approach, conducting a literature study. Furtherly, research questions are developed to help answer the main problem statement and fill knowledge gaps revealed by the literature. The following research questions are developed: RQ1) How does e-procurement enhance buyer-supplier relationships? RQ2) How does e-procurement impact the balance of power in buyer-supplier relationships? RQ3) How does information sharing through IT impact trust in buyer-supplier relationships? Qualitative interviews are then conducted to find possible answers to the research questions and to elaborate on the research gaps. The research then proceeds inductively by drawing conclusions based on an analysis of the interview data. To increase validity, the findings from the interview data were furtherly compared to the literature study. In addition, the findings that are most relevant to the research questions are also critically assessed by adding counterarguments. It can therefore be argued that the research is finalised with a deductive approach, by testing its findings against the literature.

It is found that e-procurement can be used to build stronger buyer-supplier relationships by speeding up raw data transmission and by sharing information with suppliers based on knowledge gathered using e-procurement. In addition, e-procurement enables the development of a strong buyer-supplier relationship by freeing up resources which may be used for supplier development and cost reduction. By providing the buyer access to

information and knowledge, it was furtherly found that e-procurement may increase the power of the buying company by increasing competence to make the right decisions. In addition, it was found that e-procurement can increase the power of the buyer through e-auctions. This is because e-auctions increase supply availability and can reveal current market prices (Smart & Harrison, 2003). Moreover, the findings show how information sharing using IT, in some cases, may not have any impact on trust while it in other cases can improve or even reduce trust. The reason why information sharing using IT may not impact trust is that it is mostly faceless. This is also why only communicating with suppliers using IT may decrease trust, along with reducing information richness sometimes. Information sharing using IT may also decrease trust if the e-procurement system that a supplier uses to share information is not well designed. If the tool functions well, the buyer's trust in the supplier may increase, however. Furthermore, it is found that sharing information with the supplier using IT, based on knowledge gathered through e-procurement may also improve the supplier's trust in the buyer as it indicates "good faith" from the buyer's side (Eckerd & Hill, 2012). If the supplier's trust toward the buyer is high, the supplier may share valuable information that the buyer didn't know about (Li & Lin, 2006), which improves the buyer's trust in the supplier.

Contents

1. Introduction

Increased globalisation and global sourcing for the past 30 years have made the Internet and information technology (IT) along with the procurement role within companies more and more important. Electronical procurement (e-procurement) and various e-procurement applications have therefore become important both for procurement and communication between buyers and suppliers. According to Presutti Jr (2003), firms have continuously been using e-procurement strategies to leverage the competitive advantage provided by the Internet. In addition, e-procurement and the development of its applications has revolutionised disciplines in procurement and supplier relationship management (Wagner & Essig, 2006). While the use of the Internet and IT between buyers and suppliers have been increasing, face-to-face communication between buyers and suppliers have decreased. Since face-face communication between buyers and supplier is important for building the buyer-supplier relationship, this made the author curious about how e-procurement have impacted the relationship between buyers and suppliers. This is an important area to investigate because companies will, according to Wagner and Essig (2006), always be behind the market leaders if they don't build a foundation for using e-procurement in relation to supplier relationship management. There has also been very little research around the impact of e-procurement on buyer-supplier relationships. In addition, new and existing e-procurement applications fulfilling their potential have revolutionised the disciplines of procurement and supplier relationship management (Wagner & Essig, 2006). Given the importance of e-procurement along with the lack of literature of its impact on buyer supplier relationships, the problem statement of this thesis is therefore:

How does e-procurement impact buyer-supplier relationships?

The aim of this thesis is therefore to investigate how e-procurement impacts buyer-supplier relationship and elaborate on the literature regarding the impact of e-procurement on buyer-supplier relationships. This thesis furtherly focuses on the buyer's side in relation to how e-procurement impacts buyer-supplier relationships and uses ABB Group, a global project-based company as a case company. Although ABB is a global company, the thesis furtherly focuses on ABB in Norway and the United Kingdom. Qualitative interviews are used to collect data while the interview participants have the following roles within ABB:

Procurement and Quality Director, SCM Operational Excellence Manager, Procurement & Logistics Specialist, Supply Chain Digital Transformation Lead and finally, Head of Section in Supply Chain Management Execution. The research then proceeds inductively by drawing conclusions based on an analysis of the interview data. To increase validity, the findings from the interview data were furtherly compared to the literature study. In addition, the findings that are most relevant to the research questions are also critically assessed with counter arguments. The counter arguments were either taken from other findings of this thesis, from the author's own opinions, or were added from the literature. It can therefore be argued that the research is finalised with a deductive approach, by testing its findings against the literature.

The following research questions related to the literature gaps is furtherly developed to help answer the main problem statement: RQ1) How does e-procurement enhance buyer-supplier relationships? RQ2) How does e-procurement impact on the balance of power in buyer-supplier relationships? RQ3) How does information sharing through IT impact trust in buyer-supplier relationships?

The remainder of this thesis is furtherly structured in the following manner: in chapter 2, a theoretical background is presented along with key concepts regarding supply chain management, buyer-supplier relationships, and e-procurement. In chapter 3, a literature study of important literature related to the main problem statement is presented along with literature gaps found in this literature. Based on the literature gaps, research questions are also developed in chapter 3. In chapter 4, a presentation of the case company is given to provide more context. Chapter 5 describes the methodological choices of this thesis, including the research design and data collection method, as well as the methodological weaknesses and limitations. Chapter 6 presents interview results, while chapter 7 discusses the results in relation to the research questions and literature presented in chapter 3. Finally, chapter 8 provides the conclusions of this thesis with a short summary of the most relevant findings. Managerial and theoretical contributions are also given in chapter 8 along with limitations of the research and results, in addition to suggestions for future research.

2. Theoretical framework

This chapter introduces key concepts related to the problem statement of this thesis: "how does e-procurement impact buyer-supplier relationships?". Therefore, the topic of buyer-supplier relationships and some of its key aspects are introduced first. Afterwards, the topic of e-procurement is introduced.

2.1 Buyer-supplier relationships

Between 1999 and 2002, Liker and Choi (2004) conducted a study on how to build close partnerships with suppliers by studying how Toyota and Honda built relationships with their North American suppliers. They furtherly suggest that firms are increasingly relying on their suppliers to reduce costs, improve quality, and create new processes and products faster than their competitors. Moreover, they define close buyer-supplier relationships as "close-knit networks of vendors that continuously learn, improve, and prosper along with their parent companies" (Liker & Choi, 2004, p. 2). Lascelles and Dale (1989) support the competitive purposes of strong buyer-supplier relationships. They suggest that suppliers have become an essential part of a firm's competitiveness, which is why suppliers must be treated as long term business partners. Furthermore, Lascelles and Dale (1989, p. 15) state there needs to be a change of "the traditional adversarial buyer-supplier relationship to one of co-makership".

Moving on, Liker and Choi (2004) offer a six-step model, organized as a supplier-partnering hierarchy, to build close partnerships with suppliers. First, they suggest that the buyer should acquire an understanding of how the suppliers work, because the foundations of a partnership can only be created if a firm knows as much about their suppliers as the suppliers know about themselves. Second, Liker and Choi (2004) suggest that supplier rivalry should be turned into opportunity, by having two to three suppliers per component or raw material and encouraging competition between them from the product development stage for example. Third, they suggest that a firm must supervise their suppliers by measuring their performance and setting performance targets for them, for example in terms of quality and delivery. In addition, a report card should be sent to their suppliers monthly, commenting on performance measures like quality and delivery. Fourth, they recommend that buyers should develop the technical capabilities of their suppliers. This can be done by improving the supplier's innovative capabilities, so they can develop new products for the firm. However, a supplier must learn to understand the terminology that the supplier uses to make design solutions and thus develop new products for the supplier. Fifth, it is suggested that information is shared intensively, but

selectively, which is because sharing too much information with everyone, only results in no one having the right information when it's needed. Complex components, for example, must be designed in close collaboration between the supplier of the component and the firm. Finally, Liker and Choi (2004) recommend that joint improvement activities should be conducted. Honda, for example, placed several engineers in the US, leading continuous improvement programs at suppliers' facilities. Meanwhile, they explain that Toyota teaches their suppliers the Toyota Production System, and has established teams of study groups, so manufacturers and their suppliers can together learn how to improve operations.

Ellram (1991) presented a life-cycle framework of buyer-supplier partnerships in 1991. The framework consists of the five life-cycle stages of "pre-partnering decisions", "development stage", "commitment", "integration" and "dissolution". The pre-partnering decisions stage involves the decision to enter a buyer-supplier partnership". During the development stage, the buyer and seller, according to Ellram (1991), become familiar with each other and the relationship requires a high degree of contact between the firms. Furtherly, the most ideal form of contact in this context is face to face contact, in addition to phone and other electronic media. The goal of the commitment stage is, according to Ellram (1991, pp. 15), "to improve the relationship, building strength and dependency, becoming committed to the partnering nature of the relationship". At this stage, the contact between the firms is more by phone, computer/fax than face to face. The goal of the integration stage is to maintain and stabilise the partnership, while the involved firms gain the benefits of the close association. The dissolution stage doesn't necessarily have to be reached, but the objective of the stage is to withdraw from the partnership (Ellram, 1991).

2.1.1 Kraljic's purchasing portfolio

Kraljic's purchasing portfolio was developed by Peter Kraljic in 1983 to minimize supply vulnerabilities and making the most of buying power as a means of supply management (Kraljic, 1983). The purchasing portfolio helps buying firms place its purchased products into four product types and determine the supply strategy depending on the product type. The four product types are based on financial risk and supply risk. Financial impact may involve strategic importance related to the value the product line adds, the cost share of raw material and their impact on profitability. The supply risk can involve supply market's complexity depending on supply scarcity, technology's pace and/or materials substitution, entry barriers, the cost or complexity of logistics, and the conditions of monopoly or oligopoly. The product

types consist of routine products (low financial impact, low supply risk), leverage products (high financial impact, low supply risk), strategic products (high financial impact, high supply risk) and bottle neck products (low financial impact, high supply risk) (Kraljic, 1983). Figure 1 shows the purchasing portfolio matrix adapted from van Weele (2018), which helps buyers categorize the products and different supplier strategies depending on the product type.

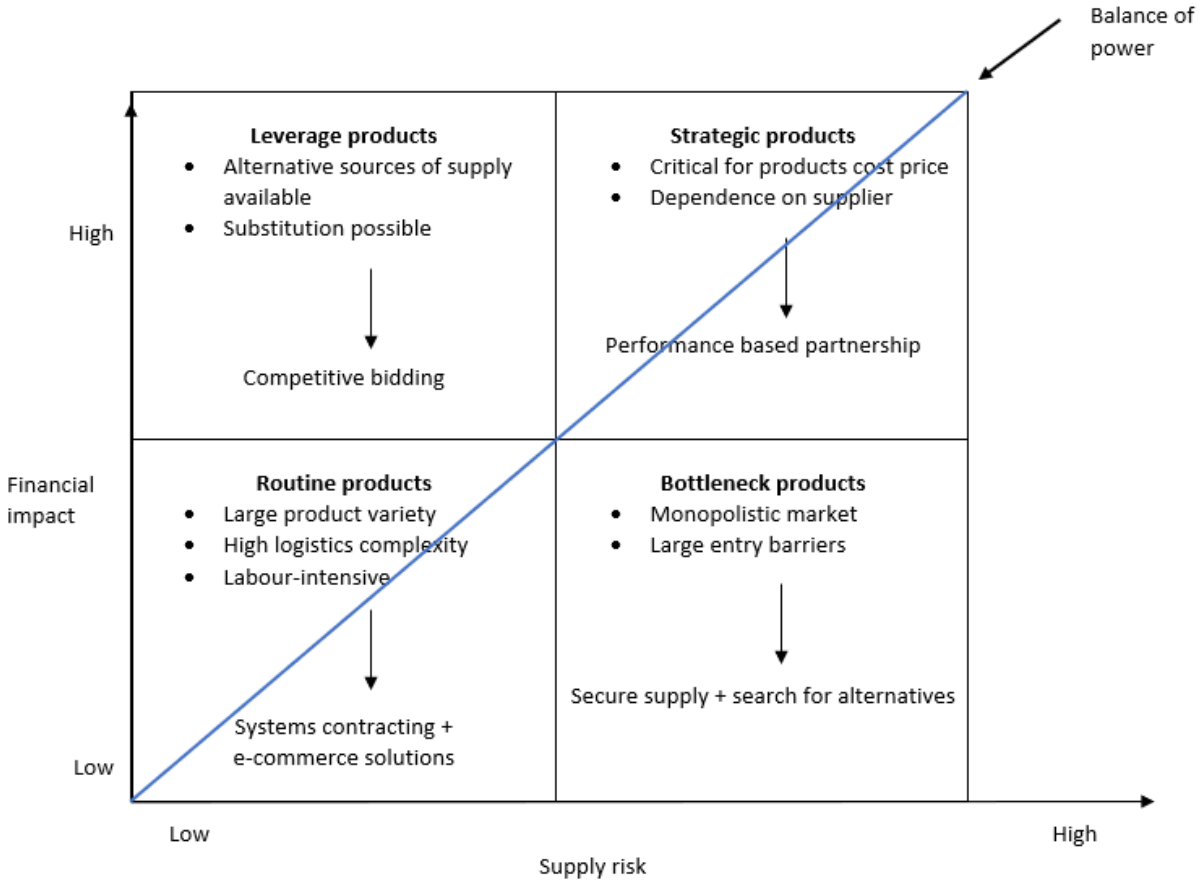

Figure 1: Kraljic's purchasing portfolio matrix adapted from Weele (2018).

Leverage products can generally be obtained from various suppliers (Caniëls & Gelderman, 2005), and give buying firms the opportunity to utilise their full buying power through tendering, target pricing and product substitution, for instance (Gelderman & van Weele, 2005). Ronchi (2003) recommends that, for leverage products, mid-term contracts and two-way relationships with reliable suppliers is established so that the quality of the product is maintained while the cost is minimized. Meanwhile, for routine items, each unit has a low value, and many alternative suppliers can be found (Caniëls & Gelderman, 2005). These products are ordered frequently and thus cause high transaction costs. The balance of power in these buyer-supplier relationships is balanced (Caniëls & Gelderman, 2007). According to Ronchi (2003), that buyer-relationships related to routine items are usually at arm's length. Moving on to bottleneck products, Caniëls & Gelderman (2005) describe these products have

as having a low financial impact but are vulnerable considering supply. They can cause considerable problems and risks that should be dealt with by volume insurance, supplier control, safety stock and backup plans. Meanwhile, bottleneck items may cause the need to search for alternative suppliers or products. The buyer-supplier relationships related to bottleneck products is supplier dominated (Caniëls & Gelderman, 2007), while reliable relationships should be found with focus on concurrent engineering and value analysis to lower the costs of operation (Ronchi, 2003). Finally, strategic items have a high value to buying firms considering having a high financial impact and supply risk (Caniëls & Gelderman, 2005), and requiring a collaborative strategy between the buyer and supplier (Gelderman & Van Weele, 2005). Based on the literature, it is expected that a balanced power situation exists in relation to strategic product, but on the contrary, Caniëls and Gelderman (2007) found that buyer-supplier relationships related to strategic products is supplier dominated. They furtherly suggest that even in satisfactory partnerships, suppliers are seen as being dominant from the perspective of buyers. Caniëls and Gelderman (2007) furtherly recommend that buying firms should be aware that the dependence in relation to strategic products implies vulnerability. Buying firms should therefore consider whether the benefits related to strategic products are worth the vulnerable and dependent position towards the supplier. Additionally, the risks included in these relationships should be assessed, while the market should be explored by looking for alternative suppliers and determining their competencies.

