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B2B E-COMMERCE: HOW HARD CAN IT BE?

20 challenges related to the B2B buying process

Abstract:

This thesis addresses e-commerce in a B2B context through a participative case study at Ericsson AB. First, a literature review is conducted in which it is argued that previous academic work on B2B e-commerce can be divided into four main topics: consideration, adoption, implementation, and evaluation. E-commerce implementation is subsequently chosen as the main focal point for our empirical analysis as this area has significant practical relevance but has received relatively little academic attention.

The empirical analysis consists of two rounds of interviews. The first round of interviews comprises a pre-study and results in a model to study B2B e-commerce implementation. This model is used during our second round of interviews with six different telecom operators and leads to the identification of twenty challenges related to the B2B buying process. In addition, a new order for e-commerce implementation is proposed in which pre-purchase and post-purchase stages of the buying process are prioritized over ordering. Finally, by relating our findings to previous academic work this thesis leads to theory refinement within the literature on e-commerce consideration, adoption, and implementation and theory refutation and -discovery within the literature on implementation.

KEYWORDS: Business-to-business, e-commerce, buying process, implementation challenges

Authors:

Michiel Janssen, 40478

Robin Aksér, 40477

Supervisor:

Björn Axelsson

Examiner:

Per Andersson

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1. Introduction

Globalization and technological improvements have made customers' alternatives for purchasing goods virtually unlimited. To remain competitive it is crucial for companies to bond with their customers. Especially since producers seem to become less reliant on resellers as they find their way to the end consumer themselves. This puts margins under pressure since customers can buy directly from the producers and have more supplier alternatives (Tsay & Agrawal, 2004). In order to remain attractive to customers and protect margins, firms need to have an efficient sales process (Mahadevan, 2000).

Due to the proliferation of the internet, e-commerce has become a popular choice for companies to improve the sales process (Kalakota & Robinson, 2003). Within Business-to-Consumer (B2C) markets, the number of web shops has skyrocketed in the last decades and e-commerce has proven to be an extremely successful sales channel (Forbes, 2013). In the US alone, the number of B2C web shops with annual revenues of at least \$12 000 was estimated at 103 000 in 2013. This represents a growth of 14% in the number of web shops compared to 2012. Inspired by the success of B2C e-commerce and the expectations this has set amongst consumers, Business-to-Business (B2B) companies are increasingly mimicking B2C practices and exploring e-commerce as a way to improve their sales process (Avanade, 2013).

Within B2B markets, there are mainly five different ways of conducting e-commerce: e-procurement, EDI, web-services, B2B hubs/markets and WWW (Albrecht et al., 2005) and we conclude that the extant literature on B2B e-commerce broadly falls into four categories: consideration, adoption, implementation, and evaluation. The first category is mainly centered on the benefits and disadvantages of e-commerce (Baron et al., 2000; Claycomb et al., 2005; Zhu et al., 2006; Sutton et al., 2008). The second category of articles is centered around factors that influence the adoption of e-commerce (Johnson, 2013; Sila, 2013; Zhu et al., 2005&2006; Teo et al., 2006; Wu et al., 2003; Barua et al., 2004). A careful analysis of these factors will enhance a firm's understanding of what contributes to a successful e-commerce venture and what strategy to pursue. The third category of articles, labelled as implementation, is centered on the processes of change, growth, and integration firms have to go through when executing the chosen e-commerce strategy (Chan & Swatman, 2003; Legner, 2008; Asher, 2007). Finally, the last category of articles is centered on the evaluation

of an e-commerce initiative (Cullen & Taylor, 2009; Hsu et al., 2013; Ratnasingam, 2005; Standing & Lin, 2007). The articles in this category have much overlap with earlier categories as the benefits and critical success factors of e-commerce are used to formulate evaluation criteria.

It seems in many cases to be more complicated to conduct e-commerce within B2B markets, which we believe can partially be explained by the difference between B2B- and B2C market characteristics. In contrast to B2C markets B2B markets are usually characterized by fewer and less homogenous customers, high buying power, more parties involved, close and long-term relationships, a high degree of customization and complexity, and more rational decision making (Jobber & Lancaster, 2006). Insight into the challenges these B2B market characteristics cause is therefore crucial for B2B e-commerce implementation.

1.1 Relevance

We argue that the area of B2B e-commerce is considerably underexposed, with one indicator being that the number of academic publications up to 2014 on B2C e-commerce totaled 10 168 while only 590 academic publications are dedicated to B2B e-commerce (see section 3.1). The lack of academic attention for B2B e-commerce is striking. Especially when considering that B2B e-commerce is becoming a top priority for CEOs (Gartner, 2013) and it is estimated that B2B e-commerce transactions in the US hit \$559 billion in 2013, in comparison to B2C e-commerce's estimated \$252 billion (Forrester, 2014). We therefore believe our thesis to be of both academic and practical relevance. This is strengthened by the fact that our case firm is operating in the telecom industry and traditionally at the forefront of technological improvements and innovation. This makes it likely that other large organizations will face similar challenges sooner or later.

In addition, our literature review to be presented in section 3.2 exposes that there is attention for the benefits of e-commerce as well as the critical success factors. As such, this body of knowledge helps companies with the question why to pursue and what to pursue when it comes to e-commerce. However, the extant literature does not say so much about how to do it. Thus, if a company has already passed the stage of consideration and adoption there is little known about implementation. Although there is a handful of scholars that have touched upon the process of implementing e-commerce in B2B- settings the focus lies on

organizational change leaving implementation issues that surface at the interplay between the seller and buyer largely unexplored.

This thesis addresses this gap by identifying implementation challenges firms stumble by looking at the buying process, an area which seems to be very sparsely studied so far. In doing so, our thesis contributes to the existing body of literature on B2B e-commerce and acknowledges the topic's increasing academic relevance and popularity.

1.2 Research question and scope

In order for B2B markets to unlock the potential of e-commerce and implement e-commerce as a sales channel it is key to understand potential pitfalls and pain points. The purpose of this thesis is twofold. First, we aim to make theoretical contributions. On a general level we aim to contribute to the theory by narrowing the gap between B2C and B2B e-commerce literature. On a specific level we aim to improve the existing B2B e-commerce literature by categorizing the literature and addressing B2B e-commerce implementation. On the other hand, we aim to make practical contributions. First, by identifying challenges within B2B e-commerce implementation and linking them to the B2B buying process, companies know which issues to expect and where to expect them. Second, we aim to answer how companies should implement B2B e-commerce by discussing the implications of the challenges found. The research question is formulated as follows:

“How do the common traits of the B2B buying process affect the implementation of B2B e-commerce?”

The research question will be addressed through a case study at Ericsson AB. This leads to the following delimitations. First of all, the research is conducted in a single industry (telecom) at a large and mature multinational organization. Second, we will study only one type of B2B e-commerce solution (B2B hub/markets) even though five different types have been identified by Albrecht et al. (2005). Despite these delimitations we believe conducting a case study at Ericsson AB presents an interesting and valuable opportunity to study the challenges and increase our understanding of the implementation of e-commerce within a B2B context since their Business Unit Networks is currently implementing an e-commerce solution.

1.3 Structure

The remainder of this thesis is structured as follows. In chapter two, the research method is presented including research design and data collection. Chapter three presents an overview of the extant literature as well as a framework for analysis. In the fourth chapter, the case company is presented and a pre-study is conducted to derive at a final framework for analysis. The remainder of chapter four consists of the main study including a theoretical analysis of the empirical results. In the final chapter, a conclusion and discussion is provided as well as the study's limitations and avenues for future research.

2. Method

2.1 Research design

From our literature review we have found mainly two ways to study B2B e-commerce; contingency-based research and case-based research. The former stream of research, often quantitative in nature, focuses on identifying e-commerce types and strategies. The aim is often to identify factors that contribute to a successful adoption of e-commerce, and as such studies address contextual variables at the organizational level. The latter stream of research, predominantly qualitative in nature, focuses on the dynamics of e-commerce. Namely, the aim is to obtain a profound understanding of the processes related to e-commerce within organizations.

The advantage of contingency research is that it is highly capable of displaying relationships between two phenomena (e.g. management support is positively related to e-commerce adoption, cf. Sila, 2013) and apt to compile advantages and disadvantages of certain e-commerce strategies (e.g. explicit e-commerce strategy leads to higher EVA, cf, Cheng et al., 2007).

However, contingency based-research is less successful in explaining how a favorable relationship between two phenomena can be obtained, and, similarly important, how adverse outcomes can be avoided. Case-based studies on the other hand are much more suitable to address 'how' questions due to the closeness to the study object and the richness of the information that can be subsequently obtained (Chan & Swatman, 2003; Asher, 2007). As this thesis aims to shed more light on the challenges of implementing e-commerce in a B2B setting we have obtained our empirics through a field study in a single organization. Such a qualitative case study approach is well suited to look into processes and therefore matches our problem statement.

We have adopted an understanding of field study research according to which the main task of the researcher is to delve into a phenomenon and to make sense of observations. For this purpose we start with a literature review which results in a framework for our analysis. Our approach can neither be labeled as deductive nor inductive since we do not use our empirics to test hypotheses nor do start with observations and subsequently form hypotheses (Bryman & Bell, 2011). However, our method is still a common approach as we utilize the

extant literature to identify a research gap, prepare for our study and move into the empirical world with a pre-understanding of what has been researched before.

2.2 Data collection

Understanding the challenges of implementing e-commerce requires extensive participant observations and interactions. Although we certainly do not want to claim that we have mastered the total complexity involved in implementing e-commerce in a B2B setting, we do feel we have grasped the main pain points related to B2B buying. This was nurtured by the fact that the opportunity to conduct our research at the case company was combined with an agreement to have weekly feedback meetings spanning recommendations and discussions with the people involved in the implementation of e-commerce.

The field study was conducted over a period of 6 months from December 2013 to May 2014. During 5 months, we spent 5 days per week at the company. Our field study used four of the six sources of evidence identified by Yin (2009); documentation, archive records, interviews and participant-observation. Interviews were set to account for the bulk of the collected data. In addition to being one of the most important methods for case study data collection, interviews are known to potentially generate targeted- and insightful data. Potential interview risks include bias due to poorly articulated questions and responses, inaccurate recall, and reflexivity (Yin, 2009).