Bensaou (1999) developed a framework for managing a portfolio of buyer-supplier relationships, where the following four categories were introduced: market exchange, captive buyer, captive supplier, and strategic partnership. The products involved within each relationship category are comparable to the product types in Kraljic's portfolio matrix. It can therefore be assumed that the relationship characteristics apply to the corresponding product types between Bensaou's and Kraljic's portfolio. First, captive-buyer relationships include complex components that need some level of customization but are still based on well-known and stable technology. This relationship type therefore matches with leverage items, which for example include electric motors, heating oil, or EDP hardware (Kraljic, 1983). The climate in these relationships is tense and lack mutual trust. There is no early supplier involvement, but a strong effort by the buyer regarding cooperation (Bensaou, 1999). Second, the market exchange category tends to involve highly standardized products that require minimal customization to the buying firm's final product, for example bearings or relays. This

category therefore matches with routine items, which can include steel rods, coal or office supplier, according to Kraljic (1983). The climate and process characteristics related to this category involve a positive social climate, with no systematic joint effort or cooperation, no early supplier involvement in design and where the supplier is fairly treated by the buyer (Bensaou, 1999). Third, the captive-supplier relationships involve products that are highly complex which the supplier usually develop and own. The products involved are comparable to bottleneck items such as electronic parts, catalyst materials or outside services and is mostly acquired from new suppliers with new technology (Kraljic, 1983). These relationships have a high level of mutual trust while direct joint action and cooperation is limited (Bensaou, 1999). Finally, strategic partnership relationships involve highly customized components or integrated subsystems where strong technology and engineering capabilities are required. These products are related to strategic items which may include scarce and/or high-value materials (Kraljic, 1983). The relationships involve a high level of mutual trust and commitment to the relationship, according to Bensaou (1999). There is a strong sense of buyer fairness and early supplier involvement in design, in addition to joint action and cooperation.

2.2 Electronic procurement

Electronic procurement (e-procurement) is defined in many ways in the literature. Some of the definitions are as follows:

1. “a technological solution that allows corporate purchasing using the internet” (Presutti Jr, 2003, p. 221)
2. “the use of information and communication dimensions of internet technology for obtaining materials and services and managing their inflow into the organization” (Aboelmaged, 2010, p. 393)
3. “the use of integrated (commonly web-based) communication systems for the conduct of part or all of the purchasing process” (Croom & Brandon-Jones, 2007, p. 295)
4. “any technology designed to facilitate the acqusition of goods by a commercial or a government organization over the Internet” (Davila, Gupta, & Palmer, 2003, p. 11)

Based on these definitions, e-procurement will in this thesis be considered any form of technology that enables procurement through the internet.

Moving on, Presutti Jr (2003) suggests that e-procurement has the power to transform the entire purchasing process because it is a major component of every step in the procurement process. Puschmann and Alt (2005, p. 130) found that to achieve operational efficiency, companies which have implemented e-procurement successful relied on proven concepts “regarding introduction, organizational change, content and catalogue management, procurement processes and system architecture”. In addition, they suggest that implementation of e-procurement is a less technical issue and revolves more around organisational aspects and redesigning procurement processes rather than technical issues. Furthermore, Presutti Jr (2003) suggests that to acquire the highest possible value creating benefits from an e-procurement strategy, it must be determined whether the purchasing process requires to be reengineered. If a firm lacks cross-functional collaboration and early supplier involvement, the collaborative potential of the e-design component of an e-procurement strategy has little chance to succeed.

Presutti Jr (2003) furtherly suggest that one of the reasons e-procurement causes high reductions in transaction costs are the reduced labour costs. Furtherly, e-procurement can also reduce costs related to inventory significantly. For example, in an e-procurement strategy where the systems of buyers and suppliers are linked over the internet, real-time exchange of information will be facilitated in the buyer’s production schedule. The output of the supplier

can then be adjusted to meet the demand of the buyer, depending on the flexibility the supplier has developed.

Furthermore, Chang, Tsai & Hsu (2013) report that e-procurement contributes to supply chain performance through partner relationships, information sharing, and supply chain integration, where supply chain integration has the highest impact on supply chain performance. Four dimensions of e-procurement were analysed, and it was found that they impact partner relationships, information sharing, and supply chain integration differently. More specifically, Chang et al. (2013, p. 47) report that "information sharing is mainly influenced by e-sourcing; partner relationships are mainly influenced by e-negotiation; supply chain integration is mainly influenced by e-evaluation". They furtherly suggest that e-procurement dimensions focus on different functions of purchasing and that they complement each other related to the benefit of SCM.

3. Literature Study

In this section, a literature study focusing on the role of e-procurement in buyer supplier relationships is conducted. Literature gaps are then be identified, while research questions are developed based on the literature gaps identified. To justify why there is a need to elaborate on the literature gaps, it is first shown how certain factors impact each other. Afterwards, the importance of the factors that are impacted is then defined.

3.1 Croom and Brandon-Jones (2007)

According to Croom and Brandon-Jones (2007), buyers feel that e-procurement gives increased leverage in buyer-supplier relationships and negotiation because e-procurement reduces search costs, which leads to increased supply availability. In addition, e-procurement gives buying firms leverage over suppliers because it "enables real-time control of spending, increases management information, and increases control" (Croom & Brandon-Jones, 2007, p. 298). It was also reported that the increased number of orders placed through e-procurement systems allowed improved contract compliance, which gave buyers more leverage over suppliers' pricing, while improving the accuracy of the suppliers' delivery according to the orders.

Knudsen (2003) also suggests that e-procurement can give the buyer a power advantage. E-procurement can be used to gain data from third party information providers, which lowers

the cost of supplier assessment. This also lets buying firms know as much about a supplier as possible, giving an information advantage that can enable a power advantage over the supplier (Knudsen, 2003).

Furthermore, Smart and Harrison (2003) suggests that online reverse auctions (ORAs) can be used to reduce prices, but don't cause reduced prices alone. The main factor that influences price reductions is the introduction of competition by involving new suppliers, or a larger sample of suppliers than normal bidding for the business (Smart & Harrison, 2003). This shows how ORAs can increase supply availability, which can increase leverage in negotiation, as mentioned (Croom & Brandon-Jones, 2007). A higher level of power relative to a supplier can in addition be acquired by positioning suppliers to compete to get and to keep the contract (Knudsen, 2003). E-procurement can also give a significant buying power leverage to the market by allowing more efficient and precise aggregating corporate wide spend across multiple purchased product areas (Presutti, 2003).

Maloni and Benton (2000) report that power has a significant influence on buyer-supplier relationships, and that a strong buyer-supplier relationship will significantly increase the performance of the buyer, the supplier as well as the entire supply chain. This highlights the importance of effective use of power within the supply chain. Therefore, the buying firm "must comprehend the scope of their power and understand how to use it effectively to drive performance" (Maloni & Benton, 2000, p. 22). Furthermore, Krause, Vachon and Klassen (2009) suggest that a company is no more sustainable than its supply chain and must therefore create and maintain a sustainable supply chain by using its full bargaining power. In addition, the balance of power between the buyer and its suppliers is important because it can be used to claim a higher share of the value created in the buyer-supplier relationship.

Chicksand (2015) argues that for a partnership to succeed there should be an equal share of risk and reward, which is more likely to be achieved when the balance of power between buyer and supplier is equal. If the balance of power is uneven between the buyer and supplier, Chicksand (2015) furtherly suggests two alternatives. One is that there should be taken measures, such as through dedicated investment in technology, for instance. The other is that it should be acknowledged that the power is not balanced and collaboratively be worked together to decrease conflicts of interest as much as is possible.

Smart and Harrison (2003) suggest that firms that have long term relationships with key suppliers should check market prices occasionally or use ORAs to acquire new or alternative sources of supply, especially in areas of continuous technological development. Furthermore, "reverse auctions have an important role as a price revealing mechanism" and can show "how costs in an existing relationship have been managed" (Smart & Harrison, 2003, p. 265). This is important because, suppliers in long-term buyer-supplier relationships may, according to Cousins (1999, p. 153), "be expected to increase prices and decrease service as they realise that they are in dependent relationships, where the behaviour is adversarial."

According to Smart and Harrison (2003), ORAs are traditional auctions in reverse, where a buyer offers a tender or contract for the supply of certain goods or services, instead of a seller offering a product or service to the highest bidder. Online reverse auctions can be seen as a technological solution that allows procurement through the internet and can therefore be considered e-procurement.

The respondents of Croom and Brandon-Jones (2007) also reported that, with e-procurement, they believed they had achieved a more transparent sourcing process and that e-procurement has given more opportunity for communication and knowledge sharing with partners. Moreover, e-procurement is not a prerequisite for closer relationships but is mostly used when the supplier is well known and trusted to the buying firm. Therefore, it can enhance rather than damage customer-supplier relationships. Having this in mind, it is also reported that the respondents of the study expected better information would directly lead to more effective purchasing and supplier relationships (Croom & Brandon-Jones, 2007).

3.2 Stump and Sriram (1997)

Improved buyer-supplier relationships caused by e-procurement is supported by Stump and Sriram (1997). They investigated how the level of IT investments and how much they're used in purchasing can change buyer-supplier relationships or rather lead to the development of closer relationships, and the reduction of suppliers. They report that increased IT investments indirectly enhance exchange relationships, while the number of suppliers usually reduces. This furthermore suggests that a buyer's IT investments will give powerful rewards to suppliers who also make IT investments. These rewards may include the potential gain of a higher share of the buyer's business, "if not sole sourcing arrangements as these reciprocal IT

investments can create cost advantages over non-adopting competitors" (Stump & Sriram, 1997, p. 134).

Wagner and Essig (2006) also argue for the notion that buyer-supplier relationships are enhanced by using e-procurement. The authors analysed previous research into the use of e-procurement, and state that the benefits gained from buyer-supplier collaboration using internet technologies depends on the existing relationship. Specifically, Wagner and Essig (2006, p. 454) state that "the more suppliers and customers work together as partners, and the greater the incentive each has to collaborate, the more likely it is that the use of internet technologies will prove successful". Furthermore, buyer-supplier relationships are enhanced by e-procurement through a simplification of the collaboration between buyers and suppliers taking the form of long-term partnerships. In this case, e-procurement can provide a win-win situation for the buyer and supplier, according to Wagner and Essig (2006).

Moreover, Wu, Zsidisin and Ross (2007) suggests that the use of e-procurement for coordination applications helps developing more effective buyer-supplier relationships because of the resulting electronic integration, which will eventually lead to more efficiency. Coordination applications of e-procurement involves interorganizational system applications that enable continuous information exchange between buyers and suppliers. This information exchange creates interdependence, trust and relationship commitment among the participants.

Moreover, coordination e-procurement applications can enhance the relationship of a firm "through the efficient exchange of strategic and tactical information like new product plans, product specifications, and inventory planning" (Wu et al., 2007, p. 580). These applications can also improve efficiency by creating stronger and relationships between trading partners. Furthermore, the formation of close network ties among trading partners is determined by the scope of the coordination e-procurement applications. By integrating the e-procurement processes of a firm and its trading partners, Wu et al. (2007, p. 584) also suggest that "firms can better align partner incentives, reduce opportunism and create stable long-term relationships", which is based on the importance that resource commitment has in creating relationship continuity and long-term benefits.

To highlight the importance of strong buyer-supplier relationships, it is worth mentioning that the buyer-supplier relationship has a central role in improving the sustainability of the supply chain (Kumar & Rahman, 2015), while a company is no more sustainable than its supply

chain (Krause et al., 2009). This is also supported by Ambrose, Marshall & Lynch (2010) who suggest that strategic relationships with critical suppliers are especially important to understand, because the successful management of these relationships contributes to firm performance. In addition, Kannan and Tan (2006) found that it is important to use the capabilities and expertise of suppliers as a stable source of competitive advantage and it is therefore necessary to develop the buyer-supplier relationship. Having competitive advantage also allows improved product quality and product development processes, as well as driving down costs.

On the other hand, Knudsen (2003) suggests that an indiscriminate use of e-procurement can lead to an arm's length type of supplier relationship, as opposed to having fewer but closer relationships. This is because of the competitive nature of e-procurement, and Knudsen (2003) therefore suggests that existing supplier relationships should be taken under consideration before implementing e-procurement.

3.3 Carr and Smeltzer (2002)

Carr and Smeltzer (2002), by exploring the role of information technology in purchasing/supply management, found that "the use of the use of information technology does not appear to help improve the level of trust in buyer–supplier relationships" (Carr & Smeltzer, 2002, p. 302), despite more frequent and clearer interaction with the use of IT. In their study, buying firms was interviewed and surveyed. Through this study, they also reported that a lack of trust in the buyer-supplier relationships, caused concern among their interviewees related to suppliers misusing their company data as well as other parties gaining access to confidential information.

Smeltzer (1997, p. 41) define a trustworthy buyer or supplier, based on literature, as someone who:

(1) does not act in a purely self-serving manner
(2) accurately discloses relevant information when requested
(3) does not change supply specifications, standards, or costs to take advantage of other parties
(4) generally acts according to normally accepted ethical standards

Literature on how IT impacts trust is furtherly gathered because the literature on how e-procurement impacts buyer-supplier relationships is lacking. Carr & Smeltzer (2002, p. 294) defines information technology, in terms of the use of automated systems, as "supplier links via electronic data interchange, information systems, and computer-to-computer links between firms". IT used between buyers and suppliers will be considered e-procurement because IT enables procurement through the internet. As mentioned, in this thesis, e-procurement is considered as any form for technology that enables procurement through the internet. Cater (2001, p. 27) even suggests that e-procurement can, for example, cover "circulating information by email to potential buyers or suppliers", using the Internet.

In contrast to Carr and Smeltzer (2002), Ryssel, Ritter and Gemünden (2004) found that internal IT is positively related to trust and commitment. The reason could be that using IT internally makes supplier processes more reliable by supporting "decision making, production planning, and quality management by improving the scanning and monitoring of the internal and external environment" (Ryssel et al, 2004, p. 199). They furtherly report that trust and commitment was frequently key preconditions for implementing IT use in relationships. On the other hand, they also suggest that IT could lead to a lower level of trust, commitment and value-creation, because it gives a risk of impersonalising relationships. This is supported by Tucker and Jones (2000). E-procurement may on the other hand reduce the opportunity of the face-to-face contact that is needed to build trust during the development stage of the partnership life cycle. In addition, Ellram (1991) suggests that the development of a partnership may be delayed or even stopped if the development stage is unsatisfactory.

Trust is especially important in the buyer-supplier relationship in terms of the development and maintenance of the relationship (Smeltzer, 1997), and promotes information sharing. Moreover, interorganisational trust has a high influence on the buyer-supplier relationship, according to Zaheer, McEvily, and Perrone (1998). Interorganisational trust is most likely based on institutionalised practices and routines that form the basis of the interfirm exchange and is more important for supplier performance compared to trust between individuals managing the buyer-supplier relationship (Zaheer et al., 1998). In addition, Zaheer et al. (1998) suggest that if trust is extensive, the performance of companies will improve.

Moving on, Chen, Yen, Rajkumar and Tomochko (2011) suggest that IT enables efficient and secure information sharing for organisations. In addition, they suggest that technology on its own is not sufficient to build trust and commitment, because companies must share vital

decision-making information. It was also found that information quality and information availability contribute positively to build trust in buyer-supplier partnerships. Furthermore, Chen et al. (2011) recommend that high quality information is actively shared and made readily available to supply chain partners. Kwon and Suh (2004) furtherly report that unpredictable behaviour has a high negative impact on trust and that information sharing reduces unpredictable behaviour and will therefore eventually improve trust. Smeltzer (1997) found that consistency, sharing of important information, and mutual respect are central parts of trust. This was done by developing a literature-based definition of trust and interviewing 19 purchasing managers.

Moreover, Eckerd and Hill (2012) found that increased information sharing in the buyer-supplier relationship improves the trust of suppliers toward the buyer in the sense that the buyer is perceived less as performing unethical behaviour. Eckerd and Hill (2012) furtherly suggest that information sharing builds trust in a way that discourages behaviour, which is important because resources spent on bureaucratic monitoring can be spent on more meaningful activities.

Regarding the effect that information sharing using IT has on the buyer-supplier relationship, Ye and Wang (2013) imply that IT alignment can improve cost efficiency through shared information, which means that cost efficiencies can be improved only through the construction of IT infrastructure without sharing important information. IT alignment furtherly refers to the similarity, connectivity, and compatibility of IT infrastructure between supply chain partners, such as strategic partners and interfirm partners.

Within the manufacturing sector, it is moreover necessary to make the best use of advanced information technologies to share information within the supply chain to increase the competitive advantages of the firm and hence survive in the global economy today (Lotfi, Mukhtar, Sahran & Zadeh, 2013). In terms of the relationship between information sharing and IT and the impact it has on trust, establishment of trust along with the promotion of collaboration can only start when companies are willing to share vital, and often proprietary, decision-making information (Fawcett, Osterhaus Magnan, Brau, & McCarter, 2007). The willingness to share information requires a trusting relationship, however, and is best done face-to-face.

Furthermore, Sako (1998) states that trust goes hand in hand with information access, but that the development of trust or mistrust depends on how this information is used. Trust is not likely to develop if a supplier thinks that a buying firm will use the internal quality records of the supplier to assign blame for the latest delivery. If the supplier thinks the information will be used for quality improvement, the supplier's trust will likely develop. It was also found that information flow from buyers to suppliers has a positive impact on the suppliers' trust related to their customers.

3.4 Research Questions

As mentioned, literature gaps based on the literature study are identified in this section, while research questions are developed based on these literature gaps. Furtherly, to justify why these literature gaps should be studied, it is first shown how the factors of the research questions are impacted by each other. Afterwards, the importance of the factors that are impacted is defined.

It has been found that e-procurement has a lot of potential to enhance buyer-supplier relationships (Croom & Brandon-Jones, 2007; Stump & Sriram, 1997; Wagner & Essig, 2006; Wu et al., 2007). The literature is limited, however. According to Wu et al. (2007, p. 585), coordination e-procurement applications have the potential of allowing firms to create "a higher level of virtual trading partnerships that were not previously available. This helps the firms to leverage each other's capabilities, which in turn leads to new product initiatives, early supplier involvement, and strategic sourcing opportunities." Coordination e-procurement applications, such as systems that enable information exchange of product designs and database integration, are more strategic in nature because they focus on interorganizational integration (Wu et al., 2007). A strong buyer-supplier relationship furtherly has a significant importance for the sustainability and performance of companies (Ambrose et al., 2010, Kannan & Tan, 2006; Krause et al., 2009;). This shows why the research gap related to how e-procurement can enhance buyer-supplier relationships should be investigated, and the first research question is therefore:

RQ1: How does e-procurement enhance buyer-supplier relationships?

Furthermore, the literature related to the influence of e-procurement on the balance of power in buyer-supplier relationships is also limited. To understand the importance of investigating this research gap, it is firstly important to have in mind that power has a central role in buyer-

supplier relationships (Chicksand, 2015; Krause et al., 2009; Maloni & Benton, 2000), as described in chapter 3.1. For instance, Krause et al. (2009) suggest that the balance of power in buyer-supplier relationships can be used to claim a higher share of the value created in the buyer-supplier relationship. In addition, companies should use their full bargaining power to create and maintain a sustainable supply chain because a company is no more sustainable than its supply chain. Secondly, it is important to have in mind that e-procurement actually has an impact on power in buyer-supplier relationships (Croom & Brandon-Jones, 2007; Knudsen, 2003; Smart & Harrison, 2003; Presutti, 2003), and. The second research question is therefore:

RQ2: How does e-procurement impact the balance of power in buyer-supplier relationships?

Furthermore, it is suggested that IT does not impact trust (Carr & Smeltzer, 2002), but can damage it (Ryssel et al., 2004; Tucker & Jones, 2000). On the other hand, Fawcett et al. (2007) and Wu et al. (2007) suggest that both e-procurement and IT can build trust. Information sharing can also improve trust in buyer-supplier relationships (Kwon & Suh, 2004; Smeltzer, 1997; Sako, 1998; Chen et al., 2011), while IT can be used for information sharing (Chen et al., 2011). The literature regarding how information sharing through IT can impact trust in buyer-supplier relationships is lacking, however.

Elaborating on this research gap is firstly important because trust has an important role regarding development and maintenance of the relationship as well as performance within the relationship (Smeltzer, 1997; Stuart et al., 2012; Zaheer et al., 1998), in addition to promoting information sharing (Li & Lin, 2006). Secondly, information sharing is, as mentioned, important for building trust in buyer-supplier relationships (Chen et al., 2011; Eckerd and Hill, 2012; Kwon & Suh, 2004; Smeltzer, 1997), while information sharing using IT can improve performance in buyer-supplier relationships in terms of improved cost efficiencies (Ye & Wang, 2013) and competitive advantage (Lotfi et al., 2013). The third research question is therefore:

RQ3: How does information sharing through IT impact trust in buyer-supplier relationships?

4. About ABB

Both ABB AS of Norway and ABB Ltd operate under segments that include power products, power systems, automation products, process automation, and robotics as it provides power and automation technologies. These companies are focused on transforming the society and the industry to create a more productive and a sustainable future. As the main purpose of the entities suggest, they are essentially oriented towards value creation on four business areas, namely electrification, process automation, motion and robotics. As any modern corporation, ABB Limited has a decentralized business model and ambitious, but also sustainable goals such as a 3-5% average annual revenue growth through economic cycle and 13-16% operational EBITA margin (ABB, 2021b).

4.1 General information about the company and business performance

ABB is an international company and generates revenues in numerous currencies. ABB operates in over 100 countries across three regions: Europe, the Americas, and Asia, Middle East and Africa. ABB is well-known for its excellence which dates back to 130 years ago and is currently driven by around 105,000 employees in over 100 countries.

The ABB Group was founded in 1988 through a merger between Asea AB and BBC Brown Boveri AG. Initially founded in 1883, Asea AB was a major participant in the introduction of electricity into Swedish homes and businesses and in the development of Sweden's railway network. In the 1940s and 1950s, Asea AB expanded into the power, mining and steel industries (ABB, 2021b).

In January 1988, Asea AB and BBC Brown Boveri AG each contributed almost all of their businesses to the newly formed ABB Asea Brown Boveri Ltd, of which they each owned 50 percent. In 1996, Asea AB was renamed ABB AB and BBC Brown Boveri AG was renamed ABB AG. In February 1999, the ABB Group announced a group reconfiguration designed to establish a single parent holding company and a single class of shares (ABB, 2021b).

ABB Ltd was incorporated on March 5, 1999, under the laws of Switzerland. In June 1999, ABB Ltd became the holding company for the entire ABB Group. This was accomplished by having ABB Ltd issue shares to the shareholders of ABB AG and ABB AB, the two companies that formerly owned the ABB Group. The ABB Ltd shares were exchanged for the

shares of those two companies, which, as a result, became wholly-owned subsidiaries of ABB Ltd (ABB, 2021b).

Regarding the company's historical evolution, a few milestones will be mentioned to highlight the performance over the years. In 2020, ABB managed to deliver the world's first commercial high-voltage shore-to-ship electric power, helping reduce greenhouse gas emissions from ships berthed at the Swedish port of Gothenburg. In 2004 the company delivered electricity through a DC (direct current) link originating 70 km away on land to a gas platform in the North Sea, helping avoid annual emissions of 230,000 tons of CO2 and 230 tons of NOX (ABB, 2022).

In 2012, ABB developed a hybrid DC breaker suitable for the creation of large inter-regional DC grids. This breakthrough solved a technical challenge that had been left unresolved for over a hundred years and was perhaps one of the main influencers in the 'war of currents'. In 2017 ABB launched ABB Ability™, its industry-leading digital solutions offering, connecting customers to the power of the Industrial Internet of Things (ABB, 2022).

In 2019, ABB revolutionised the low-voltage switchgear: The bus plate technology combined with the connectivity of the ABB Ability™ platform marked the next innovation leap, making ABB's NeoGear the safest option for operators, maximizing efficiency and reducing costs for digitalised industries. Finally, in 2020 despite all the difficulties, ABB Ability™ Genix Industrial Analytics and AI Suite combined the power of data management, domain knowledge, technology capabilities and implementation expertise. This suite helped making timely, accurate, insight-driven decisions to achieve a high degree of optimization and control. (ABB, 2022).

As far as the financial performance of the company is concerned, the ABB managed to deliver in 2020 a solid financial performance in what is already know in history as an extremely challenging year. It is definitely no surprise that this market was also impacted by the COVID-19 pandemic, but in terms of profit, their operational EBITA margin increased to 11.1 percent, showing that ABB took the right and necessary actions in response to the pandemic (ABB, 2021b).

As of 31st Deceber 2020, ABB's breakdown of employees by geography is as seen in Table 1.

December 31	2020	2019	2018
Europe	49,200	68,400	68,300
The Americas	27,600	35,200	35,600
Asia, Middle East and Africa	28,800	40,800	42,700
Total	**105,600**	**144,400**	**146,600**

Table 1: ABB's number of employees breakdown (ABB, 2021b)

Continuing with the company's business progress and future perspectives, it is relevant to mention that even though during 2020, the entity's financial performance was impacted by challenging general market conditions, influenced by the effects of the COVID-19 pandemic they also managed to focus on accelerating cost mitigation efforts, which aided profitability and cash flow. Orders and revenues declined in all business areas driven by pandemic induced headwinds and the steep drop in the oil price (ABB, 2021b).

Demand decreased year-on-year in all regions with the Americas seeing the largest declines, while AMEA was almost flat due to strength in China particularly towards the end of the year. While short-cycle product demand recovered relatively quickly from the sharp downturn seen at the onset of the pandemic, project and service activities continued through the year to be impacted by various travel restrictions implemented by countries around the world. As a result, the Electrification and Motion Business Areas, which are both more product-focused, showed a relatively resilient performance with annual orders in 2020 declining 9 and 3 percent respectively. Portfolio changes adversely affected Electrification by about 3 percent. Industrial Automation and Robotics & Discrete Automation faced greater challenges in end-markets such as oil and gas, conventional power generation, marine and automotive. As a result, annual orders in Robotics & Discrete Automation declined 12 percent, while Industrial Automation, benefiting from a few significant large orders in Marine, declined 4 percent in 2020 (ABB, 2021b).

Considering that the latest available financial and perspective communication of the entity is from the third quarter of 2021, it is currently only known that ABB anticipates a continued tight supply chain to impact customer deliveries. ABB expects a strong pace of improvement from 2020 toward the 2023 operational EBITA margin target of the upper half of the 13%-16% range. That said, there are signs of positive development in general industry and machine

builders' segments, while end-markets including buildings, distribution utilities, data centres, consumer electronics and food and beverage are expected to grow robustly ABB (2021a) .

4.2 Describing the nature of ABB as being a project-based organisation

This section presented in the upcoming part is also partially based on the data collected throughout this research.

ABB is an organisation that delivers projects and buys a large range of products which is processed before it is delivered as part of these projects. Project contracts need to be won by bidding as low as possible and offering their customers the best deal possible. This means that ABB must acquire the best deal possible themselves from potential suppliers. Normally a customer will approach ABB with a request for budget associated with a project. This request includes details around the project and what services and solutions they want ABB to provide during the project. Based on these details, ABB sends a request for quotation (RFQ) to their potential suppliers in the first procurement stage called "tender sourcing".

An RFQ is submitted to three or four potential suppliers that ABB wants as suppliers during the project. The RFQ includes the needs of ABB in terms of products and services. The quote provided back from the suppliers includes both the technical and commercial solutions along with their terms for delivering the products and services during the project. The supplier providing the most suitable offer, based on parameters such as price, compliance, technical solution, or payment terms is then selected for further collaboration. According to one of the interviewees, there can also be several rounds of back and forth between ABB and the suppliers during tender sourcing because ABB is not the only organisation trying to win the project. After the suppliers have been chosen, ABB can then bid for the project. The tender sourcing stage is then closed. If ABB wins the project, they will now enter the final procurement stage, called "Procurement Execution". This is when procurement itself takes place. It is performed by issuing purchase orders (POs) to suppliers and following up these POs. ABB may negotiate further with their suppliers during procurement execution regarding volume discounts.

ABB's Project-Management Process (PM) is hosted in a web-based navigator. This process description is the backbone of the ABB's ISO 9001 approach (ABB Switzerland Ltd, 2009). A work instruction defines the PM-process stage by means of a process-plan with activities

and links to the relevant documentation/ checklist/templates etc. The PM-process is structured in three main phases. Firstly, there is the start-up phase, then execution and finally closure. Thus, “the PM, supported by the process plan mentioned above, ensures structured projects, common methodology-similar environment for all of ABB’s projects, auditing capability at any time without additional effort, mandatory project analysis at predefined milestones and close out procedure with lessons learned and feedback” (ABB Switzerland Ltd, 2009, p. 41). Project management includes organising, controlling, planning and reviewing resources and all activities which are important to achieve the project goals. To be successful, the PM qualities should include methodical competence, leadership, social and personal competence and technical competence.

5. Method

In this section, the research design for this thesis is described along with the method used to gather data. The weaknesses and limitations of the research design and method is then presented.

5.1 Research Design

A research design can be defined as the plan for how to the researcher will find the answers to the research questions (Saunders, Lewis & Thornhill, 2016), and includes how data will be collected, measured, and analysed to answer the research questions (Sekaran & Bougie, 2016).

Furthermore, a study can be exploratory, in which the aim is to clarify ambiguous situations, issues, problems or phenomenon (Saunders et al., 2016; Zikmund, Babin, Carr & Griffin, 2010). For this thesis, an exploratory study was conducted to explore as many findings as possible. Research questions were furthermore developed rather than hypotheses to explore multiple possible answers to the research questions themselves. An overview of the theoretical background was given before a literature study in relation to the role of e-procurement in buyer-supplier relationships was done. From the literature study, research gaps were identified, and it was justified why these literature gaps are important to study. This was done by showing how the factors of the research questions are impacted by each other, before defining the importance of the factors that are impacted. Research questions were furtherly created based on the research gaps before an interview guide was created based on the research questions. This was to investigate the research gaps through qualitative interviews. The findings from the qualitative interviews were then compared to the findings in the literature review.

Research can furthermore use a deductive and/or inductive approach, or an abductive approach for theory development (Saunders et al., 2016). A deductive approach is conducted from a more general area to a more specific area (Sekaran & Bougie, 2016). Research questions or hypotheses is formulated with the help of theory before data is collected empirically to answer the research questions or test the hypotheses, according to Ruane (2016). In relation to using a deductive approach, Sekaran and Bougie (2016) and Saunders et al. (2016), on the other hand, does not mention that research questions are created. Sekaran and Bougie (2016) state that testable hypotheses are formulated based on theory, while Saunders et al. (2016) state that a testable proposition or multiple propositions are created.

With an inductive approach, general conclusions are made based on the observation of particular facts, moving from a specific area to a more general area, while generating or building theory (Saunders et al., 2016). Using an abductive approach, a surprising fact is first observed, before plausible theories of why this occurred is developed through data gathering before the plausible theories are tested using existing and new data (Saunders et al., 2016). So, an abductive approach starts inductively, with an observation and gathering data to create plausible theories for why this occurred. The approach then proceeds deductively by testing these theories. In terms of theory, Dubois and Gadde (2002) argues that the abductive approach leads to a theory development and refinement of existing theories rather than theory generation and inventing new theories.