In order to avoid the identified interview risks, it was important to consider the relationship interplay between interviewer and interviewee. This relationship is affected by three main variables; the interviewer's personality and skills, the interviewee's attitude and alignment, and how the parties define the situation (Merriam & Nilsson, 1994). Therefore, before interviews were conducted we studied qualitative data collection methods and prerequisites of Yin (2009), Merriam & Nilsson (1994), and Trost (2005). In practice, this meant that we strived for face-to-face meetings even though this required extensive travelling. Also, we met the interviewees at their own offices so they would feel most comfortable. In addition, we tried to avoid asking 'why' questions as this could make them feel attacked. Instead we formulated the questions in other formats (e.g. "can you please elaborate on that" or "how come you choose that"). Finally, we sent our interviewees our findings and results for approval in order to avoid any misunderstandings and/or misinterpretations.

Data collection was restrained by a confidentiality agreement. Interviews were therefore not tape-recorded in order to foster the discussion of sensitive issues. To address this limitation extensive interview notes were taken and results were processed directly after the interview through discussion. In addition, feedback sessions with larger groups of respondents were set up to discuss the development of the implementation of e-commerce. The confidentiality agreement also restrained us from attaching names and roles to the citations used in this thesis. This could have adversely affected our findings as it is hard to distinguish the context of the responses. However, we have tried to limit the downsides of this by discussing citations with Ericsson internally to ensure the answers are not biased by personal roles but representative for the operator as a whole.

For this thesis we conducted two rounds of interviews. The first round of interviews comprised our pre-study and was conducted to refine our analysis- and case scoping models. This was followed by the data collection interviews for the main study. A total of 39 interviewees were included, 14 within the pre-study and 25 within the main study, while the average interview duration was approximately 90 minutes. A complete list of pre-study interviewees and documents studied during the pre-study phase is listed in figures 1 and 2. A description of the main case study participants is given by figure 3.

Figure 1. Summary of pre-study interviewees

Interviewee Role/Title	Quantity
Strategic Product Manager	7
Head of Channel Management	1
E-commerce Program Manager	1
Supply Chain Manager	2
Business Requirement Owner E-commerce	1
Account Manager	1
Contract Manager	1

Figure 2. Studied documents for pre-study

Process Flowcharts	Ericsson Business Process Customer Business Process Ericsson Supply Process - Deliver E2E Low Touch Flow
Strategic Documents	Channel Management eShop/LTF Regional Site Portfolio and SWS Site Supply Strategy

Figure 3. Case study participants

	Number of interviewees	Description	Size	Maturity	ICT Market Penetration
Case A	3	National telecom operator in small western European country	Small	High	High
Case B	2	Global telecom operator with majority of operations in North America	Large	High	High
Case C	10	Group of regional telecom operators in North America	Small	Low	High
Case D	4	International telecom operator with operations in both Europe and the Middle East	Large	High	Low
Case E	4	National telecom operator in the Middle East	Medium	Low	Low
Case F	2	International telecom operator with majority of operations in the Nordics.	Large	High	High

The pre-study interviewees were subject-matter experts from Ericsson AB's central organization on areas such as supply, product portfolio management, contract management, pricing, and IT. The pre-study resulted in a revised version of our analysis model (see section 4.3.2) which can be used to collect data on B2B e-commerce implementation challenges related to the buying process in a structured way.

The main case study participants were identified by use of our case scoping model, which will be presented in section 4.2, and the case study interviews were conducted according to the structure of our revised analysis model.

2.3 Data analysis

The data that has been collected was subsequently analyzed in the following way. First, the raw interview data was collected and divided into the different stages of the buying process (see appendix C1). The data was then coded by us independently to look for patterns and recurrences of issues. We then discussed our individual coding and accepted only shared patterns as immediately relevant and significant to include in our presentation of the findings. Coding only one of us came up with was subject to an intensified discussion to make sure we did not overlook anything nor accepted something without common approval.

The empirical analysis (as we will show in section 4.4) consists of the identification of B2B e-commerce implementation challenges. In addition, we analyzed the value and complexity of addressing these challenges. The value was determined by presenting the challenges to interviewees so they could evaluate how much they expected to gain from a solution of the challenge. The complexity of the challenges became clear during several of our weekly internal meetings with supply, product portfolio management, contract management, pricing, and IT. Unfortunately, the confidentiality agreement restrained us from making the process more transparent. Namely, we were not allowed to report the value and complexity on a challenge specific level as this could reveal the capability gap of Ericsson too obviously. We were however allowed to report them on an aggregate level and therefore do not think the confidentiality agreement has negatively affected the quality of our findings as the aggregate level turned out to be sufficient to address how the characteristics of the B2B buying process affected the implementation of B2B e-commerce.

The analysis of the value of the different stages within the B2B buying process will be presented in section 4.4.7 “evaluation”. Since sections 4.4.1 to 4.4.6 are focused on identifying challenges while 4.4.7 analyses value we realize we are inconsistent in the way we conduct our empirical analysis. However, we decided to deviate from the analysis model to gain practical relevance. The reason for this choice is further discussed in the actual section.

3. Literature review

3.1 Introduction

In order to give a presentation of the relevant literature on B2B e-commerce the best ranked journals within the fields of marketing and strategy have been searched initially using the Business Source Premier Database. In addition, two specialists¹ within the field of marketing and supply chain management were consulted to retrieve a list of expert journals. For the list of journals that rank consistently among the highest within marketing and strategy (Hult et al., 1997; SJR Journal Ranking, 2014) as well as a list of expert journals see appendix A1.

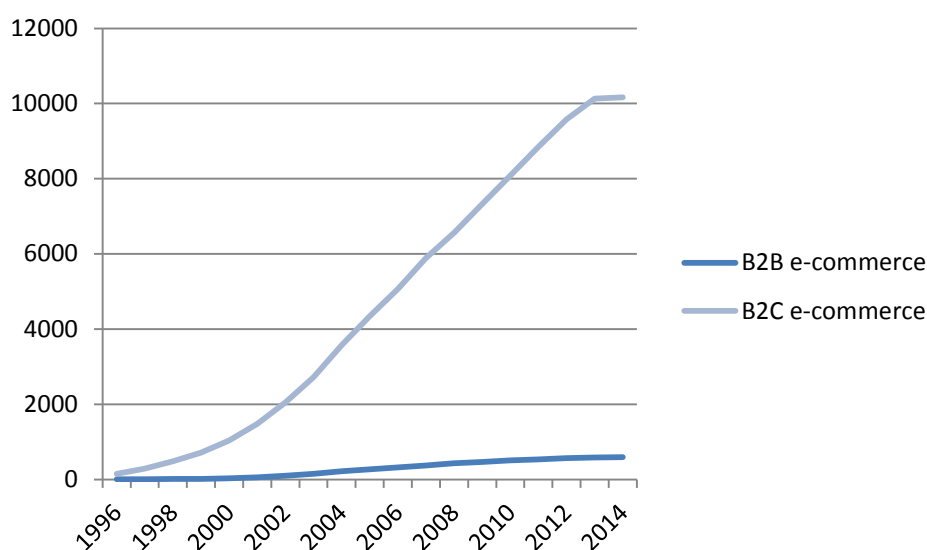
As these journals gave little results the search was expanded by including all marketing and strategy related journals available in the database. Searching the Business Source Premier Database using a combination of the keywords ‘B2B e-commerce’, ‘web-based procurement’, ‘e-procurement’, ‘B2B trends’ and ‘B2B e-commerce implementation’ generated 578 academic articles. After screening the titles a list of 62 articles were deemed relevant for further inspection. After screening the abstracts of these 62 articles 21 articles showed a clear relation to our topic and became part of our literature review (see appendix A4).

The development of research on e-commerce within B2B settings is still in an early stage in comparison to research on e-commerce in B2C settings. To map the evolution of research within these two areas this paper performed a count of the prevalence of certain keywords within all academic journals of the Business Source Premier Database including the journals of appendix A1.

¹ Professors Per Andersson and Björn Axelsson from the Stockholm School of Economics were consulted.

The keywords that have been used to study the academic development of B2B e-commerce are the same as have been used to generate a list of relevant articles. To study the development of B2C e-commerce this paper counted the prevalence of 'B2C e-commerce', 'online retail' and 'internet retail B2C'. Figure 4 shows the number of publications containing the aforementioned keywords over the past 20 years (see appendix A2 for a detailed table). A window of 20 years is desired to capture the development from the very beginning as the widespread proliferation of the internet occurred in the 90's.

Figure 4. Cumulative number of academic publications related to B2B- and B2C e-commerce



It remains clear from these numbers that the area of B2B e-commerce is considerably less exposed to academic study than B2C. The lack of academic attention for B2B e-commerce is striking as it estimated that B2B e-commerce transactions in the US hit \$559 billion in 2013, in comparison to B2C commerce's estimated \$252 billion (Forrester, 2014). Moreover, fuelled by the successes of e-commerce in a B2C context the area of B2B e-commerce seems to becoming increasingly relevant which is illustrated by a count on www.scolar.google.com. The keywords "consumer market e-commerce" generate about 168,000 search findings in total, while the keywords "industrial market e-commerce" decrease the result to about half; 82,000. However, if the search is filtered to only include results after the year 2010, "consumer market e-commerce" and "industrial market e-commerce" generate about 16,400 and 17,100 respectively which goes to show that the popularity of B2B e-commerce is rising. This is also supported by a survey conducted amongst 152 C-level managers in the USA and Canada, in which e-commerce was ranked within the top four of sixteen most

important areas for investments for the next five years for business improvements (Gartner, 2013). Thus, this thesis aims to contribute to the existing body of literature by addressing e-commerce in a B2B setting and acknowledging the increasing relevance and popularity of the topic.

Now we have introduced this chapter by explaining our review approach and pointing out the general development of e-commerce literature it is time to move into the actual review. In the following section we start by defining what e-commerce really means.

3.2 E-commerce

When reviewing the literature on e-commerce, one stumbles across a variety of definitions; (Baron et al., 2000; Kaplan & Sawhney, 2000; Ah-Wong et al., 2001; Standing & Lin, 2007; Wang & Archer, 2007; Cullen et al., 2009). For this case study it was therefore crucial to define what the term 'B2B e-commerce' represents.

To define B2B e-commerce, the terminology of Cullen et al. (2009) was used. Cullen et al. describe e-commerce as a subset of activities under the overarching concept of e-business. While e-business is argued to encompass the conduct of all business activities using electronic means, both within and between firms, e-commerce refers *only* to activities (both internal and external) which support business *between* organizations by the use of electronic systems in exchange of goods, services and/or information. Important to note in this definitions is the emphasis on activities that support inter-organizational business, being either internal or external, and the inclusion of information as a mean of exchange. Together, these two aspects support our research approach to study the entire buying process, and not the ordering stage alone, in order to give a truer picture of the challenges of implementing a B2B e-commerce application.