This research started deductively with a literature study before research questions were developed from the research gaps found from the literature study. The search engine Google Scholar was used to get an overview of existing literature related to e-procurement and buyer-supplier relationships. Search terms such as the following were used: “buyer-supplier relationships”, “e-procurement”, “e-procurement buyer-supplier”, “e-procurement power buyer-supplier”, “trust buyer-supplier” and “e-procurement trust buyer-supplier”. Qualitative interviews were then conducted to find possible answers to the research questions and elaborate on the research gaps. The research then proceeded inductively by drawing conclusions based on analysis of the interview data. To increase validity, however, the findings from the interview data were furtherly compared to the literature study. In addition, the findings that were most relevant to the research questions were also critically assessed by adding counter arguments. The counter arguments were either taken from other findings of this thesis, from the author’s own opinions, or were added from the literature. It can therefore be argued that the research, toward the end, followed a deductive approach by testing the findings against the literature study. On the other hand, the findings could have been tested through other data collection methods to increase validity.

5.2 Case study

A case study involves a study of one or more cases like an individual, a small group, an organisation, or a partnership (Creswell & Poth, 2018). Furthermore, they can be defined as a qualitative approach where the researcher explores one or more cases over time through detailed, in-depth data collection involving multiple sources of information, and in which a case description and case themes are reported. However, for this thesis, in-depth interviews

were the only source of information that was used due to time constraints. Yin (2003, p. 13) also defines a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident". In this thesis, the phenomenon of e-procurement's impact on buyer-supplier relationship is investigated within ABB.

In relation to case studies, Eisenhardt and Graebner (2007) argue that single case studies or multiple case studies can be conducted. Single case studies are conducted because they are unusually revelatory, extreme examples, or giving opportunities for unusual research access, or because of the likelihood of gaining theoretical insight. The researcher can focus on an issue or concern and then choose a bounded case to illustrate the issue, in which it's called a single instrumental case study (Creswell & Poth 2018). According to Stake (1995, p. 3), a single instrumental case study can be done because the researcher has "a research question, a puzzlement, a need for general understanding and a feel that we may get insight into the question by studying a particular case". For this thesis, a single case study was carried out because ABB is a world leader within technology. Getting insight into e-procurement's impact on buyer-supplier relationships therefore seemed very likely by studying ABB.

5.3 Qualitative interviews

A qualitative interview can be defined as a directed conversations that revolve around questions and answers related to a specific topic (Easterby-Smith, Thorpe & Jackson, 2015) and include in-depth interviews (DiCicco-Bloom & Crabtree, 2006). Boyce and Neale (2006, p. 3) state that: "the primary advantage of in-depth interviews is that they provide much more detailed information than what is available through other data collection methods, such as surveys." Furthermore, the general aim of qualitative interviews is to achieve an understanding of the perspective of the respondent as well as why they have these perspectives (King, as cited in Easterby-Smith et al., 2015). For this thesis, qualitive interviews were conducted to explore answers to the main problem statement and the research questions, which was created from the gaps found in the literature study. Interviews are generally appropriate when "The step-by-step logic of a situation is not clear" (Easterby-Smith et al., 2015, p. 135), and "facilitates conducting an open-ended, in-depth exploration of an area in which the interviewee has substantial experience" (Charmaz, 2014, p. 85). Choosing to conduct qualitative interviews was therefore done to go in-depth into how e-procurement impacts buyer-supplier relationships.

Most of the participants who were chosen for the interviews were contacted by email through the contact person within ABB, who gave the email address and phone number of potential participants. The rest of the participants were first contacted through LinkedIn by searching for terms such as "procurement ABB LinkedIn" on Google, before communication continued by email. An interview protocol (see appendix **Error! Reference source not found.**) was created based on the research questions before contacting the potential participants. Everyone who agreed to participate was sent an information letter related to the purpose of the project and their personal information and privacy (see appendix 10.2). The interview protocol was then sent to the participants before scheduling the interviews. The interviews were conducted through meetings on Microsoft Teams and lasted around 60 minutes. The interviews were recorded to ensure that no valuable information was lost when presenting the results. This is also an advantage in terms of reliability and validity as recording interviews, according to Mitchell, (1993, p. 27), "assist in establishing the reliability and validity of the data." Before each interview started, it was asked for permission to audio record the interview. On the other hand, recording interviews may also inhibit participants from responding freely (Mitchell, 1993) and may therefore decrease validity and reliability that way.

Only participants with positions related to SCM within ABB were chosen to secure relevant data in terms of the problem statement. Specifying the criteria for choosing interviewees too much would most likely have made it more difficult to acquire interviewees. Therefore, the five interviewees that was chosen had the following roles within ABB: Procurement and Quality Director, SCM Operational Excellence Manager, Procurement & Logistics Specialist, Supply Chain Digital Transformation Lead and finally, Head of Section in Supply Chain Management Execution. Only five participants were interviewed as most people who were contacted did not wish to participate. One solution could have been to ask them to answer the interview questions as a semi-structured questionnaire first, as this doesn't require as much planning or time and effort from the participants. Once the participants have already invested some time and effort in participating in the semi-structured questionnaires, it might have been easier to for them to agree to participate in the in-depth interviews where it would have been possible to ask follow-up questions and go more in depth. In hindsight, gathering data through a semi-structured questionnaire would have been more appropriate because the main aim of qualitative interviewing is to understand the perspective of the participants and why they have this perspective (King, as cited in Easterby-Smith et al., 2015). In addition, the purpose of qualitative interviews should also be to acquire information about the understanding around

the topic of the participants related to their worldviews (Kvale & Brinkmann, as cited in Easterby-Smith et al., 2015). Qualitative interviews would therefore have been more appropriate if the problem statement was more specified towards the opinion of e-procurement practitioners, for instance.

The countries where the respondents work was not important, as the problem statement is not geographically specific/does not ask how e-procurement impacts buyer-supplier relationships for companies in Norway, for instance. Three of the participants were working in Norway, while the remaining two were working in England.

5.4 Weaknesses and limitations

This section will look at weaknesses and limitations in terms of reliability and validity of the research design, case study, and the qualitative interviews of this thesis. Reliability and validity in qualitative research are, according to Golafshani (2003, p. 604), understood as the trustworthiness, rigor, and quality of the research. In terms of validity, Sekaran and Bougie (2016) consider internal validity as the degree of accuracy between the research results and the collected data, and external validity the degree to which the research results can be generalized or transferred to other contexts or settings.

Something that may have reduced the reliability and validity of this thesis is the limited number of data collection methods that were used. Only in-depth interviews were used as data collection method. Adding semi-structured questionnaires before doing the in-depth interviews could have increased amount of data as well as the reliability and validity. On the other hand, the interview responses could have been influenced if the same participants were interviewed after the questionnaires.

5.4.1 Research design

In relation to weaknesses of the research design, no research approach was followed deliberately. Choosing a research approach early based on the problem statement would have increased the trustworthiness that a fundamental research approach would have given and would thus have improved validity and reliability. Choosing a research approach would also have made it possible to plan how to ensure validity and reliability.

5.4.2 Case study

It was decided that qualitative interviews would be conducted for data collection after the problem statement was formulated. The author did not choose to use qualitative interviews for any specific, which may have hurt reliability and validity.

The limited number of interviewees may also have reduced external validity because the number of participants makes it difficult to conclude that the results apply in general. This is supported by Boyce and Neale (2006, p. 4), who suggests that: “when in-depth interviews are conducted, generalizations about the results are usually not able to be made because small samples are chosen and random sampling methods are not used”.

Something that should have been considered before deciding to conduct qualitative interviews, which may influence reliability and validity, is that the interviewer should be appropriately trained in interviewing techniques (Boyce & Neale, 2006). For instance, the interviewer should avoid yes/no questions and leading questions in addition to using appropriate body language and appearing interested in what the interviewee is saying to acquire the most detailed and rich information from the interviewee (Boyce & Neale, 2006).

There should also have been an awareness around bias before choosing qualitative interviews as a data collection method. Easterby-Smith et al. (2015, p. 336) defines interview bias as something that “occurs when the process of questioning influences the interviewee’s response.” According to Brink (1993), the data-gathering instrument in qualitative studies is often the researcher himself. Therefore, “questions of researcher bias and researcher competency, if unchecked, may influence the trustworthiness of data considerably” (Brink, 1993, p. 35), which means that bias could influence reliability and validity. According to Sekaran and Bougie (2016, p. 118) “bias could also be introduced by emphasizing certain words, by tone and voice inflections, and through inappropriate suggestions.” Simultaneously, Easterby-Smith et al. (2015, p. 143) states that “there is a very real concern about interviewers imposing their own reference frames on the interviewees, both when the questions are asked and when the answers are interpreted” in relation to interviewer bias. In addition, Sekaran and Bougie (2016, p. 117) also states that “Interviewees can bias the data when they do not come out with their true opinions but provide information that they think is what the interviewer expects of them or would like to hear.” Due to a lack of training and awareness around bias, leading questions were involved when conducting the interviews for this thesis. This may also have been to confirm what was learned through the literature study.

5.4.3 Qualitative interviews

As mentioned, three of the participants were from Norway while the last two were from England. To increase validity and reliability, it would have been better to interview more participants from different countries around the world, as this would have increased external validity in terms of generalisability. The findings may therefore only apply to companies in Norway and England. In addition, choosing only one case-company can also be considered a weakness in terms of external validity, as the findings may only apply to the company's departments in Norwegian. This thesis therefore does not give strong empirical answers to the problem statement, so future research should test the findings of this thesis empirically.

6. Results

The interview protocol was structured in four sections, the first one focusing on some introductory details about the interviewee, while the remaining three parts were each individually addressing the study's research questions (RQs). In the upcoming part, the results of the three main sections will be presented, while the actual analysis of the findings will be performed in the next chapter of the paper.

The number of people participating at this study's interview sessions were five. As a short background introduction, all the respondents have meaningful roles within the company, most of them related directly to procurement, however, one respondent is more involved in projects implementation, but, however he has knowledge also about the purchasing process.

6.1 The role of e-procurement at ABB

The e-procurement process is mostly used for indirect procurement at ABB. This means it is mostly used for purchasing indirect goods such as PC monitors and cables. The reason is that it is easier to predict the need of indirect products and purchasing can be automated. Moreover, for direct procurement, e-procurement is used to a smaller degree because the level of precision that is required is higher, and it is therefore more difficult to predict what is needed in a project. However, according to one of the respondents, e-procurement helps reducing transaction costs by making life easier for both ABB and their suppliers, especially in terms of collaboration. In addition, e-procurement allows automation of processes and transactions, which allows resources to be focused on other areas such as supplier development and reducing their defects, for instance.

ABB also uses a tool called ABB Procure, which is a digital tool that is used during tender sourcing to manage ABB's sourcing activities. When using this tool, the user needs to define details such as country, required products, scope of work, and terms and conditions. A request for quotation (RFQ) is then generated and sent to the potential suppliers. The email inbox of someone who is corresponding with a specific supplier is not needed, because ABB Procure allows anyone with access to the tool to continue discussions with the specific supplier. The tool also records the change of specifications and details about negotiations, for instance, and can therefore give an advantage because the time to win a project can take three years, while many things can change during this time, such as people working on the project. In this thesis, e-procurement is defined as any form for technology that enables procurement through the internet. E-procurement is considered any form for technology that enables procurement

through the internet, so ABB Procure will be considered e-procurement in this thesis because it connects buyer and supplier electronically and enables procurement through the internet.

After a supplier has been chosen, a requisition is given to a buyer during the procurement execution stage. The buyer must process and check that the requisition is correct according to what was done by the sales department during tender sourcing. The purchase order (PO) is then created based on this requisition and sent to the supplier by email, which shows another example of how e-procurement enhances buyer-supplier relationships by improving communication. Email is also considered e-procurement by Cater (2001) and is, in this thesis, considered e-procurement because it is a form of technology that enables procurement through the internet.

E-procurement is also used for supplier qualification in ABB. One respondent states that "there are some other online systems we use with our supplier to transmit other counter view information such as supplier qualification". The respondent furtherly specifies that suppliers need to provide data about how their business is operating, how big their staff is, the status of their financial stability and certificates they have, for instance, situation that facilitates the level of trustworthiness, as the buyer is getting also financial details about the supplier, being able to conduct some analysis to predict the stability of the supplier in time and assess if particular risks can further occur. The respondent thinks that ABB's trust toward their suppliers will improve if the supplier can provide this information,

Another example of how e-procurement is used for communication at ABB, is how the business unit called ABB Motion and Electrification uses a system called Advanced Supply Chain Collaboration. In this system, POs are transmitted to the suppliers, while the confirmation order acknowledgement as well as the shipping notices is transmitted by their suppliers. In other business units, the POs are sent to suppliers through email and the correspondence will still be recorded in ABB Procure. This highlights how e-procurement can enhance buyer supplier relationships at ABB by improving communication.

When referring to the role of e-procurement within ABB, one interviewee mentioned that a significant role of e-procurement is to gather knowledge electronically. ABB uses an e-procurement tool called Supply Chain Management Information Systems, for instance. Using this tool, buyers within ABB can properly trace their internal spend by category, invoice and by region, for instance. Another respondent mentioned that when working exclusively in a

project-based business, e-procurement does not bring any relevant additional benefit. This respondent in addition to another respondent, rather find e-procurement more suitable for companies that are production oriented, when the factory produces some standard products and have a clear list of supplies that are required on a continuous basis. In line with these responses, another interviewee mentioned that using e-procurement tools is useful when considering big projects, if the sub-items are sufficiently known on the market and can easily be procured. On the other hand, e-procurement in the form of email is widely used even in big projects. As mentioned, email is considered as an e-procurement tool in this thesis because Future research should therefore test the findings of this thesis empirically. This example shows how email is used to procure directly from the supplier. One respondent gives an example on how email is used in bigger projects after a supplier has been chosen. At this stage, a requisition is given to a buyer during the procurement execution stage. The buyer must process and check that the requisition is correct according to what was done by the sales department during tender sourcing. The purchase order (PO) is then created based on this requisition and sent to the supplier by email.

6.2 Balance of Power Between ABB and Their Suppliers

One respondent state that business units within ABB are also more or less required to source from some internal suppliers within ABB, even if costs of sourcing from them are higher. Another respondent said that the spend associated with these suppliers is probably 60%, and that internal suppliers offer better quality but are less helpful compared to external suppliers. In these cases, the balance of power will be in favour of the internal supplier because the supplier knows that the buyer within ABB has no choice but to source from the specific supplier. Consequently, it will be difficult to come to an agreement to the buyer's requests regarding length of warranty, for example. The same respondent furtherly stated that business units within ABB have a close relationship with their internal suppliers, but that there are many conflicts in these relationships. There may be long discussions in relation to issues such as late delivery fines or length of warranty. However, the degree of conflict also varies depending on the complexity of the product. If the issue is around pencils, neither the buying nor supplying party usually bothers with long discussions. According to one respondent, internal suppliers may be considered strategic suppliers in terms of Kraljic's portfolio matrix. The balance of power is still on the supplier's side rather than being balanced, however.

As was found in the results, in most cases, ABB has more power than most of their external suppliers. Even if ABB has the power to get a good price offer from their suppliers, they do

this in a reasonable way to act like partners and win the particular project together. This balances the power level between the parties in a way, as they both have a final similar goal.

Furthermore, as ABB is a project-based organisation, one of the interviewees mentioned that the quantities they need from suppliers are less predictable compared to production-based organisations. This makes it more difficult to agree to volume discounts and will in some cases lower ABB's power. According to the same interviewee, ABB uses demand aggregation, however. This involves aggregating ABB's demand for products such as switch gears across different regions to increase leverage related to volume discounts. Thus, demand aggregation involves the use of digital tools to enhance visibility within ABB but is not considered e-procurement.

ABB uses an agreement called terms and conditions of sales with their suppliers. In the opinion of one of the participants, these agreements favour both ABB and the supplier equally; 70% of the time, the supplier will agree to ABB's standard terms and conditions, while in 30% of the cases, there will be deviations from the standard terms and conditions, but the bargaining power is still equally balanced.

Furthermore, one interviewee stated that if ABB has one single supplier of a niche product, collaboration will be the focus in the buyer-supplier relationship to secure continuity of supply. This also means that ABB will focus on supplier development and cost reduction with them, contributing with ABB's own knowledge and competence. According to the interviewee, the balance of power is in favour of the supplier in this case, however. From a purchasing perspective, this is not ideal, as having at least one alternative supplier and leveraging competition between them is more advantageous. On the other hand, the interviewee also mentioned that having the power in favour if the niche supplier is advantageous from a business perspective as they are making a very specific product that satisfies an application and is making a lot of money from it, meaning that the risk of the supplier going out of business is low. Considering this, it can be stated that once again, the co-dependency equilibrates the balance of power between these two parties especially in the case of niche products requirements, as they are having a common goal.

Moving on, ABB is, according to one respondent, in a relatively stronger position than their external suppliers, in most cases. The respondent thinks the reason is that the products ABB is buying, are in a buyer's market. This means that there is an increased supply and/or decreased

demand of the specific products (Ganti, 2021). The respondent furtherly stated that balance of power is also mostly on ABB's side because ABB, being a large and solid customer, is an attractive customer to many suppliers. Furthermore, this respondent also believes that regarding niche businesses, the supplier generally always has more power than the buyer, concluding that the scenario is properly represented by the situation described in the top left corner of Kraljic's purchasing portfolio matrix.

Even if an external supplier is monopolistic, another participant finds that the supplier is generally quite compliant in the buyer-supplier relationship, while the collaboration is working very well. However, despite having the power to ask external suppliers for a good pricing offer, ABB tries to do so in a reasonable way, because both ABB and the supplier want to act like partners and win the project together. This balances the power level between the parties in a way, as they both have a final similar goal.

Another respondent had a similar opinion, stating that the supplier provides products that are very specific, and one thing that the buyer can do, even if it mostly depends on the particular supplier, is to assess the financial performance of the supplier to make sure that the supplier is stable and there is no foreseeable risk of interrupting the continuous supply. Moreover, according to this response, it appears that no buying company likes knowing that the buyer represents more than half of the supplier's revenue, as it would make the supplier too risky. To have enough strength as a buyer, multiple alternatives are needed when it comes to procurement. When referring to the balance of power and how e-procurement can influence it, the same respondent stated that "e-procurement is about knowledge" and using e-procurement to acquire knowledge, the balance of power can be moved in favour of the buyer.

6.3 Buyer-supplier relationships at ABB

When being asked about buyer-supplier relationships, one interviewee mentioned the importance of having a strong relationship, highlighting co-dependency, in a way, and suggesting that a good method to measure the strength of the buyer-supplier relationship is to look at the level of eagerness to help, from both sides even at inconvenient hours.

Another respondent, who also stated that the relationship with the supplier is undoubtedly important, even shared an example of a situation in which ABB had to help the supplier reach global factory standards, while ABB learned to properly assess the supplier before choosing them instead of basing the supplier selection merely on cost, which can have negative consequences.

A second respondent also gave a past example in which ABB and a supplier they have a strong relationship with further developed a product collaboratively. The reason is that the customer who used that product had a problem with it. According to the respondent, this would not have worked if ABB didn't have a strong relationship with this supplier.

Furthermore, the nature and the strength of the buyer-supplier relationships ABB invests in depends on the level of expenses and amount of money spent on the specific supplier. According to one respondent, one of ABB's business units has 114 suppliers in their top 80% spend, while they have about 1000 suppliers in their bottom 20% spend. The suppliers in the top 80% spend are the suppliers that the business unit focuses on supplier development with and focus on developing a strong relationship with.

If the question revolves around a product ABB needs in every project, they will build a stable relationship with suppliers of those products. These products include cabling and switchgears, for example. Most of ABB's spend in relation to these products, is committed to one supplier, while a minor amount of spend will be committed to back-up suppliers. On the other hand, when it comes to solar power systems, for instance, this is not something that a lot of ABB's customers need. ABB will therefore not establish a stable supply base of these products and are not going to build a strong relationship with them.

6.4 Impact of e-procurement on buyer-supplier relationships at ABB

As far as the collaboration between ABB and their supplier is concerned, it seems according to one respondent, that the quality of this relationship have improved a lot due to the benefits given by e-procurement. However, the same respondent also mentioned that there is still a lot of room for improvement, which can be achieved if the company manages to implement a customised tool to meet the needs of both the buyer and supplier. Another respondent, who refers to e-procurement as a platform designed for procuring directly from the supplier, is somewhat in agreement, stating that e-procurement has not given the efficiencies ABB hoped for. ABB is generally far behind regarding e-procurement and has not given any clear improvements regarding better service from suppliers, better communication, collaboration, or prices.

This is also in agreement with an additional interviewee, who stated that in relation to e-auction, ABB's relationships with their suppliers have not been improved because it is meant to acquire a better price. The suppliers will therefore not feel like partners and more distance

will be created. Furthermore, one respondent suggested that by implementing e-procurement tools, complexity would be increased for a supplier, which increases costs for the supplier, because the supplier must now employ someone to fill in and send spreadsheets. In addition, some suppliers are not highly digital, but their products have high quality and low cost. Replacing these with a highly digitalised supplier with all the digital infrastructures is not always the best idea because the highly digitalised supplier will have higher complexity and higher cost. However, according to this respondent, e-procurement works when everything flows automatically, but a factor that can impact the general benefits given by the usage of e-procurement is related to various cultural differences, and miscommunications that can occur due to language barriers. Here, the respondent provided an example of a less optimal collaboration with a supplier from China. To get the maximum benefits of e-procurement, however, both the buyer and supplier must fully understand each other.

An additional respondent implied a similar idea, stating that it is important that the e-procurement tool that is used is not too complex for neither the supplier nor the buyer to use. If a tool requires the user to fulfil more tasks, it may be more difficult for a supplier to keep up with the required tasks, negatively impacting in this manner the buyer-supplier relationship. The respondent provided an e-procurement tool called Fieldglass as an example. According to the respondent, Fieldglass forced communication through a system instead of using email and phone calls, like people were used to. It did not meet the expectations and therefore did not create better collaboration but created more distance between buyer and supplier. ABB Procure is, on the other hand, easy for suppliers to use, because all they need to do is to provide an answer to emails. ABB procure is a digital tool that is used during tender sourcing to manage ABB's sourcing activities. It is used to share project requirements in a more efficient way and records almost all email correspondence with the suppliers. This means that the tool allows the email history of ABB's users to be found. By reading previous email correspondence between a purchaser within ABB and a supplier, users can learn why a supplier was chosen for a previous project, for example, providing thus more transparency that could not be possible in a traditional operating system and therefore also increasing trust between ABB and their suppliers.

Also, another aspect mentioned by one of the respondents, was that in general, if working with a supplier from an emerging market, one has to be very understanding and realise that this supplier is still at the beginning of the journey. Therefore, they are not highly digital and

the cost reduction benefit that comes with this approach must be compensated with the time invested in providing clear guidelines, hence a balance must be found in such cases in order to make this collaboration fruitful.

Moving on to the areas of partnership that were enhanced by e-procurement, one respondent stated that even though he is not personally involved in any procurement activities, he thinks that ABB's buyer-supplier partnerships have been enhanced, based on his colleagues' impressions. Another respondent stated that e-procurement have enhanced ABB's buyer-supplier relationships in the sense that one can receive all the information needed in a timely manner and whenever needed, in addition to increased transparency between buyer and the supplier.

An additional respondent states that ABB Procure speeds up raw data transmission and gives a more efficient way to transmit data than by just using email. The respondent furtherly said that with ABB Procure, for instance, "the intention is to enhance the information transmission, then for sure, they make buyers and suppliers closer to each other"

Furthermore, one interviewee suggests that e-procurement can enhance buyer-supplier partnerships by using the knowledge gathered to collaborate in a meaningful way. This respondent furtherly states that the more knowledge that is gathered, the more information can be shared, which improves a supplier's trust in ABB, and therefore builds a stronger relationship. The knowledge can be used to drive fairness and avoid being greedy during negotiations. If ABB knows that the supplier has gotten increased costs and struggles, it is important to not be greedy and end up sending them out of business. According to the same respondent, e-procurement simplifies processes and frees up resources, which is then used for supplier development, cost reduction and the development of strong relationships, stating that "you're using e-procurement as an enabler to allow your buyers to engage with the suppliers and look at doing things better and a lot of the times, this will mean the buyer going to the supplier and looking at their processes and how we can we optimise their processes to do things better ".

6.5 Information sharing at ABB

One interviewee stated that ABB does not share more information than what is needed with their suppliers, for them to understand the scope and give the most appropriate offer. The less detail that is in a request, the worse the offer will be according to what the needs of ABB are. Another respondent agrees with this, saying that the more information ABB shares, the better

foundation the supplier will have to give a good offer. A third interviewee said that both parties want to share as much as they can to achieve an outcome both parties want. Knowing how much information is enough to share is only learned with knowledge and experience and a buyer needs to determine how much to share based on what they want to achieve. For instance, the mentioned respondent also said that to build a positive buyer-supplier relationship, knowledge sharing with the supplier is done, believing that by giving something to someone, they will give a lot back.

ABB mostly share information electronically or with IT, which is considered a very fundamental communication channel even considering email or automated messages. One respondent estimate that 90% of the information being shared is through IT. Another respondent estimates that during tender sourcing, IT is used for 80% of information sharing. The rest may then be shared in person or through phone calls. However, this scenario is applicable only for the existing suppliers, when it comes to a new supplier, the same respondent mentioned that the approach is quite different. At the beginning the buyer invests more time and tries verbal communication until all the key aspects are set. Afterwards, the buyer slowly introduces ABB Procure and gradually switches the communication channel towards written communication through this tool. At the time, during the corona pandemic, a different interviewee says that information is shared 100% through IT, including phone calls and Skype. A fourth respondent says that everything is electronic and that ABB is 100% electronic in some form or fashion. For example, one of the interviewees said that IT can be used to register suppliers, qualify them, and request purchase orders and invoices. A high degree of communication during a delivery goes through IT systems, where email can be classified as IT because email can be used as a supplier link via information systems.

In relation to bigger issues, the suppliers usually visit ABB's premises very frequently in periods, in addition to every other week or month. Regarding sensitive subjects and difficult issues, information is usually shared in person, or by phone calls if not possible. For indirect products such as office supplies, PC monitors or desks, information sharing in person is not needed. Furthermore, when it comes to new suppliers, IT is not used initially for information sharing. Phone calls could be used to get a better understanding of each other by explaining what each party is doing, what the project ABB is bidding for is about, in addition to explaining the use of ABB Procure to track communication.

Giving suppliers a better understanding of the scope and sharing information in person is therefore important. The reason is that something big and complex requires a higher degree of information richness. Electronic information sharing enables information to be shared faster and with higher precision, but the information richness is reduced. The information richness is not a high priority in simple cases. On the other hand, speed, precision, and richness can be important if something very complex and expensive with several year's delivery time is being installed on a drilling platform that. In this case, a two-week delay could make the whole delivery non-profitable. It will be important to get the information as soon as possible and highly detailed, so a better explanation of what happened can be given to the customer.

6.6 Trust

In one interviewee's opinion, trust is first and foremost impacted by how paranoid someone is, and the experiences ABB has while working with a supplier in terms of honesty, for instance. If a supplier is not telling the truth or is less willing to help, trust decreases. If a supplier takes a lot of initiative and are somewhat proactive with problem solving, it shows that they are service minded and care about ABB.

Furtherly, honesty about delays and following through on an offer are important regarding trust. A bad experience ABB can have with a supplier can be the supplier increasing the prices at a late time because something changed. In relation to invoices, if something is wrong and not according to the purchase order, trust can quickly be lost. The buyer can easily see if they are being invoiced wrongly by doing a few cross-checks with what was ordered and whether something in the order was changed. So, a supplier should be able to deliver what they offered to increase trust. This means that it is important that a supplier can follow up on what is in their quote, such as delivery time. One respondent furthermore said that it is very easy to tell if a supplier is not being honest and will terminate the conversation very quickly and exit that supplier as soon as possible, no matter how long it will take. Furthermore, trust is a very personal issue and can depend on which representative ABB are talking to. One representative can be less trustworthy, while the managing director seems more trustworthy. Therefore, a supplier's trust towards ABB can increase if someone in a senior position joins the in a meeting, because the supplier will feel more appreciated and important.

6.7 Impact of information sharing on trust

Different aspects of information sharing have an impact on the trust ABB has towards their suppliers. The respondents disagree about how ABB sharing more information with their

suppliers than their suppliers are sharing with ABB and opposite will impact ABB's trust toward the particular supplier. One respondent said that if ABB shares more information with their suppliers than their suppliers are sharing with ABB, this will negatively impact their trust towards their supplier. In the opposite case, their trust towards the supplier will increase. If a supplier shares information that ABB was not aware of, or teaches one or more people from ABB something new, that will increase the ABB's trust.

Furthermore, one of the respondents said that an increasing amount of information sharing coming from a supplier shows that the supplier is more dependent on ABB. This will have a positive impact because ABB gets an information advantage. On the other hand, the respondent said that even if ABB shares an increasing amount of information with a supplier, this does not necessarily have a negative impact. It could make ABB more dependent on their supplier. The respondent furtherly explains that the supplier will gain an information advantage, which can hopefully help things go better.

As mentioned, from a sales perspective, the more information ABB shares with their suppliers about a project, the better picture of the specific project the supplier will have and the more appropriate offer they will be able to give. From a purchasing perspective or a procurement execution perspective, it is also not seen as a problem if a supplier is asking for more information. They will also always get the information they are asking for. ABB's trust in their supplier will increase in the sense that they are more confident the supplier understands the needs of ABB and will be able to deliver a good job, so by having a high level of transparency, the suppliers can also understand ABB's business better and can therefore make better offers that are more aligned with ABB's needs. It also goes the other way round, the more information the suppliers are willing to share with ABB, the higher is the level of trust from the buyer. In addition, the risk of surprises decreases, knowing that a supplier has the information they need.

Furthermore, due to non-disclosure agreements (NDAs), some of the respondents might not lose trust towards their suppliers when ABB is sharing more information than their suppliers are sharing. If either party thinks the information that they are sharing is sensitive, they will sign an NDA. Such information can involve technical specifications or the price the supplier has offered. NDAs also makes it possible to be open and honest with a supplier and never lie or openly mislead them.

There are also some specific things a supplier should share information about to increase ABB's trust towards them. The supplier sharing delivery information is important for understanding whether the supplier can stick to their delivery schedule, also in line with the literature mentioned above, regarding the alignment of the expectations and the preference of avoiding unexpected situations. In addition, the supplier should share information about the status of their production capacity, so ABB can be comfortable that they have sufficient capacity to stick to their delivery schedule. These issues are also related to the standard sourcing activities. Therefore, ABB will ask their suppliers about these types of information and their replies will be registered into ABB Procure. Further information suppliers should share is related to supplier qualification, such as health and safety in their factories, regulations, environment policies and ISO certificates.