Now we have established what e-commerce means we continue our review by identifying which overarching themes the extant literature on e-commerce addresses.

3.2.1 E-commerce consideration

A major theme that can be identified within the extant literature is what we call e-commerce consideration. The articles that fall within this topic mostly address the benefits and

drawbacks of e-commerce and as such help to give us an understanding of the implications of e-commerce as a technology.

The benefits of e-commerce are well captured by Claycomb et al. (2005) as they explain that firms incur lower cost of information and improved supply chain management due to automation, increase the potential number of buyers as the restrictions of the physical world are lifted in a virtual world, may reduce transaction costs due to standardization, and improve inventory control as a result of digitization.

Similar to Claycomb et al., Baron et al. (2000) explain that e-commerce represents great benefits due to improved speed of communication, reduced processing costs, and expanded markets. In addition, Baron et al. help us to consider e-commerce by pointing out that the direct procurement processes in most companies have gone through major reengineering efforts in the past decade while the procurement of indirect items has had little attention paid to it². This is an important consideration as the value of indirect orders is generally much smaller than those of direct items whilst the cost of process is roughly the same. This can result in a situation in which an item costs more to order than it does to pay for. Thus, the procurement of these kinds of products is an area where an e-commerce solution can lead to great benefits.

Besides a great deal of benefits e-commerce also has several downsides that one has to attend to. These downsides are related to risks both at a technical- and business level that arise when pursuing an e-commerce solution. Examples of such risks are *making transaction-specific investments* (investments which only carry value within a specific relationship), *information asymmetries*, and a *loss of resource control* (resources cannot be returned if the relationship is terminated) (Sutton et al, 2008).

Risks like these are also touched upon by Zhu et al (2006) in their study on organizations' migration towards open standard systems (away from less open systems such as Electronic Data Interchange (EDI)) for B2B system integration. In a survey-based study involving nine countries, they found that migration towards open-standard systems is caused by organizations' perceived benefits from such systems; such as network effects (scalability).

² Baron et al. (2000) define direct items as items required in the production of an organization's products. Items used in processes that support production are defined as indirect items. Examples of these are maintenance, repair and operations (MRO) items.

However, the study also illustrated that organizations who have already invested in other technologies, such as EDI, suffers switching costs due to path dependency (Zhu et al, 2006).

Thus, considering the potential benefits and drawbacks as pointed out in this section helps firms to assess whether e-commerce is a valuable technology.

3.2.2 E-commerce adoption

Another main topic within the extant literature is that of e-commerce adoption. The articles within this area predominantly use a contingency approach and examine which factors influence whether firms take on the e-commerce technology or not, and the degree to which e-commerce initiatives are used. As such, this stream of literature relates to the literature on e-commerce consideration since the degree to which an e-commerce is used will naturally determine the extent to which benefits are realized and drawbacks occur.

The TOE-framework is commonly used in e-commerce adoption literature (Zhu et al, 2005&2006; Sila, 2013)). The framework categorizes adoption factors as either *technological* (tasks that support business administration and technical skills) *organizational* (organizational readiness and characteristics) or *environmental* (external pressures). Hence, the framework can be used for both identifying success factors (Zhu et al., 2005&2006; Sila, 2013), and inhibitors (Thomson et al, 2006) which makes it a useful tool for analyzing factors which contribute to organizations' adoption, or non-adoption, of B2B e-commerce. TOE-framework characteristics such as technology competence, organization size, competitive pressure and partner readiness, together with specific innovation characteristics; relative advantage, compatibility, costs, and security concern have shown to influence adoption and impact sales, procurement and internal operations.

Zhu et al., 2006 conclude in their study that compatibility is the most influential innovation characteristic on post-adoption usage, and that security concern is a stronger inhibitor than costs. Cross-country analysis among the included survey participants also showed that innovation characteristics, and contextual constraints, had different influence in markets with high- or low information and communications technology (ICT) penetration. Relative advantage seemed to be a stronger influencer in markets with high ICT-penetration rates, while costs, security concern, and competitive pressure were more influential in low ICT-penetration markets.

Johnson (2013) looks into critical success factors for e-commerce within the aerospace and defense, healthcare, higher education and local government industry sectors. A qualitative study comprising 58 interviews with senior executives showed eight factors which turned to be of great importance for the adoption of e-commerce: critical mass, integration issues, value proposition, leadership participation, industry knowledge, revenue model, branding and reputation, and rich content. Whereas the first seven factors are rather self-evident and undisputable, rich content as a critical success factor is far from generally accepted. Namely, some scholars argue that a web-channel has to be as lean as possible to make ordering as easy as possible as there few distractions (Turban et al., 2003). However, Johnson (2013) argues that buyers want an e-commerce solution to provide rich content to reduce information asymmetry and support purchasing decisions. In particular, images of products from multiple angles, so that procurement staff can assess the aesthetics of what they intend to purchase and extensive search functions are most critical for users.

Wu et al. (2003) adds to the B2B e-commerce adoption literature by studying the intensity to which firms adopt their new strategies. They evaluate adoption intensity through four different processes; *communication processes*, *administration processes*, *order-taking processes*, and *procurement processes*, and three different interfaces; *within-firm*, *customer interface*, and *supplier interface*, and combined these two parameters construct an adoption intensity framework (see appendix A3)

The adoption intensity was then evaluated against four performance outcome variables; *efficiency*, *sales performance*, *customer satisfaction*, and *relationship development*. The study found that the overall adoption intensity indeed had effect on these performance outcomes, and the adoption intensity chosen by organizations were influenced by a number of input variables as well.

The most influential input variables were found to be top management emphasis, organizational learning abilities, customer power, customer orientation, and normative pressure from the competitive environment.

The level of communication intensity (level of support for communication processes) had effect on all the included performance outcomes, while administration intensity affected customer satisfaction and relationship development alone. Interestingly to mention is the finding that order-taking intensity and procurement intensity showed to have no effect on any of the included performance outcomes (Wu et al., 2003). Thus, Wu et al. (2003) help

firms with adopting e-commerce by specifying in which areas and through which means e-commerce can be developed. Together these choices determine the intensity of the adoption. In addition, Wu et al. have identified input (independent) variables that influence intensity. Finally, the impact on performance of the different intensity levels is explored.

3.2.3 E-commerce implementation

A third topic within the e-commerce literature is that of e-commerce implementation. This body of research mainly consists of case studies that focus on the process of realizing and executing e-commerce strategies.

Within the implementation literature there is much attention for general organizational and management issues related to change. Chan & Swatman (2003) for example explore the management and business issues related to e-commerce implementation. Understanding e-commerce implementation is an enormous task, due to the complexity of the process. Their study describes the implementation process along three stages: change process, growth process, and integration process. The change process subsequently consists of initiation, system development, changing routines and utilization, and diffusion and expansion. The most crucial part in the change process is the last stage, which involves the diffusion and expansion of the system and which decides whether the initiative is successful. The growth process has to ensure the e-commerce solution becomes mature through add-ons and increased functionality. Finally, firms have to go through an integration process to ensure the system is integrated both within the organization (internal) as at the partner's side (external).

Through a case study of ten major Australian e-commerce initiators evidence is provided that the main challenges during the implementation are threefold. First, technology related issues arose mainly attributed to compatibility and integrations problems as well as a difference in the capabilities of different trading partners which affected the change and integration processes. Second, managerial problems occurred in the sense that e-commerce was perceived as a lower priority than physical channels which mostly affects initiation and utilization within the change process. Finally, business related issues arose due to existing trading relationships and agreements which also inhibited utilization of the e-commerce channel.

In addition, the authors aim to discover whether the B2B e-commerce implementation process in major organizations looks similar across firms. Regardless of the high expectations concerning the use of B2B e-commerce their study highlights that the overarching issue was its relatively slow adoption by almost all case study participants.

Legner (2008) adds to the findings of Chan & Swatman by examining how a B2B e-commerce solution can evolve over time, with multiple release points and development cycles. Through a longitudinal case study, Legner follows ETA SA (a member of the Swatch Group) in their effort to engage with customers in B2B e-commerce relationships. E-commerce engagements are argued to be more complex in B2B markets compared to B2C, both from internal and external perspectives, due to the “trading of sophisticated bundles of good and services in mid- and long-term relationships,” and that organizations might spend up to 40% of its costs on efficient channel management (Legner, 2008). The study results in a recommendation of three stages of e-commerce evolution:

1. First generation e-commerce solution: Provide transaction-related services, such as order entry functionality, through a web-based interface.
2. Service innovation: Extend the e-service portfolio to also include pre- and post-purchase services to cover the entire customer process
3. Channel innovation: Develop complementary channels to support machine-to-machine communication

As such, the three stages of Legner are a further specification of the change and growth process as identified by Chan & Swatman as they give a more detailed specification of how firms can develop an e-commerce solution and make it more mature. In addition, channel innovation is directly related to the integration process of Chan & Swatman as this specifies the issues with system integration. The need to develop complementary channels rises from customer demands (mostly large customers) who complain about double-work in relation to order entry. The lack of system integration causes process inefficiencies in three ways; through manual exchange of product data, manual order capture and order confirmation, and manual dispatch information and invoice transfer (Legner, 2008).

Finally, Asher (2007) provide more insights into the diffusion and expansion phase within Chan & Swatman’s change process by developing a framework for implementing EDI links. Through a case study at an aerospace company the authors provides guidelines for which

type of e-commerce partnership should be pursued by categorizing partners based on volume and complexity of transactions.

The most important finding is that the majority of EDI partnerships at the case company were formed with partners that had a high amount of transactions with low dollar value but high total dollar spent. A low number of high dollar transactions was explained by the need for additional signatures and subsequently a more complex cycle to automate. Thus, choosing partners according to Asher's criteria helps firms to diffuse and expand their e-commerce solution and facilitate the change process. Moreover, choosing the right partner could also help to avoiding problems with external integration.

Together, these articles provide useful insights into e-commerce implementation. However, the processes that are studied are mainly those of organizational change. The challenges that are addressed by these authors are therefore rather general and especially in the case of Chan & Swatman more management and internally related. As such, we believe the literature partly fails to address implementation issues that surface at the interplay between the seller and buyer. As e-commerce is all about improving the interaction between buyer and seller we therefore argue that there is still much to learn on how to implement e-commerce.

3.2.4 E-commerce evaluation

A fourth topic that can be distinguished within the extant literature covers e-commerce evaluation and reflects upon the outcomes of e-commerce.

Standing & Lin (2007) discuss evaluation on an abstract level and point out the constraints and benefits of evaluation. Through a survey on the evaluation practices of 28 Australian companies the study finds a relationship between the constraints on evaluation, use of evaluation methodologies, and system satisfaction. A major constraint on evaluation stems from the fact that many benefits of e-commerce are intangible and cannot be easily evaluated and calculated in monetary terms. This has also implications for firms considering e-commerce and or implementing e-commerce as it is more difficult to gain management support for initiatives for which the monetary gain can sometimes be hard to express. Nevertheless, understanding the benefits has a positive impact on the degree of satisfaction with a system, since stakeholders recognize the value being delivered by their B2B e-

commerce systems. There is evidence suggesting that high levels of satisfaction provide a further rationale to address outstanding constraints on B2B e-commerce evaluation. Those organizations that adopt evaluation practices enter into a cycle of continuous improvement and higher levels of satisfaction. Those that do not adopt evaluation practices find it difficult to identify and understand the benefits from using a system, which results in lower levels of satisfaction.

Cullen & Taylor (2009) discuss evaluation in more practical terms as they aim to determine the success factors for ongoing use of B2B e-commerce systems. Literature on operations, supply chain management (SCM) and information systems (IS) is used to develop a set of candidate factors, which are then examined by quantitative measures.

From their research the authors can identify five success factors for ongoing use; *system quality* (e.g. ease of use, level of standardization and integration) *information quality* (e.g. timely and efficient information flow, level of accuracy, amount of information), *management and use* (e.g. level of management support, relevance to organization's strategy, scope of volumes and values), *world wide web – assurance and empathy* (e.g. display of important legislation, web site association with recognizable bodies), *trust* (e.g. security of system and information, solid agreements in place, existing relationship among partners).

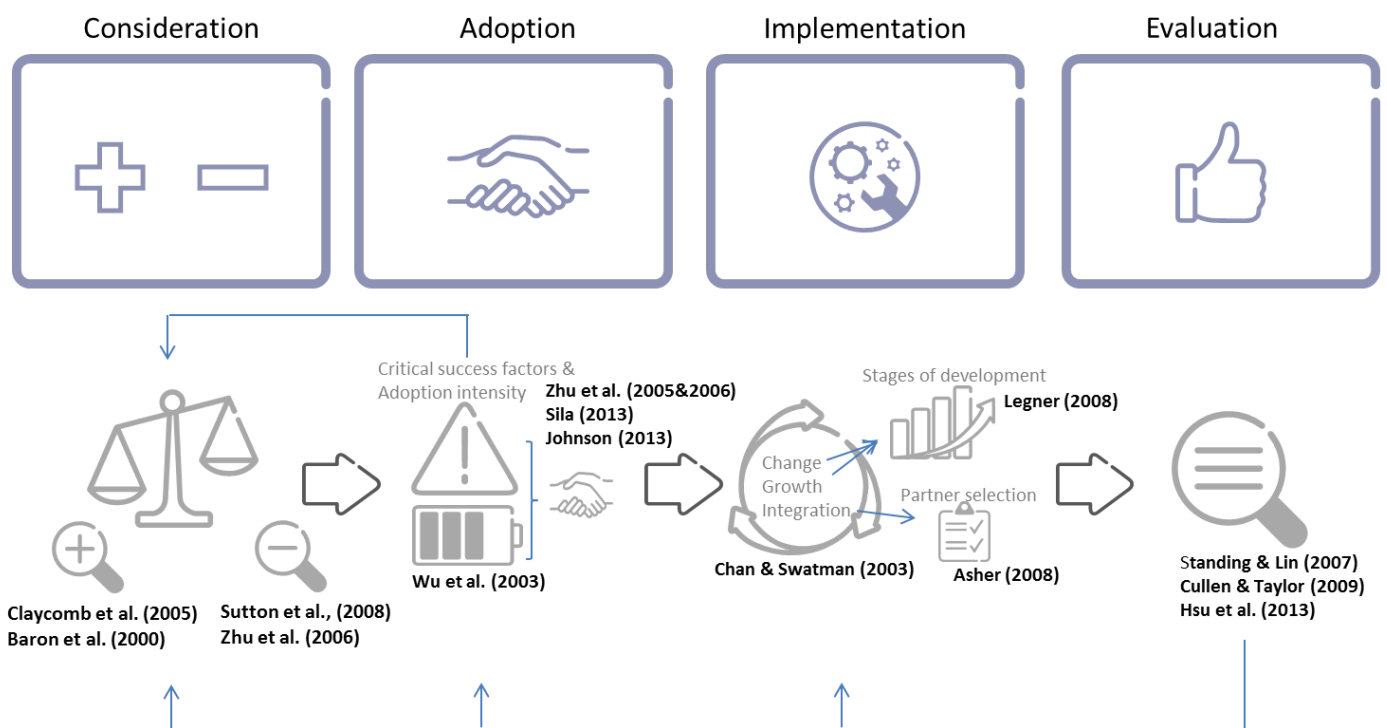
In a quantitative study from 2013, Hsu et al. evaluate if web-site characteristics can have positive influence on customer e-loyalty and positive word-of-mouth (WOM). As such, Hsu et al. zoom into the evaluation of the front-end of an e-commerce solution and specifies system quality and information quality as mentioned by Cullen & Taylor. Simultaneously Hsu et al. specify the fifth success factor of Cullen & Taylor by relating these front-end characteristics to trust. The study is conducted with organizational members of the Market Intelligence Center (MIC) in Taiwan, and got 312 responses. The study showed that five web-site characteristics; *the home page, site design and performance, text content, audio-visual elements*, and *service provider interaction and involvement* had a positive influence on the relationship quality between supplier and customer, or more precise the level of *trust* and *customer satisfaction and commitment*. The trust- and customer satisfaction then had a positive influence on e-loyalty.

3.2.5 Literature Conclusion

Categorizing the literature not only helps us to give a structured overview, but it is also useful for our analysis as it follows the different stages firms that pursue an e-commerce solution go through. Namely, during the consideration stage firms understand *why* e-commerce is an attractive way to improve the sales process. Once the benefits are recognized, firms need to take into account the factors that influence adoption. Next, the question remains *how* one has to proceed once one has actually come to the implementation stage. Finally, firms have to reflect on their venture to assess *if* it has paid off and where improvements are needed.

Our e-evolution model translates our categories into process stages and is presented below. Further, we have summarized and mapped our findings in appendix A4.

Figure 5. The e-evolution model



It remains from this review that there is much attention for the benefits of e-commerce as well as the critical success factors. As such, this body of knowledge helps companies with the question why to pursue and what to pursue when it comes to e-commerce. However, the literature does not say so much about how to do it. Thus, if a company has already passed the stage of consideration and adoption there is little known on implementation. Although

there is a handful of scholars that have touched upon the implementation process, the level (i.e. lack) of detail leaves much questions unanswered. Namely, the articles mainly approach e-commerce implementation from a general organizational change perspective. This means that there is much focus on internal management issues while issues that surface at the interplay between the seller and buyer largely remain unexplored. In order to address this gap this thesis studied e-commerce implementation by looking at the process of industrial buying. The following section presents the framework for analysis.

3.3 Framework for analysis

The purpose of this thesis is to identify B2B e-commerce implementation challenges related to the B2B buying process. Hence our analysis model, and our method for using that model, incorporated elements of both industrial buying (covered by sections 3.3.1-3.3.4) and B2B e-commerce (covered by our literature review). The purpose of our analysis model is to provide a useful tool to in a structured way collect data on B2B e-commerce implementation challenges related to the buying process.

Even though our research focus is on implementation, it is important to recognize that consideration, adoption, and evaluation are still relevant to consider. While Ericsson might be at the implementation stage, customers on the other hand still have to consider using it, possibility adopt it, and evaluate it after use. A successful B2B e-commerce implementation must therefore give support to all of these process stages.

For example, e-commerce consideration discusses benefits of e-commerce (Baron et al., 2000; Claycomb et al., 2005; Balocco et al., 2010) which need to be converted to value argumentations in the implementation stage. E-commerce adoption covers organization- and market-characteristics (Zhu et al, 2005&2006; Thomson et al, 2006; Sila, 2013) which an e-commerce provider can use to identify suitable target customers, and *e-commerce evaluation* describes what customers value when using an e-commerce solution, both on a system level and individual web-site characteristics (Standing & Lin, 2007; Cullen & Taylor, 2009; Hsu, 2013).

The elements of e-commerce consideration, adoption and evaluation were incorporated into our method for using the analysis model, and some also used for case scoping. This is further described in section 3.3.5, 4.2, and 4.3.2.

The following sections on industrial buying will explain the logic behind the analysis model presented in section 3.3.5.

3.3.1 B2B Buying

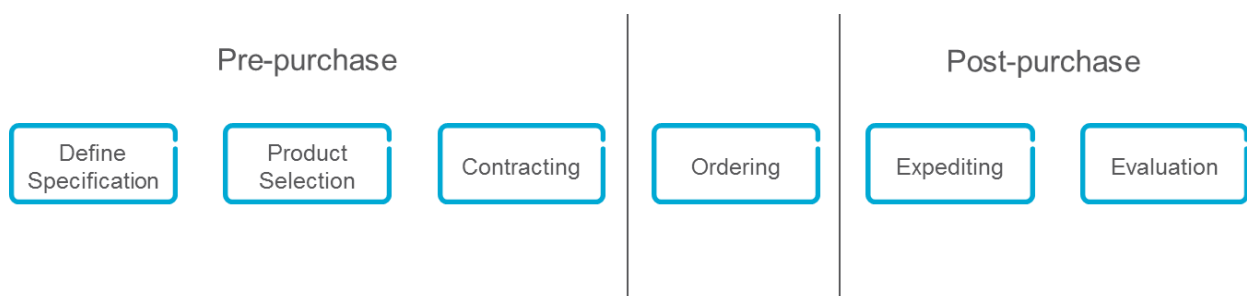
B2B buying is a well-covered topic in academic literature and B2B markets differ from B2C markets in a number of ways (Jobber & Ellis-Chadwick, 1995; Weele, 2005; Kotler & Armstrong, 2010). In contrast to B2C markets B2B markets are usually characterized by fewer and less homogenous customers, high buying power, more parties involved, close and long-term relationships, a high degree of customization and complexity, and more rational decision making. In our case study three perspectives on B2B buying were used to form the analysis model; a process approach, a people approach, and a situational approach. These perspectives will be explained by the following sections and then illustrated by the analysis model (see section 3.3.5).

3.3.2 The process approach

B2B buying is often illustrated as a process consisting of a number of pre-purchase, purchase-point, and post-purchase stages as shown in figure 6 (Weele, 2005; Grönroos, 2007). Although these stages are presented in a sequence it is important to realize that firms do not always go through them in such a structured manner.