Suppliers sharing their cost breakdowns is also important. The reason is that by showing the cost components, ABB can be more comfortable that the price offer of the supplier is fair. ABB needs to understand the processes behind that cost. Some suppliers are reluctant to sharing their price breakdown, however, and neither ABB nor their suppliers are interested in sharing information about their costs. Their supplier will not share information about manufacturing costs or profits, for example, and ABB will not trust them even if they did.

Furthermore, suppliers sharing information about ideas and technological advances are important for trust. For this reason, one interviewee mentions that ABB has periodic innovation days or supplier conferences for suppliers to share ideas and technological advances. These generate competitive behaviour, while all the supplier meetings are confidential. The respondent furtherly says that a few of ABB's suppliers also use of webinars for these meetings. Even before the coronavirus pandemic, they started using webinars to present new technologies, to talk about commercials and projects they are doing. The respondents think these webinars has increased ABB's trust because when suppliers used to visit ABB's premises to give seminars, usually only two engineers would turn up. But now, the attendance is about 18-20.

6.8 E-procurement's impact on trust between ABB and their suppliers

One respondent mentioned that the level of trust when sharing information through IT has also increased generally in time. At a certain point, people were reluctant to share a lot of information through email, but as time has passed and people started to trust the use of email, they became more opened to it. Also, when communicating through email with their

suppliers, the buyer can also encounter difficulties in terms of keeping all the conversations up-to-date and sharing information in a timely manner related to all updates and changes.

On the other hand, two respondents agree that IT doesn't have any impact on trust. One saying that sharing information through IT is mostly faceless and neither enhances nor reduces trust, it's relationship neutral, while the other saying that even if information is mostly shared with IT especially during the coronavirus pandemic, this have not had any impact on trust.

One respondent thinks that with the help of the current e-procurement tools, all messages can easily be transmitted to the supplier and all changes are available in the system. This respondent also thinks that ABB procure have improved the trust between ABB and their suppliers all the quotations received back from the suppliers are registered, while the most up to date information is shown both to the supplier to users within ABB.

Furthermore, in the opinion of one respondent, information sharing through IT can also improve trust because it improves reliability, stating that "what is written is via IT", and what is written is more reliable than speaking on the phone without following up the conversation with an email summarising what was talked about. So, IT and electronic information sharing can in some cases improve trust. A different respondent agrees, saying that even when discussions are had in person, certain elements of that discussion must be recorded in written format digitally, after an agreement has been reached.

As a method to improve trust, one interviewee stated that in the case of ABB, as an example, it is important to receive a breakdown of the total acquisition price from the supplier to see that the price is fair. This is usually shared by suppliers in their quotations and will be registered in ABB Procure, but the respondent also estimates that there is an even use of IT-communication and face-to-face communication when the supplier is sharing their price breakdown, but it is somewhat unclear whether sharing this information through IT improves trust. In this case, phone calls or something similar is arranged. Another important aspect in terms of trust is represented by the supplier's ability to meet the deadlines, so the supplier needs to share their delivery information including their delivery schedule. In this way, ABB can see exactly how everything is scheduled and when all the deliveries will take place. In addition to sharing the schedule, the respondent says that ABB also appreciates if the supplier communicates additional information regarding the production capacity and the quantity that

can be produced within a certain time frame. In this way, ABB feels more comfortable and in control, having more trust. Furtherly, gathering information around the supplier's delivery schedule and their production capacity is associated with the standard sourcing activities of ABB, so communication goes through ABB Procure and the information will be registered in ABB Procure as well.

Another aspect that the supplier is encouraged to share especially during the qualification phase, is data regarding certain qualifications such as health and safety, regulations, environment policies and ISO certificates. This aspect was mentioned by two respondents, strengthening therefore the relevance of providing this type of information. In this way, the buyer is more inclined to gain trust in the supplier and become more confident in the products.

In line with these opinions, another respondent stated that the most important thing in terms of trust is alignment between what the supplier is offering and what they are deliver. If the same supplier delivers a product as promised in three different projects, they will be rated highly in future projects. Also, the same respondent mentioned that the buyer is also looking at the supplier's factory standards.

ABB's trust towards their suppliers also depends on how their suppliers share information. The information needs to be shared fast when ABB asks for it. For sales, if ABB needs a quote from a supplier within three days after the RFQ is sent. If the quotes are received late, ABB sometimes must be strict and reject the quote. When quality assessments of a suppliers are done, one respondent says that speed of response is something that is considered. If ABB wants a cost breakdown or their engineers want technical information, the suppliers must have the ability to reply quickly. In this case, they can use IT to share information, and if they are fast, ABB's trust will increase. The speed of information sharing is also a relevant key aspect directly connected with the concept of e-procurement, because if the buyer requires a quote in a particular time frame, then the expectation is to receive it in due time, not to encounter delays from this incipient phase.

On the other hand, there can be some reasons why e-procurement decreases ABB's trust toward their suppliers. In the opinion of one interviewee, only using IT for information sharing would erode trust over time, since it is faceless. Another interviewee agrees, stating that sharing information face-to-face is better for trust because the buyer and supplier get to

know each other well and that a personal relation is established, “which is something that has often gotten in the background with the introduction of e-procurement.” When the phone or face-to-face communication is used, a higher amount along with richer and better information, in addition to a better understanding is acquired. With electronic information sharing, “it is only a statement” and unknown whether a delay is caused by the supplier being talentless or because the road was closed during delivery. When comparing sharing information face-to-face with IT, another respondent has more faith in sharing information face-to-face and believes that sharing information this way improves trust and builds the relationship with the supplier. When the supplier’s trust towards ABB is high, the supplier is more likely to share information with ABB because the relationship is positive. They are more likely to share something you did not know was there. In addition, this respondent thinks that even if sharing information electronically or through IT can improve trust, sharing information face-to-face is better and that there needs to be a balance, saying that “*I appreciate technology has its place, and technology is a wonderful tool, but the moment you forget the real thing is about people, then you lose a lot*”.

In the opinion of another respondent, ABB’s trust in a supplier can decrease if the supplier’s invoice system is bad. For instance, the invoice system of the supplier could be designed in such a way that it does not consider the needs of ABB compared to other customers of the supplier and therefore requires buyers within ABB to send many emails to compensate for the badly designed invoice system. This respondent, however, also thinks that ABB’s trust in their supplier will increase if the supplier has a flexible invoice system that can easily adapt to their different customers.

7. Discussion

In this section, the findings that are relevant to the research questions are compared to the literature. Furtherly, the most relevant findings are critically assessed with counter arguments. The counter arguments are either taken from other findings of this thesis, from the author’s own opinions, or are added from the literature.

7.1 E-procurement’s impact on buyer-supplier relationships at ABB

Croom and Brandon-Jones (2005, 379) report that some of their “respondents reported significant difficulties in clearly identifying process savings”, while only one of their participants could validate savings related to process efficiencies per transaction from e-procurement adoption. This was based on an evaluation of e-procurement implementation and

operation through an 18-month study of multiple organisations. In addition, many of their respondents describe the achievement of internal cost benefits as elusive. This is in line with how one of the findings in this thesis suggests that e-procurement has not given the efficiencies ABB hoped for. The finding suggests that ABB is generally far behind regarding the development and implementation of new e-procurement tools and has therefore not acquired any clear improvements in terms of better service from suppliers, better communication, collaboration, or prices. This agrees with my own opinion that the benefits that e-procurement gives are rarely acquired early after introducing new e-procurement tools, which may be because both the buyer and supplier may need to learn to use the new e-procurement tools.

This finding may also be related to how one respondent suggested that by implementing e-procurement tools, complexity may be increased for a supplier, which increases the supplier's costs, because the supplier must now employ someone to fill in and send spreadsheets, for instance. In addition, some suppliers are not highly digital, but their products have high quality and low cost. Replacing these with a highly digitalized supplier with all the digital infrastructures is not always the best idea because the highly digitalized supplier will have higher complexity and higher cost. An additional respondent implied a similar idea, stating that it is important that the e-procurement tool that is used is not too complex for neither the supplier nor the buyer to use. If a tool requires the user to fulfil more tasks, it may be more difficult for a supplier to keep up with the required tasks, negatively impacting the buyer-supplier relationship in this manner. The respondent provided an e-procurement tool called Fieldglass as an example. According to the respondent, Fieldglass forced communication through a system instead of using email and phone calls, as people were used to. It did not meet the expectations and therefore did not create better collaboration but created more distance between buyer and supplier. These findings are consistent with how Wu et al. (2007, p. 584) state that "E-procurement is a fairly complex reengineering process. It requires organizational readiness for both strategic and tactical applications. Organizational learning abilities in new technology will determine the extent and pace of the e-procurement adoption process". So, in my opinion, the reason why the benefits that e-procurement gives are rarely acquired early after introducing new e-procurement tools may also be because introducing e-procurement increases complexity and there is a need for learning the new e-procurement tools.

Furthermore, one respondent shared that e-procurement may not have given the benefits ABB has hoped for because ABB are required to source from many internal suppliers or vertically integrated suppliers, who seem to be stubborn and difficult to deal with. According to this respondent, the balance of power is in favour of the internal supplier because the supplier knows that the buyer has no choice but to source from them. It is therefore difficult to get the supplier to agree to the buyer's requests in terms of length of warranty, for instance. In the opinion of the author, this suggests that it is difficult to realise the benefits provided by e-procurement if the buyer-supplier relationship is not close and lacks trust, while opportunism in the relationship may be high. This is also somewhat in agreement with Presutti Jr (2003), suggesting that the collaborative potential of the e-design component of an e-procurement strategy has little chance to succeed if the buyer has little history of cross-functional collaboration and early supplier involvement. In the opinion of the author, a buyer that has little history cross-functional collaboration and early supplier involvement may implies that the buyer's buyer-supplier relationships are not close and lacks trust, while opportunism may be high.

Furtherly, one respondent thinks that e-auctions have not improved ABB's relationships because e-auctions are meant to acquire a better price. Another respondent agrees and thinks that when using e-auctions, suppliers therefore does not feel like partners and more distance is be created. In addition, the supplier may feel like they do not see the whole picture of the project understand the scope of the projects they are bidding for, and in addition it also seems to affect the currently existing relationships between the buyer and suppliers. This is consistent with Jap (2003), who suggests that online reverse auctions increase the belief of both new and current suppliers that the buyer is acting opportunistically with the supplier. In my own opinion, this makes sense because e-auctions make the buyer and supplier somewhat anonymous to each other and is only meant to acquire the lowest price. Thus, e-auctions do not enhance the buyer-supplier relationship in terms of improving trust or collaboration, for instance. Furthermore, in my opinion, it seems like e-procurement can impact buyer-supplier relationships in terms of the collaboration between the buyer and supplier and in terms of trust between the buyer and supplier.

According to other findings, e-procurement has improved most of ABB's buyer-supplier partnerships but has a lot of room for improvement. It was furtherly found that ABB Procure speeds up raw data transmission and gives a more efficient way to transmit data than just by

using email. It was furtherly suggested that with ABB Procure, for instance, “the intention is to enhance the information transmission, then for sure, they make buyers and suppliers closer to each other.” This is supported by Chang, Tsai & Hsu (2013), who suggest that e-procurement contributes to supply chain performance through partner relationships, information sharing, and supply chain integration. Thus, based also on the results, it can be stated that e-procurement impacts multiple levels, and implicitly the quality of the collaboration. In my opinion, this implies that e-procurement will eventually improve the quality of the collaboration in buyer-supplier relationships, which will make the buyer-supplier relationships closer, by increasing trust, for instance. On the other hand, Carr and Smeltzer (2002, p. 302) report that “the use of information technology does not appear to help improve the level of trust in buyer-supplier relationships.” Carr and Smeltzer (2002, p. 299) also report that a few of their “interviewees seem to believe that trust may be negatively related to increased information technology use.” This is even though the frequency of interaction between buyers and suppliers increases as information technology increases the ease of communication. This does not agree with how the results show that e-procurement can enhance buyer-supplier partnerships by using the knowledge gathered through e-procurement to collaborate in a meaningful way. The results furtherly suggest that the more knowledge that is gathered, the more information can be shared, which improves a supplier’s trust in ABB and therefore builds a stronger relationship. However, this finding agrees with the idea expressed by Stump and Sriram (1997), namely that IT investments have the potential to enhance the information management capabilities of buyers in addition to transaction processing efficiency, which both can be used to acquire better deals from suppliers and create closer relationships. This agrees with my opinion, which is that e-procurement should be used to gather knowledge while buyers and suppliers should furtherly share this knowledge using e-procurement, for instance, without asking for anything in return to increase trust between each other.

According to the results, e-procurement furtherly simplifies processes and frees up resources, which are then used for supplier development, cost reduction and the development of strong relationships. One of the respondents explained that “you're using e-procurement as an enabler to allow your buyers to engage with the suppliers and look at doing things better and a lot of the times, this will mean the buyer going to the supplier and looking at their processes and how we can we optimise their processes to do things better.“ This is supported by Stump & Sriram (1997), who suggest that the successful implementation of IT investments can

reduce the order processing cycle times of the buying firm and automate many routine procedures, which reduces costs and allows purchasers to carry out vendor evaluation programs and value analyses, build closer relationships with key suppliers, and rationalise their supply bases. In my opinion, this means that both the freed-up resources and knowledge gained through e-procurement should be used together to enhance the buyer-supplier relationship in terms of improving collaboration between both parties. If both the freed-up resources and knowledge is used for supplier development, the supplier's trust toward the buyer may increase as well. However, the literature implies that in cases where a buyer has suppliers who are less flexible, lack organisational readiness and learning abilities in new technology, e-procurement may be hindered from eventually simplifying and freeing up resources (Presutti Jr, 2003, p. 223; Wu et al., 2007, p. 584).

Furthermore, the results show that the knowledge gathered through e-procurement can be used to drive fairness and avoid being greedy during negotiations as well. If the buyer knows that the supplier has gotten increased costs and struggles, it is important to not be greedy and end up sending them out of business. This shows again how knowledge can be used to build stronger buyer-supplier relationships. Furthermore, this finding is somewhat aligned with the first step of the supplier-partnering hierarchy of Liker and Choi (2004). This step involves acquiring an understanding of how a supplier work because the foundations of a partnership can only be created if a firm knows as much about its suppliers as the suppliers know about themselves (Liker & Choi, 2004). This finding is aligned with Liker and Choi (2004) because knowing as much about a supplier as the supplier knows about themself means that the buyer has gathered the necessary knowledge to act as reasonable as possible with the supplier so that the supplier doesn't go out of business, for instance, and thus enhancing the buyer-supplier relationship in terms of the supplier's trust toward the buyer. However, the literature implies that in some cases, it may be difficult to gather knowledge using e-procurement. For instance, Li and Lin (2006, p. 1653) report that "information sharing is impacted positively by top management support, trust in supply chain partners and shared vision between supply chain partners and negatively by supplier uncertainty." This means that suppliers may share less information if there is a low level of top management support, trust in supply chain partners and shared vision between supply chain partners. Furthermore, this shows that sometimes, it may be difficult to gather knowledge if there is a low level of top management support, trust in supply chain partners and a lack of shared vision between supply chain partners. Moving on, the results don't explain in much detail where the knowledge gathered

using e-procurement comes from, so the author of this thesis assumes that sometimes it may come from information sharing between buyers and suppliers. As an example of this, Croom and Brandon-Jones (2007) report an increased level of communication driving knowledge sharing between buyers and suppliers from implementing e-procurement. On the other hand, the results regarding e-procurement's impact on power in buyer-supplier relationships imply that knowledge gathered using e-procurement may also come from market research and information sharing across business units.