Weele (2005) presents a B2B buying process model which is well-established and accepted in academic literature.

Figure 6. The B2B Buying Process



For this thesis we have slightly adapted the definitions used by Weele to our research scope. More specifically, the following additions/alterations have been made:

- *Define Specification* refers to customers' information collection efforts, on top of which purchase decisions and product selections are made (i.e. individual product specifications),
- Select Supplier is replaced with *Product Selection*.
- *Evaluation* refers to evaluation of the e-commerce channel instead of suppliers.

3.3.3 The people approach

Another way to look at B2B buying is to adopt a people approach. An important aspect of B2B buying which sets it apart from B2C buying is that the buying decision is often not made by a single person. Instead the decision is handles by a *decision-making unit* (DMU), also referred to as a *buying center* (Jobber & Ellis-Chadwick, 1995). Possible DMU roles are identified by a number of academic works (Jobber & Ellis-Chadwick, 1995; Weele, 2005; Kotler & Armstrong, 2010) which is summarized by figure 7.

Figure 7. DMU roles in B2B Buying

DMU role	Influence on buying decision	Implications
Initiators	Initiate the purchase process: e.g. maintenance managers	Understanding who the initiator(s) is/are is key to influence the early stages of the buying process.
Users	Use the product: e.g. construction workers	It is important to understand how influential the users of a product (service) are in a particular purchase situation. Users tend to put more emphasis on product functionality and features than other DMU roles.
Deciders	Have the authority to select the product: e.g. production managers	Authority might be both formal and informal, hence accurate determinations of deciders might require in-depth knowledge about a DMU
Influencers	Provide information and add decision criteria throughout the process: e.g. accountants	Since decision criteria can be altered along the process it is important to maintain a hands-on approach; hence staying with the customer throughout the process

Buyers	Have the authority to execute the contractual arrangements: e.g. purchasing officer	Important to notice the difference in authority between <i>executing</i> and <i>selecting</i> the contractual arrangements
Gate-Keepers	Control the flow of information: e.g. secretaries who may allow or prevent access to DMU members, or buyers whose approvals must be sought before a supplier can contact other members of the DMU	Communication channels need to be kept open among the different DMU roles

Critical for this thesis was to analyze how DMU roles and influence changed throughout the buying process, and hence affected the level of complexity of each undertaken process stage. One alteration (as a result of the alteration in the process stage) was made to the DMU roles identified by Jobber & Ellis-Chadwick (1995), Weele, (2005), and Kotler & Armstrong, (2010).

- The *deciders* influence regards authority to select products instead of suppliers/models

3.3.4 The situational approach

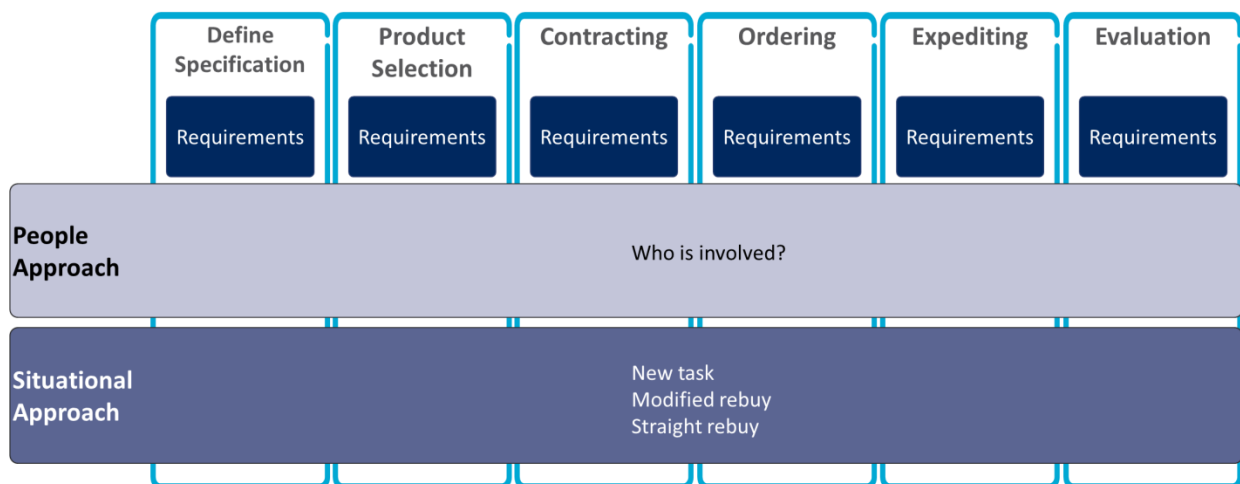
Finally, B2B buying can be approached from a situational perspective. Jobber & Ellis-Chadwick (1995) and Weele (2005) distinguish three general purchase situations; *new-task situation*, *modified rebuy*, and *straight rebuy*. A new-task situation occurs when an organization buys a new product from an unknown supplier. This means that no relevant experience exists; hence uncertainty and perceived risk levels are relatively high. The modified rebuy involves one of two potential situations; either an organization buys a new product from a known supplier, or it buys a known product from an unknown supplier. Modified rebuy situations can occur if some alteration of current supply setups is necessary (e.g. delivery problems) and the uncertainty level for the modified rebuy is lower than for new-task situations. The straight rebuy then occurs when an organization buys a known product from a known supplier. This is the most common buying situation and routine purchasing procedures are often in place. Naturally, this buying situation presents a low level of uncertainty to organizations (Jobber & Ellis-Chadwick, 1995; Weele, 2005).

3.3.5 Analysis Model

The three approaches of the previous sections were combined to construct a first version of our analysis model, which was tested in our pre-study. Given our research question it was suiting to let the process approach form the foundation to the model, and also to be maintained for both data collection and result reporting throughout our thesis.

The people- and situational approaches then complement the model and make sure that aspects like DMU responsibilities and involvement, and purchase situations are analyzed throughout the buying process. As such, the situational approach will analyze the buying process on a *macro* level, by indicating which process stages are undertaken given the purchase situation. A straight rebuy for example normally involves fewer process stages than a new task purchase (Weele, 2005). The people approach on the other hand is used to analyze the buying process on a *micro* level, since it affects the complexity of each undertaken stage. The first version of our analysis model is presented below.

Figure 8. Analysis Model (first version)



As mentioned in section 3.3 we included B2B e-commerce consideration, adoption, and evaluation aspects - which provided the basic structure of the literature review - in our method for using the analysis model; this to enable proper analysis for the requirements related to each stage of the buying process.

Johnson (2013) for example highlights how content levels and different types of information affect buyer satisfaction and purchasing decisions, and our method covered this in the define specification- and product selection stages. Further, Cullen & Taylor (2009) identifies

system standardization and integration as critical for ongoing use, and integration requirements were covered in the ordering stage. Hsu et al. (2013) have determined a number of web-site characteristics to be influential for the relationship quality between supplier and customer. Among those are the level of interaction and involvement from the service provider. Therefore both our pre-purchase and expediting stages covered the topic of customer support. Further, the adoption intensity framework (see appendix A3) was incorporated into our method for analyzing the evaluation stage.

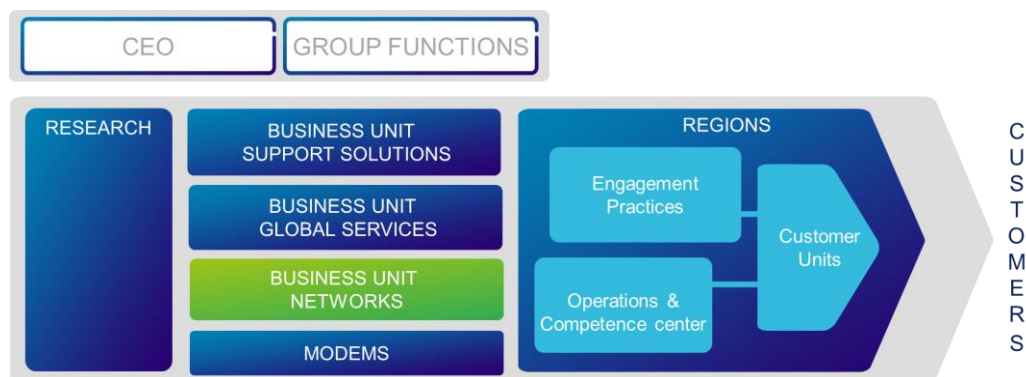
4. Case study

4.1 Introduction

Ericsson AB was founded in 1876 in Stockholm, Sweden, and has grown to today employ over 110,000 people worldwide. The company service customers in over 180 countries, offering communication networks (hardware) together with network services and enablers (hardware and software). Ericsson has earlier also offered consumer goods such as mobile telephones, but has in recent years chosen to redirect its focus on the network aspects of telecommunications, hence engaging in only B2B relationships. Ericsson is the worldwide market leader in the telecommunications industry, in terms of market share, with over 40% of the world's mobile calls passing through its networks. In addition, the company's net sales for 2012 reached 227,8 billion SEK.

Ericsson AB has kept its corporate headquarters located in Sweden, and the company is listed on NASDAQ OMX Stockholm (B-shares also listed on Nasdaq New York). Ericsson's go-to-market organizational structure consists of a Research & Development organization, four Business Units, and ten Market Regions. This thesis will be conducted together with the Business Unit Networks; more specific the Radio product area and the Product Line (PL) Site Products-department within that unit. A visual description of Ericsson's organizational structure, with Business Unit Networks highlighted, can be found below.

Figure 9. Ericsson's Organizational Structure



PL Site Products has previously developed an internal web-based tool (i.e. for Ericsson employees only), called Site Web Shop (SWS). Recently they have decided to make the tool available for external customers as well and the first pilot began in March 2014. SWS is

used primarily in the tendering phase of Ericsson's sales process, and the primary users are Ericsson's solution managers who are to use it when making product selections. Currently over 3,000 Ericsson employees are registered SWS users. The purpose for an external SWS is therefore to increase efficiency in Ericsson's sales process by allowing customers to make their own product selections, and place orders on selected products, directly through the online platform. SWS offers similar functionality as regular consumer web shops such as search functions, related products- and similar product tabs, portfolio filtering, technical and supply information, and the option to build shopping carts. However, since SWS was developed as an internal tool no ordering functionality exists as of today and shopping cart information can only be extracted in Microsoft Excel format.

The initiative to develop SWS was taken as management saw an opportunity to increase the visibility of the site portfolio and gather all vital product information in one place. SWS development has from the start been conducted from an outside-in perspective, and end-users have therefore been much involved in the process. User friendliness and ease-of-use have been key objectives, and the traditional consumer e-commerce offering has served as inspiration.

Parallel to SWS an external e-commerce solution, called eShop, has been developed for another product portfolio. eShop is developed as a pure ordering tool with no (or very limited) product information and portfolio overview. Instead eShop targets customer who already have clear understanding of their needs, and simply desire a call-off tool. A long-term plan to merge the two initiatives exists, but today development and governance is conducted separately.

SWS includes today 1,981 products from Ericsson's global site portfolio. The global portfolio consists of over 5,000 products in total, and products are being transferred into SWS on a regular basis. The goal however is not to include all 5,000 since Ericsson has a long-term plan to reduce the amount of products carried by the global portfolio.

On top of the global portfolio, Ericsson's regional and local market organizations source a number of site products locally. Locally sourced products then make up local portfolios, however the supply flow of these products are not visible to PL Site Products or supply organizations at Business Unit Networks.

4.2 Case scope

Our case study focuses on the external version of SWS, which is currently being piloted. The current external version offer users the same functionalities as the internal version, aside from some information which is kept hidden for privacy reasons.

With its ten market regions, and customers from over 180 countries, Ericsson truly operates on a global scale. Given the time-frame for this case study, it was necessary to make geographical limitations. Still, our cases spanned four different countries and three different continents which together with our case selection criteria ought to have benefited the richness and generalizability of our findings.

The literature on e-commerce adoption (Zhu et al, 2005&2006; Thomson et al, 2006; Sila, 2013) was used to identify three variables, among which case study results were believed to differ. The three variables were *customer size*, *maturity*, and *the level of ICT-penetration of the customer's business market*.

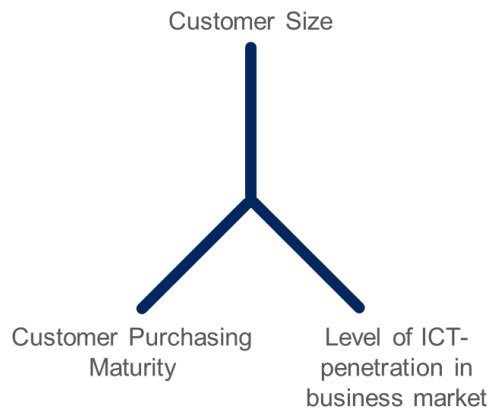
Customer size is identified as an influential factor for B2B e-commerce adoption (Thomson et al, 2006; Sila, 2013) and customer size refers to characteristics such as turnover, size of customer base and market presence. These factors also have potential effect on a customer's purchasing power. The customer's potential purchasing power is believed to have effect on customer requirements in regards of B2B e-commerce, since it has effect on power relations in business-to-business relationships in general.

The level of customer maturity can also be an influential factor, and refers to the level of technical competence and knowhow that is present within the customer's purchasing department (Zhu et al., 2005&2006) . The competence of the purchasing department is considered an influential factor since it affects intra-organizational handoffs and DMU composition throughout the buying process.

The level of ICT-penetration within the customer's business market is considered influential since it has proven to affect what innovation characteristics organizations desire when engaging in e-commerce. For example costs and competitive pressure have significantly higher effect in markets with low ICT-penetration, while potential for relative advantage has more significance in markets with high ICT-penetration (Zhu et al., 2006).

The adoption characteristics identified before were then combined to construct a model for geographical scoping which is presented below.

Figure 10. Case scoping model



Together with the analysis model, presented in section 3.3.5, the case scoping model tested for relevance during the pre-study round of interviews.

4.3 Pre-study

As stated in section 2.2 the first round of interviews were conducted as a pre-study to test the analysis model, but also to increase our understanding of site products and the current sales situation. Pre-study interviewees were subject-matter experts from Ericsson's central organization (Business Unit Networks) on areas such as supply, product portfolio management, contract management, pricing, and IT. The pre-study contributed with four main findings which affected our analysis model and will be discussed in the following section.

4.3.1 Analysis

Adding a Need Recognition process stage

The current analysis model takes its beginning after the need for site products have already been recognized, and is therefore quite passive in nature. Hence it does not take into consideration eventual sales efforts by Ericsson (information push) or any other aspects of how site products initially enter the buying process.

Today external communication regarding the site portfolio is taking place almost exclusively through the customer accounts (CUs). An external product catalog is not visible to customers

unless requested, and even then CUs would have to extract product information from internal systems to generate one. Information regarding the site portfolio can also be found on Ericsson's public web site and extranet portal. This information is however not highlighting individual products or offers, but instead site information at an aggregate level such as value propositions and naming portfolio sub-categories.

Current external communications regarding site products is argued to be quite reactive by Ericsson's Site Supply organization.

"Often customers turn to Ericsson for information regarding site products and pull information from us. Therefore we have little influence regarding product selection."

Exceptions occur when customers trust Ericsson to deliver complete radio solutions, but even then there is often a pre-determined scope regarding what products and suppliers can be used. An e-commerce solution runs similar risk to be reactive in nature; by completely leave portfolio browsing and product information search in the hands of external customers.

"It is important that SWS does not become a call-off tool, but instead an opportunity for us to influence their search behavior and steer them to make better product selections."

Contracting to be considered as a pre-purchase support activity

In the current analysis model contracting holds a fixed position in the buying process. The pre-study however illustrated how the contracting situation varies on a case-by-case basis.

"For some customers with framework agreements in place the contracting process is a prerequisite to even initiate a buying process, while in other cases contracting occurs at later stages.. For some, usually small, customers there are no contracts in place but every purchase initiates a new negotiation process."

Even though multiple guidelines exist, Ericsson has no standardized customer contract formats. Contracts can for example be written for projects, for geographical regions, product categories, or time frames. Therefore terms and conditions might differ according to scope, even though the purchased product remains the same. Contracts also tend to be quite extensive, hence cover a wider product range that is actually ordered. This is due to risk

reduction efforts, both from the customer- and Ericsson side, necessary due to the often protracted contracting process.

“The process might take months to complete..and at the initial phase it is therefore difficult for the customer to commit to specific products and for Ericsson to exactly determine its supply constraints..”

Two types of modified rebuy

Relating to the situational approach in our analysis model, the pre-study further identified two types of modified rebuys; *within* a contract and *outside* a contract. As mentioned in the above section, contracts often cover a wide product scope and are likely to include products that do not get ordered. However, situations occur when customer wishes to purchase a new product that happens to be covered by a contract.

“This is common in situations when framework agreements are written for entire product categories. During such situations there is no need to initiate a new contracting process, however customers can still need support earlier (meaning the pre-purchase stages of the buying process).”

When a customer wishes to purchase products that lay outside of current contracts the situation is different. Ericsson does not have a standardized price list today, neither standard contractual terms and conditions for site products. Therefore every purchase request for a product that is not covered by a contract must be handled manually and conditions must be set, even if the customer in question has conducted plenty of site business with Ericsson in the past.

“It can be a hassle to look up prices and conditions for individual products and it is something people rather not spend their time doing...especially if it is a low-value request. ”

Product scope as a moderating variable

Our pre-study further adds to our model by considering product scope as a moderating variable. It was found that different product categories have different requirements in the pre-purchase and ordering stages.

For example, some site product categories, e.g. antennas and installation material, are often sold as accessories for sales of Radio Base Stations (RBS), while others, e.g. energy- and remote site control solutions have a project sales approach. Also, purchase decisions for the different product categories are not necessarily taken according to the same evaluation criteria, or even by the same people. Customers tend to be less price sensitive for certain categories, such as antennas and energy systems, and the selection process for these categories are more structured and controlled. However, for installation material for example, the customer can even outsource the product selection decision to the authorized service providers (ASPs) who will perform the installation. In these cases however, it is common that customers still maintain some level of control by providing ASPs with pre-determined product lists from which products can be chosen.

“Customers have their own product experts just like Ericsson does, and some larger customers even split responsibilities among individual product categories”

“Some product categories, like antenna- and power systems, require more engineering expertise and performance-related decision criteria are more influential. For other categories they (customers) tend to decide pretty much on price and availability.”

Support for case scoping model

In addition to the previous model alterations our pre-study gave support for our case scoping model, presented in section 4.2. For example, *size* was supported since larger customers have the power to escalate their orders if pressed for time; meaning that orders do not get processed chronologically but instead large customer gets their needs attended to before smaller customers receive their ordered products. Further, maturity as a variable is justified by the contracting process during which customers tend to vary in their technique, competence, and the DMU roles that are included.

“The more mature customers are. the tougher it gets during negotiations as they have higher requirements on information and service levels..”

After receiving this support from our pre-study interviews, the case scoping model was used to identify the six case study participants to be included in the second interview round. The case study participants are described in figure 3 in section 2.2.

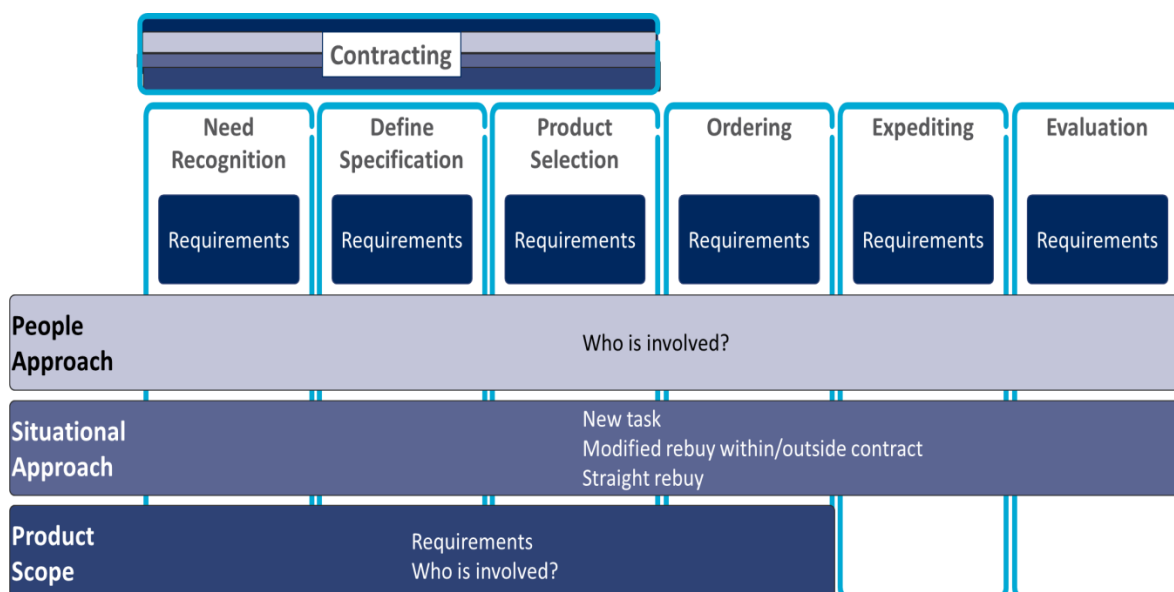
4.3.2 Analysis Model (Revised)

As stated in section 3.3, the purpose of our analysis model is to provide a useful tool to collect data on B2B e-commerce implementation challenges related to the buying process in a structured way. However, after completing the first round of interviews it became clear that our initial model must be revised before it could be used. More specifically, the pre-study interviews led to the following additions/alterations:

- A *Need Recognition* stage was added at the very beginning of the buying process, focusing on how needs for individual products arise, and supplier participation in product development- and investment projects will be covered by the need recognition process
- *Contracting* was considered to be a support pre-purchase activity, but will continue to be analyzed with the same structure as the other process stages
- The *situational approach* includes two types of modified rebuy
- *Product scope* was added as a moderating variable for pre-purchase and ordering requirements.