7.2 The balance of power between ABB and their suppliers

The interview results also show examples of how the knowledge gathered using e-procurement can increase the power of buyers in buyer-supplier relationships. For instance, the results show that ABB uses an e-procurement tool called Supply Chain Management Information Systems to trace their company-wide spend by category, invoice and by region, for instance. Based on the company-wide spend, it will then be possible to determine whether the buyer or supplier has more power. In my opinion, companies should therefore use e-procurement to collect information about their own business so that this knowledge can be used for leverage in negotiation. This is supported by Presutti Jr (2003), who suggests that e-procurement can also give a significant buying power leverage to the market by allowing more efficient and precise aggregating corporate-wide spending across multiple purchased product areas. In this example, it may be assumed that e-procurement systems can provide an overview of internal spend. In addition, information regarding spend could be obtained through company-wide information sharing information. Therefore, it can be argued again that it may be difficult to gather knowledge company-wide and across business units, if there is a lack of top management support, trust in supply chain partners and shared vision between supply chain partners (Li & Lin, 2006).

In addition, ABB Procure is an example of how knowledge gathered using e-procurement can increase the power of buyers in buyer-supplier relationships. For example, ABB Procure gives negotiation power to suppliers by making all negotiation history available and recording all the best discounts. Buyers within ABB can therefore ask for the same discount from a specific supplier. As an additional example, ABB Procure gives a higher degree of competence as it gives access to information, which allows its users to make better decisions. In my opinion, more e-procurement tools should therefore be developed or optimised to increase competence and collect important decision-making information. This somewhat agrees with Ramkumar

and Jenamani (2012) who suggest that e-procurement providers, such as Ariba, offer services such as spend analysis to buyers, which is a tool that assists buyers to make better decisions much faster, based on market intelligence. ABB Procure records all email correspondence to and from users within ABB. Using ABB Procure, it is therefore in the author's opinion, that information must be shared by suppliers and internally at ABB to increase knowledge and competence and to collect important decision-making information. Therefore, it can be argued again that it may be difficult to gather knowledge from suppliers and across business units if they have a low level of top management support, trust in supply chain partners and a lack of shared vision between supply chain partners. (Li & Lin, 2006).

The interview results also suggest that the knowledge that is gathered using e-procurement is important if the supplier is trying to confuse ABB representatives during negotiations and discussions by providing a high amount of irrelevant information. In addition, the results show that the knowledge may help buyers within ABB to be aware of suppliers lying for different reasons during negotiations. However, during negotiations, ABB must demonstrate that their demands are reasonable by showing that they understand the market, commodity price and the level of spend. This shows that they have the knowledge and are negotiating reasonably and sensibly. Furthermore, the buyer will gain respect and trust from the suppliers and improve the relationship, while it gives the buyer the ability to make better decisions. This aligns with the author's opinion, namely that buyers should use e-procurement to not only collect information within their own business and about their suppliers, but also about market conditions to increase their power in their buyer-supplier relationships and to negotiate reasonably. This may be power in terms of leverage in negotiations or compliance from the supplier, for instance. This agrees with how Croom and Brandon-Jones (2007) report how e-procurement can provide the buying company with real-time control of spending and increased management information and therefore more leverage in buyer-supplier relationships, in addition to more effective purchasing and supplier relationships. Management information may be described as information regarding expenditure, product and service specifications and supplier information, for instance, that can be used in the management of the procurement process. It was also reported that contract compliance had increased using e-procurement, which had given the buyers "greater 'leverage' over suppliers' pricing and improved the accuracy of supplier delivery to order" (Croom & Brandon-Jones, 2007, p. 299). This is also supported by Smart and Harrison (2003, p. 265) who suggest that "reverse auctions have an important role as a price revealing mechanism" and can show "how

costs in an existing relationship have been managed". This is important because, suppliers in long term buyer-supplier relationships may, according to Cousins (1999, p. 153), "be expected to increase prices and decrease service as they realise that they are in dependent relationships, where the behaviour is adversarial." This shows how e-procurement, by using using online reverse auctions, can be used to gather information and knowledge about market conditions and increase the power to reduce prices in long term buyer-supplier relationships.

Speaking of online reverse auctions, the interview results also provide e-auctions as an example of how e-procurement can put the balance of power in favour of the buyer. The reason is that using e-auctions, suppliers will compete to submit the lowest bid, but with the same quality. In my opinion, this means that the buyers have the power during e-auctions because the buyer can get what they want from the suppliers. In the literature study, it was furtherly found that ORAs can increase supply availability (Smart & Harrison, 2003), which can increase leverage in negotiation (Croom & Brandon-Jones, 2007). This somewhat agrees with Cheng, Chen and Mao (2010), who suggest that after the emergence of the e-auction mechanism in 1988, there was a noticeable change in market power from suppliers to buyers. In my opinion, e-auctions also give buyers increased bargaining power because current suppliers may be replaced using e-auctions. In a buyer-supplier relationship, there is also a risk that suppliers may increase their prices higher than the market prices over time, without the buyer knowing (Smart & Harrison, 2003). Using e-auctions, market prices may be revealed, however. In the author's opinion, this also implies that e-procurement can increase buyer power through its knowledge gathering function. In addition, the author thinks that having the ability to conduct e-auctions demonstrates that the buyer is a big and attractive customer, and therefore increases the buyer's power.

7.3 Impact of information sharing using IT on trust

The results indicate that there are a few reasons why information sharing using IT in some cases does not have any impact on trust while it in other cases can improve or decrease trust in ABB's buyer-supplier relationships.

For instance, some of the interview results show that sharing information using IT doesn't enhance or reduce trust because IT is mostly faceless. Some of the findings suggest that IT has not had any impact on trust even though it is used more than face-to-face communication in some of ABB's buyer-supplier relationships. Similarly, Carr and Smeltzer (2002), suggest that there doesn't seem to be a relationship between trust and the use of information

technology. On the other hand, this may be because "it is unclear whether the use of information technology is related to the richness of information shared between buyers and suppliers" (Carr & Smeltzer, 2002, p. 302), in which the richness of information is most important when buyers and suppliers are establishing complex purchase agreements. Moreover, the reason why IT may not have a relationship with trust in some cases may also be because there is less need for face-to-face communication when a relationship enters the commitment stage (Tucker & Jones, 2000). So, in ABB's buyer-supplier relationships where IT is used more than face-to-face communication, it is assumed that some of these relationships have moved past the commitment stage. In my opinion, information sharing is something positive and demonstrates trustworthiness and should therefore increase trust in a buyer-supplier relationship. On the other hand, there may be a lack of information richness related to information sharing using IT, which may cause information sharing through IT to not have any impact on trust, in some cases. In addition, this may be because the lack of face-to-face communication counterbalances the trust that increases through information sharing itself. This may be explained by Ellram (1991), who underlines the importance of face-to-face communication in the development of buyer-supplier relationships. She suggests that contact during the development stage of buyer-supplier relationships should be done face-to-face and by telephone and other electronic media, which will strengthen personal relationships between individuals and between both firms. Furthermore, Ellram (1991) reports that having personal contact at multiple levels seems to accelerate partnership development and will show support and commitment to the relationship. This is in line with how the interview results show that face-to-face communication improves trust and builds the relationship with suppliers more than communicating using e-procurement. Furtherly the results suggest that a higher amount, along with richer and better information, and a better understanding are acquired when communication using phone or face-to-face is used. When electronic information sharing is used, only a statement is given, essentially, and it is unknown whether a delay is caused by the supplier being talentless or because the road was closed during delivery. In my opinion, this explains why a lack of face-to-face communication, may cause information sharing through IT to not have any impact on trust.

Despite that information sharing through IT may not have an impact on trust, some of the interview results also show that IT can build trust by increasing reliability. According to the results, this is because IT increases allows face-to-face conversations to be recorded digitally in written format. In the author's opinion, the use of email communication, for instance,

improves trust between buyers and suppliers because it allows face-to-face communication to be recorded digitally, in written format. Furtherly, the trust between ABB and their suppliers has increased with the use of ABB Procure, for instance. The reason is that ABB Procure registers all the quotations received back from suppliers and allows the most up to date information to be shown both to suppliers and to users within ABB, so reliability increases. This is supported by Dewett and Jones (2001, p. 325), suggesting that IT produces many efficiencies in communication including "the ability to record and index more reliably and inexpensively the context and nature of communication events." However, the interview results suggest that only using IT for communication may erode trust over time, since it is faceless. This agrees with Ryssel et al. (2004, p. 204), who think that "IT carries the danger of impersonalising relationships, which, in turn, could lead to reduced trust, commitment and value-creation." This is in line with the author's opinion that buyer-supplier relationship in which communication only takes place through IT should have lower trust compared to a buyer-supplier relationship in which the parties communicate using both IT and face-to-face communication.

Based on the interview results, online qualification may be considered an example of how sharing information through IT contributes to building trust. When online qualification is carried out, information related to supplier qualification is shared with the buyer through online qualification. The results furtherly suggest that the buyer's trust in the supplier will improve if suppliers are able to qualify themselves. The use of e-procurement for supplier qualification is also argued by Bottani and Rizzi (2005). In my opinion, the use of online qualification also shows an example of how e-procurement can be used for knowledge gathering, while information related to supplier qualification may increase bargaining power, for instance. However, gathering information in relation to online qualification may be difficult if the supplier's trust in the buyer is low. According to Li and Lin (2006, p. 1653), "information sharing is impacted positively by top management support, trust in supply chain partners and shared vision between supply chain partners, and negatively by supplier uncertainty." To increase the supplier's trust in the buyer, however, the buyer may share information with the supplier for free. This may be explained by Eckerd and Hill (2012, p. 241) who state that "the extent to which firms share information with one another provides a signal of "good faith" that their motives and intentions can be trusted". To build supplier's trust in the buyer, the buyer could also actively share high quality information and make it readily available to supply partner, according to Chen et al. (2011). Information availability

refers to what degree that information is readily available and does not need to be solicited or actively shared by a partner.

In addition, online qualification may not always build trust if the IT tool being used is unreliable. The interview results suggest that the buyer's trust in a supplier may decrease if the e-procurement system that a supplier uses to share information is not well designed. This is somewhat supported by Aminah et al. (2018, p.192) who state that "Trust in e-procurement systems plays an important or a more dominant role in improving the perception of good governance by providers of goods/services." However, this does not support that low trust in an e-procurement tool may lead to decreased trust in a supplier, but it may imply that having trust in e-procurement systems is important for improving trust in suppliers. On the other hand, Aminah et al. (2018) agree with how the results show that the buyer's trust in the supplier may increase if the e-procurement system that a supplier uses to share information functions well.

As was shown in the results, suppliers sharing the price breakdown of what they sell is important to improve the buyer's trust in the supplier. This is supported by Smeltzer (1997), who suggests that an unwillingness to discuss price increases can, from a buyer's perspective, erode trust between buyers and suppliers. However, if a supplier acquires a price advantage which can allow them to exceed the price expectations of their buyers, trust will increase if the supplier shares this information and advantage with the buyer without being asked to do so. In the opinion of the author of this thesis, trust should therefore improve when suppliers share their price breakdowns using IT, which is somewhat supported by the results. The results also show that ABB's suppliers share their price breakdowns using IT and that sharing price breakdowns itself is important for building trust. In my opinion, this again shows that e-procurement can be used for knowledge gathering. On the other hand, the interview results only suggest that sharing the price breakdown is important for trust and that ABB's suppliers usually share them using IT. The results do not make it explicitly clear whether sharing the price breakdown through IT improves trust. There is neither found support in the literature saying that sharing the price breakdown using IT improves, reduces, or has no impact on trust. Therefore, it is difficult to say what impact sharing price breakdowns using IT has on trust. This should therefore have been investigated further during the interviews.

The results furtherly suggest that a supplier sharing delivery information is important for the buyer to understand whether the supplier can stick to their delivery schedule and to improve

the buyer's trust in the supplier. In addition, the supplier sharing information about their production capacity is also important for building the buyer's trust in the supplier. Gathering this information is associated with the standard sourcing activities of ABB, so communication goes through ABB Procure and the information will be registered in ABB Procure as well. In the author's opinion, this suggests that the supplier sharing information about their delivery schedule and production capacity using IT improves trust. Another aspect is that the buyer's trust in the supplier may improve if the supplier can show that they are reliable according to their delivery schedules and production capacity. This is somewhat supported by Kwon and Suh (2004) who report that behavioural uncertainty is negatively associated with a firm's trust in its supply chain partner, and that information sharing reduces the degree of uncertainty, which in turn enhances the level of trust. On the other hand, the results do not make it explicitly clear whether sharing this information using IT improves trust. It could also be possible that it has no impact on trust.

As mentioned, sharing technical advances and technology is important to build trust, as suggested by Smeltzer (1997). The results show that it is possible to conduct periodic innovation days or supplier conferences for suppliers to share ideas and technological advances, which have been conducted more and more online. This has improved ABB's trust toward some suppliers, according to only one respondent. From the results, one can therefore not be completely certain whether sharing technological advances using IT improves trust or not, in my opinion.

From the results, it was also found that IT increases the speed of information sharing and that sharing information using IT may therefore sometimes improve trust. In the opinion of the author, a high speed of response should increase the buyer's trust toward the supplier because it shows trustworthiness by demonstrating competency, open communication, and honesty, which is important regarding trust (Smeltzer, 1997). In the author's opinion, trust should therefore increase when sharing information using IT. This somewhat agrees with Ryssel et al. (2004), who suggest that one of the benefits of internal use of IT, among others, is a faster response to customer demands. Utilizing the advantages of internal IT furtherly enables the supplier to give customers high-quality products and services, and ensures timely delivery, which will eventually result in higher customer satisfaction. The supplier demonstrates competence and a willingness to serve the customer's needs. The customer's trust will therefore increase (Ryssel et al., 2004). Therefore, it may be possible to conclude that

information sharing using IT improves trust in buyer-supplier relationships because it increases the speed of information sharing.

8. Conclusion

The purpose of this thesis was to investigate how e-procurement impacts buyer-supplier relationships. To fulfil this purpose, the thesis was based on the following main research question:

How does e-procurement impact buyer supplier relationships?

To help investigate this research question, the following three research questions were formulated based on research gaps found in the literature study:

RQ1: How does e-procurement enhance buyer-supplier relationships?

RQ2: How does e-procurement impact on the balance of power in buyer-supplier relationships?

RQ3: How does information sharing through IT impact trust in buyer-supplier relationships?

There were found three ways in which e-procurement can enhance buyer-supplier relationships. Firstly, e-procurement speeds up raw data transmission and makes buyer-supplier relationships closer because some e-procurement tools are intended to enhance information transmission. Secondly, e-procurement may be used to gather knowledge, which can be shared with the supplier to build stronger buyer-supplier relationships and improve the supplier's trust toward the buyer. Buyers may also use the knowledge to drive fairness and avoid sending suppliers out of business, for instance, and thus improve buyer-supplier relationships. Finally, e-procurement allows resources to be freed up, which enables the development of stronger buyer-supplier relationships. For instance, the resources may be used for supplier development or trying to reduce the supplier's costs.

In terms of e-procurement's impact on the balance of power in buyer-supplier relationships, the results indicate that e-procurement can increase the buyer's power and competence to make the right decisions. This may be done by giving access to information and knowledge through company-wide email correspondence, for instance. In addition, e-procurement may increase power by giving the buyer access to information about market conditions or company-wide spend, for instance. In addition, it was found that e-procurement can increase the power of the buyer through e-auctions. This is because e-auctions increase supply availability and can reveal current market prices (Smart & Harrison, 2003). In addition, e-

auctions increase the buyer's power because suppliers are competing to submit the lowest bid. The collected interview data regarding e-procurement's impact on the balance of power turns out to be very limited, however. It would therefore have been an advantage if further in-depth interviews were conducted focusing on this area.