The revised version of our analysis model is presented in figure 11, and appendix B is dedicated to further illustrate how our analysis method and model were used during our case study interviews.

Figure 11. – Analysis model (revised version)



The B2Be-commerce consideration, adoption, and evaluation aspects that were included in our analysis method proved beneficial during our interview discussions. However discussion regarding specific requirements on web-site characteristics tended to be quite abstract and vague at times. This was unfortunate since Hsu et al. (2013) identify characteristics such as home page, site design and performance, text content, and audio-visual elements to be crucial for relationship quality between supplier and customer. This pre-study issue was addressed by adding mock-ups and a demonstration of SWS to our interview method (see appendix B4).

The expansion of the buying process to include a need recognition stage is in line with Grönroos' (2007) purchasing model, and our method for analyzing this stage will be inspired by Legner 's (2008) claim that B2B markets are characterized by "the trading of sophisticated bundles of goods and services in mid- and long-term relationships.

For a more detailed description of how our analysis method and model were used during our case study interviews, see Appendix B.

4.4 Empirical analysis main study

The results from the main case study will be presented and analyzed according to structure of the analysis model, i.e. the buying process. The results are reported in three ways; through an in-depth analysis covered by sections 4.4.1-4.4.8, a condensed summary in appendix C1, and as process flowcharts in appendix C2-C4. The process flowcharts have been modified from their original versions to be in compliance with the non-disclosure agreement under which this thesis has been conducted. Therefore the flowcharts do not illustrate precise process flows, but instead illustrate three main points;

- In case A and C the process involves relatively few people
- In cases B,D, and E the process is governed by both central and regional organizations
- In case F the process involves inter-organizational handoffs

4.4.1 Need recognition

As a starting point, there is generally low interest for site products. The main reason for the lack of interest from Ericsson today is that the presales process is extremely long while the dollar value is very low.

"We have the same lengthy processes for products that cost say \$100 dollars as products that cost \$ 20 000. So we rather focus our energy and time on those products (meaning the latter ones)."

The lengthy presales process is mainly caused by an inefficient way of communicating between Ericsson and the customer.

"The exchange of emails can span several weeks.. For example, when the customer sends a question about the availability of certain products and the way they should be configured.. The information needed to answer these questions is dispersed across the organization and involves several departments.. That's why this pre-sales processes is so long.. Especially when several adjustments have to be made or if the customers changes its configuration along the way.."

From the customer side, the interest in the site portfolio is generally low for five of the six customers because the need for site products is generally recognized in relation to other products like RBS or bought as part of a larger package.

"One could compare the existing situation with the way people buy mobile phones today: the interest in the phone charger is minimal and only related to the purchase of the main unit."

Only Case C differs from the others as they place many stand-alone orders. This can be explained by the maturity of this customer. Whereas the others plan their site orders well ahead and in relation to the roll-out and construction of new sites the buying behavior of Case C is much more ad-hoc. The lower maturity of this customer also sounds through in the following quote:

"..We basically start to order site-products when we realize we run out of stock.."

Another reason for the general low interest in individual site products can be the result of having a full service contract with Ericsson. For example, in the case of Case E the customer specifies the performance it needs from the network after which Ericsson takes care of the complete configuration including choice of site products.

“They call us with questions like: we need a rooftop site in 3 months over there or now we need to have 4G in these areas by 2015.. Then it is fully up to us to make sure this is delivered.. The customer outsources almost all responsibility for the configuration and selection of products..”

The low interest represents a challenge for SWS as this means that the new sales channel needs to be heavily promoted. A common reason to adopt an e-commerce strategy is that it automates processes and therefore reduces time and resources for the company. However, due to the current low interest Ericsson cannot simply sit back and expect that the customer is going to use it. It will require many investments before an active approach can be left for a passive approach which e-commerce basically is.

Another challenge is fuelled by the fact that for Case A, B, D and F in our case study, the need recognition for site products is steered by a predefined scope. This means that the customer configures a list of products that can be considered for building a site. Products that fall out of this menu cannot be bought, at least not without extra consideration. The reason for having a predetermined list is to keep the amount of products within a reasonable range.

“The number of sites a telecom operator runs can easily amount to several hundreds if not thousands and therefore it is important to use the same products across sites as much as possible to reduce complexity and be as lean as possible.”

Having a predetermined scope has severe implications for B2B e-commerce in general and Ericsson's SWS in particular. Namely, in order to be of relevance for the customer there is a need to have the option to browse through the customer's menu or at least be able to see which products belong to the predetermined list and which not. With a product portfolio of several thousand products it would otherwise be very difficult to figure out which products the customer possibly needs and which not. This requires customization for each and every customer which is a costly and timely process. The one-size fits all approach of which B2C e-shops heavily benefit is thus not possible in this B2B case.

Another issue has to do with the great amount of people that are involved, even within this early stage. This especially holds for large operators like Case B, Case D, and Case F as the organizations are split into a national and regional level (see appendix C3).

“The national level is responsible for configuring a product menu that is subsequently spread across the whole organization including the regions. However, the regions have a great influence on the specification of this menu as they know their specific environment and the constraints this put on the products best.”

With so many people involved it is hard to determine who the user of SWS really is. Not knowing the audience makes it particularly difficult to design a sharp value proposition. Even if all the different kind of users can be identified the problem for e-commerce still remains, that is, to be able to address all users equally well with one homepage. Also, there is a challenge with customer satisfaction when so many people are involved in the buying process. For example, a user of SWS –the person that actually goes into SWS and browses– can be extremely satisfied with the user interface and experience on the website. However, this satisfaction might not always be passed on to the next person in the chain.

“The question is how much of my satisfaction is passed on to the person who sits on the money. Compare it with Chinese whispers.. You know the game where you whisper a message to the next person in line who then whispers it to the next person in line and so forth. In the end, the message always gets twisted. What I’m saying is that you have to be aware of the implications if the user is not the same person as the buyer. Both have to be satisfied with the e-commerce solution.. You won’t have this problem within B2C e-commerce you know.. The only person who might get in the way if I want to buy something is my wife..”

4.4.2 Define specification

When it comes to the define specification stage the challenges for e-commerce are centered around pricing and the level of detail of technical- and reference information.

When customers enter SWS they expect to see prices, especially if they want to be able to order in a later stage. However, historically Ericsson has had different prices for each customer. This means that a one-size fits all approach in which every customer sees the same price information is not desirable.

“Sometimes, depending on the contract with the customer, we have different prices due to for example volume discounts. Therefore we cannot suddenly show a price in

SWS that is lower than what the customer paid before... Then they will certainly get angry and start to complain they paid too much in the past and demand a refund.”

Thus, due to the different contracts and historical purchases Ericsson has to have a unique pricelist for each individual customer which requires a lot of customization. Another issue related to this is that Ericsson is not used to invoice customers on an individual product level but on an aggregate level. Finally, prices are a hot potato as not everyone should be able to see them in SWS. As pointed out before, within each customer organization there is a great amount of different users and some of them do not or should not have the authority level to see them. For example, customers work with authorized service providers (ASPs) when building sites.

“When ASPs are involved it means that an operator or Ericsson outsources the actual construction of a site to a third party.. This ASP should be able to see all the technical information in order to select the right products for the job but should never be able to see the prices to not disturb market dynamics... Namely, ASPs work for several operators, possibly even at the same time.. and these operators can have different prices..”

In addition to prices, customers need technical information in this stage. However, customers have very different maturity levels. For example, Case B and Case D have their own product specialists while Case A and Case E are much more immature and therefore rely on Ericsson’s product expertise. Having so differing types of customers makes it difficult to decide on the right service level, that is, how much information do we have to provide to satisfy all customers? Too much information will make SWS unnecessarily heavy for the mature users while too little information will make SWS unusable for the immature users. Because customization would be very costly keeping both types of users satisfied is a challenging task.

Finally, providing reference information is a challenge. Within B2C e-commerce people rate and share freely what they bought and whether they are satisfied with the product or not. However, within B2B e-commerce this is problematic. Due to the heavy competition between operators they are not at all willing to share which products they use in their networks. Another problem to create a valuable review platform is the low number of

customers in comparison to B2C e-commerce. Building a proper review platform is reliant on network effects (i.e. the more people use it the more valuable it gets cf. Eisenmann et al., 2006) which are virtually absent. Especially when taking into consideration that the performance of the products is very context bounded for all six operators.

“A product could work extremely well and leading to great network performance in rural areas but fail to work in high-density areas.. Because a site is so specific due to its environment it does not give so much to read about specific reviews”

“Different countries have different governmental regulations on telephone networks. For example, here in our country we have to design our sites to limit human exposure to electromagnetic fields. This makes our configuration completely different from countries which do not have such regulations..”

Moreover, the lack of control and the danger of negative reviews is a serious challenge. One could argue that this also holds for B2C e-commerce but the risk of one bad review is much bigger in B2B due to low number of customers and the values that are at stake.

“If Amazon loses one customer due to a bad review it is a pity but it won’t harm bottom line.. If we are to lose one customer the effects are substantial..”

4.4.3 Product selection

Within product selection two main issues surfaced. The first one arises because of the different product categories. In SWS, nine different categories exist. Because some of the product categories are more complex than others, Case B, Case D, and Case F have designated category specialists. As such, this challenge mostly applies to the large sized customers in our study as the category specialists increase the number of users even further. This makes it even more difficult whom to address. Also, the selection criteria differs across categories and this means that the value argumentation has to differ accordingly. Again, one size does not fit all.