Regarding the impact of information sharing using IT on trust, the results show that, in some cases, information sharing using IT may not have any impact on trust while it in other cases can improve or decrease trust. The reason why sharing information using IT in some cases do not have an impact on trust may be because it is mostly faceless and may reduce information richness sometimes. The possibility of sometimes reducing information richness along with the lack of face-to-face communication may also be why only communicating using IT may reduce trust over time (Ryssel et al., 2004). Furthermore, a buyer's trust toward the supplier may be reduced if the e-procurement tools that a supplier uses to share information is not well designed. If the e-procurement tools that a supplier uses to share information with the buyer is designed well, on the other hand, the buyer's trust toward the supplier may improve.

A major reason why information sharing using IT may improve trust is that IT increases reliability. This may be by recording and giving access to company-wide email correspondence and recording face-to-face communication digitally, in written format. Moreover, information sharing using IT may improve trust by using online qualification. If suppliers can qualify themselves using online qualification, the buyer's trust in the supplier will improve. This is an example of how IT can be used for knowledge gathering, which may eventually be shared with suppliers to build trust between both parties (Eckerd & Hill, 2012).

The results furtherly indicate that a supplier sharing their price breakdowns and delivery schedule along with information regarding their production capacity and technological advances are important for improving the buyer's trust toward the supplier. The suppliers usually share this information electronically. However, it is unclear whether sharing this information using IT improves trust. It could also be possible that it has no impact on trust, so this should be investigated closer in the future.

It was also found that e-procurement can enhance buyer-supplier relationships by speeding up data transmission and that information sharing using IT may therefore sometimes improve trust (Ryssel et al., 2004). However, there is not enough data nor support from the literature to

conclude that information sharing using IT improves trust through increased speed of information sharing. Therefore, this needs to be investigated in more depth in the future.

8.1 Managerial implications

Several managerial implications can be drawn from this study. The knowledge gathering function of e-procurement is highly important, for instance. To improve trust and build a strong buyer-supplier relationship, the knowledge should be used to collaborate in a positive way and share information with suppliers. In addition, e-procurement should be used to free up resources, which should furtherly be used to improve and build a stronger buyer-supplier relationship through supplier development, for instance. It is also recommended to use IT to share information based on the knowledge gathered through e-procurement with suppliers to show "good will" and build trust (Eckerd & Hill, 2012).

Moreover, managers should ensure that the implementation of e-procurement does not increase complexity too much for the buyer or the supplier as this may increase costs. Some suppliers may be less digital and prefer doing things the old way, so forcing them to use more complex e-procurement tools is not recommended.

Furthermore, to increase the buyer's power in buyer-supplier relationships, e-procurement should be used to gain access to information and knowledge about market conditions or company-wide spend. In addition, e-auctions should also be used, to increase the buyer's power. E-procurement tools should also give its individual users access to company-wide email correspondence to increase the bargaining power of the buying company.

However, it is important to remember that communication through e-procurement may neither improve nor reduce trust or may erode trust if it is the only method of communication that is used because it is mostly faceless. It is therefore recommended to have a balance between sharing information through IT and using Face to face

Moreover, to improve trust, it is important to ensure that the information-sharing function of IT improves reliability. This should be done by facilitating face-to-face conversations to be recorded digitally, in written format, for instance. To build trust using IT, it is also recommended that managers encourage suppliers to share information using IT regarding supplier qualification. It is furtherly important that managers ensure that the e-procurement tools that are being used are well designed and work well, or this may decrease trust.

8.2 Theoretical contributions, limitations, and future research

In terms of theoretical contributions, this research has provided several interesting findings. Compared to the literature, the findings contribute to current literature by showing more specifically how e-procurement may impact buyer-supplier relationships. The findings are by no means exhaustive or conclusive, however. Due to the limited amount of data, this thesis unfortunately cannot give strong empirical answers to the problem statement. Future research should therefore test the findings of this thesis empirically.

Furthermore, in the opinion of the author, the collected data in terms of how e-procurement impacts the balance of power in buyer-supplier relationships is too limited. Future research should therefore investigate this in more depth. Moreover, it is not completely certain how the supplier sharing information regarding their price breakdowns, delivery schedule, production capacity and technological advances using IT impacts trust. Future research should therefore also investigate this in more depth as well. In addition, there is not enough data nor support from the literature to conclude that an improved trust between buyer and suppliers is obtained from an increased speed of information sharing using IT. Future research should therefore also investigate this in more depth.

The problem statement and research questions of this thesis are very broad and does not cover a specific industry, company size, or region, for instance. This may have caused the data to be too broad and limited. This study could only look at a project-based firm within the power and automation industry due to time restrictions. This may have reduced generalisability. The discussion could have compared this industry with industries covered in the literature. On the other hand, future research could compare project-based firms within the power and automation industry with other industries to confirm the findings of this thesis. Future research should also investigate other industries of certain sizes and in certain regions, for instance.

Furthermore, the author did not define “e-procurement” for the first three participants during the qualitative interviews, so these participants may have had different understandings. There was also too little time allocated to some of the interviews. In addition, there was also a lack of interview skills and listening skills on the author’s side. The author should therefore have chosen other data collection methods. These issues may have reduced the needed amount of detail in the responses and given the limited amount of data.

Furthermore, qualitative interviews were the only data collection method that was used and may have been subject to confirmation bias. Future research should therefore include more data collection methods and further in-depth interviews to increase reliability and validity. As mentioned, only five participants were interviewed as most people who were contacted did not respond or did not wish to participate. As mentioned, one solution could have been to ask them to answer a semi-structured questionnaire first, as this does not require as much time and effort from the participants. Once the participants have already invested some time and effort, it could possibly have been easier to get them to agree to participate in the in-depth interviews, in which it would also have been possible to ask follow-up questions and go more in-depth.

9. References

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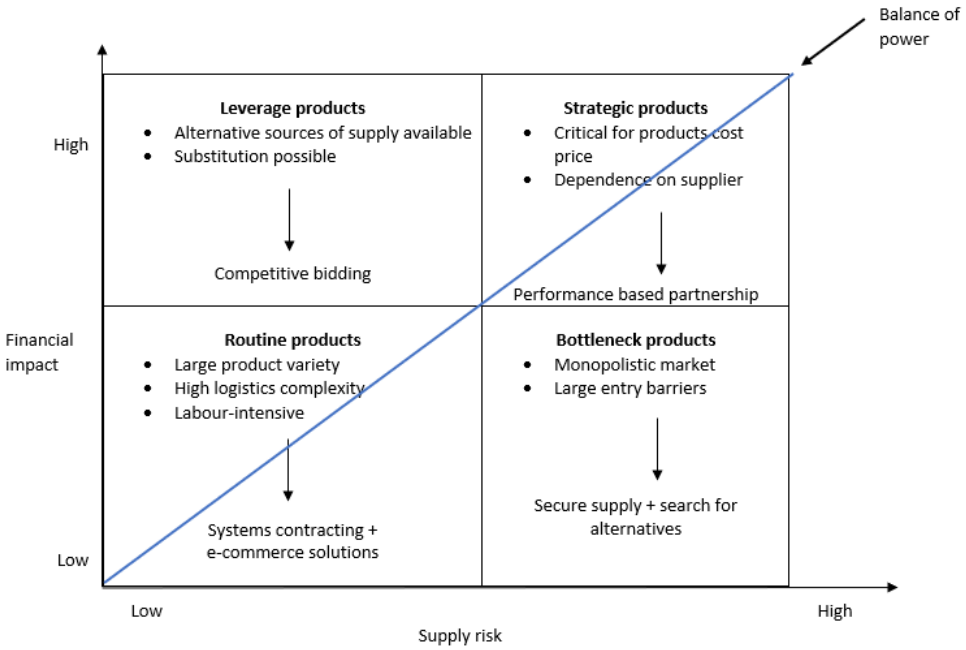
10. Appendix

10.1 Interview guide

Interview guide - the impact of e-procurement on buyer-supplier relationships

Kraljics purchasing portfolio matrix

Kraljic's purchasing portfolio was developed by Peter Kraljic in 1983 to minimize supply vulnerabilities and making the most of buying power as a means of supply management, according to Kraljic (1983). The purchasing portfolio helps the buying firm place its purchased products into four product types and determine the supply strategy depending on the product type. The four product types are based on financial risk and supply risk. Financial impact may involve strategic importance related to the value the product line adds, the cost share of raw material and their impact on profitability. The supply risk can involve supply market's complexity depending on supply scarcity, technology's pace and/or materials substitution, entry barriers, the cost or complexity of logistics, and the conditions of monopoly or oligopoly. The product types consist of routine products (low financial impact, low supply risk) such as steel rods and office supplies, leverage products (high financial impact, low supply risk) like electronic motors and heating oil, strategic products (high financial impact, high supply risk) such as high value components and bottle neck products such as electronic parts (low financial impact, high supply risk) (Kraljic, 1983).



Kraljic's purchasing portfolio matrix

Leverage products can generally be obtained from various suppliers (Caniels & Gelderman, 2005), and gives buying firms the opportunity to utilize its full buying power, through tendering, target pricing and product substitution for example (Gelderman & Van Weele, 2005). Meanwhile, for routine items, each unit have a low value and many alternative suppliers can be found (Caniels & Gelderman, 2005). They're ordered frequently and thus cause high transaction costs. The balance of power in these buyer-supplier relationships is balanced (Caniëls & Gelderman, 2007). Furthermore, bottleneck items have a low financial impact but are vulnerable considering supply (Caniels & Gelderman, 2005). They can cause considerable problems and risks that should be dealt with by volume insurance, supplier control, safety stock and backup plans. Meanwhile, bottleneck items may cause the need to search for alternative suppliers or products (Caniëls & Gelderman, 2007). Finally, strategic items have a high value to the buying firm considering a high financial impact and supply risk (Caniels & Gelderman, 2005), and require a collaborative strategy between the buyer and supplier (Gelderman & Van Weele, 2005).

Introduction

1. What is your role in the company?
2. What education/background do you have?
3. What is your relation to the suppliers?

Q1: How does e-procurement affect the balance of power related the different product types in Kraljic's portfolio matrix?

4. Which of the product types are you involved with (leverage/ routine/bottleneck/strategic products)?
5. How would you describe your relationship with these suppliers?
6. What is your supplier strategy in these relationships?
7. What is the role of e-procurement within these supplier strategies?
    - E-procurement: Any form for technology that enables purchasing using the internet
        - Any software that allows you to communicate with suppliers
            - Email, video meeting
        - Any web platform that allows you to purchase/find suppliers

8. How would you describe the balance of power between ABB and these suppliers? Is this the ideal balance of power for these relationships? What is the ideal balance of power in these relationships?
    - Power: bargaining power, compliance to requests or favours, contract compliance
9. How is e-procurement used to achieve the ideal balance of power?

Q2: What characteristics in existing buyer-supplier partnerships causes e-procurement to enhance them?

10. How has e-procurement enhanced your buyer-supplier partnerships in terms of areas such as collaboration and communication? (results)
11. Has all your partnerships been enhanced by e-procurement? What are the characteristics of the partnerships that has been enhanced by e-procurement?
12. What are the most important elements of the partnerships that allows e-procurement to enhance them?
13. What is the role of e-procurement throughout the development of your buyer-supplier partnerships?
14. How are you using e-procurement to enhance your buyer-supplier partnerships? (steps and methods)

Q3: How is general trust in buyer-supplier relationships affected by information sharing through IT?

15. Does any day to day information sharing occur between you and your suppliers?
16. How does your suppliers sharing more information with you than you are sharing with them impact your general trust in them?
17. How does you sharing more information with your suppliers than your suppliers are sharing with them impact your general trust in them?
18. Is the balance of information sharing between you and your suppliers always equal?
19. How does an increasing amount of information you share with your suppliers impact your general trust in them?
20. How does an increasing amount of information your suppliers share with you impact your general trust in them?

21. Having your most trusted suppliers in mind, how much is IT used for information sharing? (information sharing in person vs IT)
22. Has the amount of information sharing through IT always been this much? If not, how has the change affected trust? Has this always been the case? If not, how has a bigger/smaller role affected trust?
23. What is your view on information sharing through IT and its impact on trust?
24. Regarding trust, what kind of information is the most important that your suppliers provide? How is this information provided? Has this always been the case? If not, how has trust been affected?
25. How does your suppliers share ideas? Has this always been the case? If not, how has the change affected trust?
26. How does your suppliers share cost savings? Has this always been the case? If not, how has the change affected trust?
27. How does your suppliers share technological advances? Has this always been the case? If not, how has the change affected trust?
28. Regarding the degree of trust towards your suppliers, what are the most ideal characteristics of the information shared by your suppliers? What is the most ideal manner of how it's shared? How does information sharing through IT affect these characteristics? How does this affect trust?

10.2 Information letter

Are you interested in taking part in the research project "The Impact of E-procurement on Buyer-Supplier Relationships"?

This is an inquiry about participation in a research project where the main purpose is to *investigate how buyer-supplier relationships are impacted by e-procurement.* In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project
The project is being conducted in relation the master thesis where the purpose is to get a better understanding of how the relationship between the buying firm and its suppliers is affected by eprocurement. The theory around this is limited and through the project, areas that are not covered by the theory will be investigated. The following research questions have therefore been created:

1. How does e-procurement affect the balance of power related the different product types in Kraljic's portfolio matrix?
2. What factors in existing buyer-supplier partnerships causes e-procurement to enhance them?
3. How is trust in buyer-supplier relationships affected by information sharing through IT?

Who is responsible for the research project?
*University of Agder - Department of Working Life and Innovation*is the institution responsible for the project, which is being conducted in cooperation with ABB Group.

Why are you being asked to participate? being conducted in cooperation with ABB Group. You are asked to participate because your role in the company will be able to contribute with useful information for the thesis. Your contact information has been acquired through the contact of the project leader in ABB.

What does participation involve for you?
Participation includes an interview of 60-90 minutes. The interview will be conducted through video meeting. All personal information will be treated confidentially. This includes your role in the company. It is also wished to be taken notes from the interview in addition to using sound recording. Web identifiers such as email and Ip address will not be used in the thesis, but can be collected because the interview will be conducted through video meeting and to facilitate the interview. The questions will revolve around the balance of power between buyer and supplier, buyersupplier partnerships and how they facilitate an enhanced partnership through e-procurement, and how information sharing through IT impacts trust.

Participation is voluntary
Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made

anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data
We will only use your personal data for the purposes specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Only the projects supervisor, Naima Saeed, and master student, Petter Pham, has access to the data collected from the interviews.
Transcriptions and notes from the interviews will be stored at the encrypted OneDrive servers of UiA until the project ends on approximately September 1, 2020. Transcriptions and notes will only be connected to your role in the company.

What will happen to your personal data at the end of the research project?
Transcriptions and notes from the interviews will be deleted when the project ends on approximately September 1, 2020.

Your rights
So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?
We will process your personal data based on your consent.

Based on an agreement with Universitetet of Agder - *Institutt for arbeidsliv og innovasjon*, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?
If you have questions about the project, or want to exercise your rights, contact:

- Universitetet of Agder via Naima Saeed (naima.saeed@uia.no).
- Our Data Protection Officer: Ina Danielsen (ina.danielsen@uia.no)
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely project leader,

Petter Pham

Petter Pham

Consent form

I have received and understood information about the project «the Impact of e-procurement on BuyerSupplier Relationships» and have been given the opportunity to ask questions. I give consent:

 to participate in *interview*

I give consent for my personal data to be processed until the end date of the project, approx. September 1, 2020

- (Signed by participant, date)