“Because antennas have such a high impact on network performance we have very specific requirements for them. It has to be exactly right in order to work in the specific environment of the site. In contrast, we don’t care so much about cables. They simply have to be the right length and fit”

The second challenge for e-commerce arises because of the differing strategies and behavior between operators. For Case C, order history, availability and speed were the most important selection criteria. For Case E this turned out to be supplier knowledge and responsibility whereas for Case A it was product performance and quality. For Case D, price and lead time were crucial whereas Case B was mainly concerned about lead time alone. Although some operators had somewhat similar criteria it remains that there are differences in priorities making it very difficult to use one and the same sales pitch for each customer. This is a challenge for e-commerce as it is a relatively static sales channel in comparison to face-to-face interactions in which it is much easier to adjust the tone and have a nuanced sales pitch.

4.4.4 Contracting

Active framework agreements are found to be in place for site products in all six cases, and can be a potential issue since neither a standardized format nor scope for contracting has been identified. Framework agreements can be composed on project-basis, for specific time periods, or for a certain geographical region. As mentioned before, in the Case E case site products are even governed by a service contract implying the Ericsson has the sole responsibility to identify suitable site products to include in the order packages.

The customer-specific contracts cause terms and conditions, such as prices and delivery times, to differ on a case-by-case basis. An e-commerce solution must therefore either be customized to suit individual contract requirements, or amend those contracts. Price customization can be achieved through extensive maintenance and updating of e-commerce price lists, but supply aspects are even more complex since they would require customized supply setups. Today, such supply customization is achieved with a single supply setup but with manual supply planning.

Case B, D, E, and F do not order site products that are outside of the framework agreement. For these cases it is therefore important to customize the e-commerce solution in order for it to be considered a relevant tool.

“Case B is only interested in buying products that have been tested and approved by its own experts and development teams. Therefore we would need to see which products within SWS are orderable for us”

4.4.5 Ordering

Eight main issues are identified in relation to the ordering stage. First, in four of our cases, site products are always ordered together with other product categories as part of a larger package. If this buying behavior is to be supported, an e-commerce solution would therefore have to include the complete scope of desired products, which SWS currently does not. Since other product categories are managed by other product lines within Ericsson, the SWS development team has no formal authority or claim to those products. Hence growing the e-commerce orderable product scope would require cross-functional collaboration.

The fact that orders are most often planned and products are ordered in bulk proposes another issue. Case B and Case D tend to plan orders for specific time periods.

“For example, they could call and ask: we need 500 of product x within the next three months..”

Case E and Case A on the other hand group orders site-by-site. During our interviews, only Case C expressed that smaller and more frequent orders on site products, even individual categories such as a “cable-order” occur. Planned bulk orders are not to be delivered with a single delivery, and neither at a single delivery address, and Ericsson must therefore, through manual order processing, plan the delivery dates and addresses to suit customer needs and requirements. The e-commerce challenge related to this issue is therefore either to automate the manual order processing and planning, or disregard it and develop a less in-depth (more transactional) type service.

Related to the issue with Ericsson’s manual order processing is the challenge of calculating the transportation cost for a specific order. If transportation is to be included in the final price paid by customers, it must be given before the ordering point. This requirement is related to accounting entries at the customer side.

“I must know the total price including transportation costs before placing an order. Not for my own sake, but our internal processes dictate it and our financial department would terminate the order otherwise”

Since site products can be quite large and heavy, and the fact that it is often consolidated with other products before final delivery, transportation planning can be complex.

Transportation planning aims to reduce the transportation cost, and could include; deciding which distribution center and warehouses to use, means of conveyance, and consolidating points. If ordering is to be handled by an e-commerce solution alone, transportation costs must therefore be excluded, covered by standard fees, or calculated automatically. Since transportation of site products can be quite expensive, and that transportation planning is complex, the first two options are questionable from a commercial point of view and the latter would require advanced technical development.

“Today Ericsson’s suppliers and warehouses are connected to four global distribution centers, and which to use for a particular shipment affects for example supply chain costs and customs.”

A common trait within the ordering stage in all six cases is to reduce the workload related to ordering. Customers wish to increase their ordering efficiency, and avoid any double-work. Orders are therefore in all six cases first placed in internal ordering systems, and therefore transmitted to Ericsson either through e-mail or EDI links. This common trait proposes a challenge since if a customer was to place orders through a supplier’s e-commerce solution, in our case study SWS, it must not increase the ordering workload. Without B2B system integration SWS would require customers to place order both in the tool and in their internal ordering system, and the workload would increase. In all of our six cases the topic of B2B system integration was discussed and expressed to be a requirement for e-commerce ordering to avoid double order entries.

“My customer refuses to do anything twice, so any manual order processing has to be conducted on our end.”

Another issue, identified in all six cases, is DMU responsibility handoffs from the pre-purchase stages to the ordering stage. Orders are assembled and transmitted by a purchasing role and decision making roles from previous steps are transformed to influencers or excluded from the process. For Case C and Case A, the DMU is more limited due to the smaller organizational size and early authority roles still have strong influence. The organizations of the Cases B, D, F, and E are all split into central and regional levels, and ordering responsibility can be handed to both depending on the order scope. The Case F

case even includes an intra-organizational handoff since ASPs are part of the DMU in the product selection stage (described in Appendix C4).

In addition, order approvals have been found necessary in all six cases. E-commerce ordering must therefore support the above mentioned handoffs since the person who composes the shopping cart in SWS is most likely not the same person who has the authority to push the ordering button.

The seventh issue related to ordering is the shift in responsibility it implies. Today, customers issue purchase orders which are converted and processed by Ericsson employees who then send confirmation to customers, hence the responsibility for wrongful conversions is carried by Ericsson. The challenge for an e-commerce solution is then to motivate customers to overtake this responsibility and accept a self-service type of ordering solution without manual processing from Ericsson.

"Customers are really happy today that we enter and process orders because then they are not accountable for the consequences of a mistake.. It is going to be hard to change this behavior.."

Finally, Ericsson has a global and local product portfolio each having its own supply flow. Currently, only products from the global portfolio are included in SWS. This is a challenge because customers source part of their products from the local portfolio as well. Not having this local portfolio included makes it hard to have a relevant scope for each customer, and, if Ericsson is to include the local portfolio this will bring a lot of extra work to customize and integrate the two supply flows.

"There are basically two main order flows within Ericsson.. On the one hand we have our global supply flow with four global inventory and distribution centers. Products that are currently in SWS only follow this flow.. However, our regional Ericsson offices do not necessarily have to use Ericsson's global portfolio.. They are also allowed to source products locally. Local sourcing is sometimes preferred if the needed products do not exist within the global portfolio or if it leads to shorter lead times.."

4.4.6 Expediting

The challenge of the incomplete product scope as identified in the need recognition stage (site products ordered together with other product categories) continues to be an issue in

the post-purchase stage of the buying process. In all six cases, order tracking is the main post-purchase support activity provided by Ericsson in regards to placed orders. For planning and installation purposes, customers need to know if the delivery is on-time or has been delayed. Today, Ericsson employees can track placed orders through internal systems. However, often multiple systems need to be making order tracking time consuming and complex. Given these conditions proving order tracking through an e-commerce solution require system integration between the platform and Ericsson's current internal system. The Case D- Case C- and Case A all identify order tracking as a pain point in today's process, mainly caused by limited administrative resources and complicated internal systems at Ericsson.

Order alterations is another issue since orders might need to be added to, changed, or deleted between the ordering point and the delivery date. Also, after delivery some products might need to be returned due to malfunction or wrongful delivery (wrong product being ordered or delivered). How support activities such as these are handled can have a major impact on the level of trust in a business relationship and is given high priority.

"...even though providing such support through an e-commerce solution would be possible, I don't want it. It would lose important touch points with the customer and limit our possibility to maintain a tight customer relationship... I actually would prefer to be on the phone with them every single day to work them (meaning the customer and bond)"

Finally, an issue related to trust is brought up by Case A in the expediting stage; *e-commerce security*. Case A often conducts straight rebuys and would therefore value if their order history would be saved in the e-commerce solution in question. However, Case A considers their order history to be most confidential and would need strong assurance from Ericsson that their information cannot be shared. The two most present security concerns from their point of view is data hacking and accidental unauthorized access to other parties.

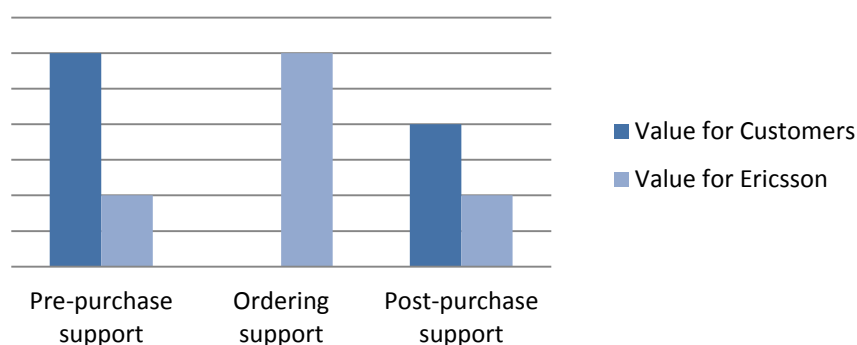
4.4.7 Evaluation

As mentioned in section 3.3.2 the evaluation stage of the buying process does in our thesis relate to how customers would evaluate the e-commerce solution. As the data analysis follows the stages of the buying process, interviewees were asked to evaluate e-commerce

accordingly. Thus, this section covers which stages of the buying process are most valuable to support with an e-commerce solution. By doing so we deviate from our analysis model as mentioned in the method section (see section 2.3). To be consistent with our analysis model we should have asked about challenges within the evaluation stage of the buying process and identified which persons are involved in this final stage. However, we made this choice to add practical relevance to the discussion.

All six cases view e-commerce support to be most crucial in the pre-purchase stages of the buying process, followed by the expediting stage. They believe the e-commerce solution can generate value by supporting communication and administration processes between the customer and Ericsson, but also by providing a standardized communication tool for customers to use internally when discussing Ericsson's product offering. On the other hand however, for Ericsson much value can be generated in the ordering stage, with e-commerce ordering providing great order processing automation opportunities which could lead to increased process efficiency and cost savings (see figure 12).

Figure 12. Value from e-commerce as buying process support



Important to mention is that since the ordering stage alone provides no direct value for customers, Ericsson's efficiency gains cannot be achieved unless support for the entire process is provided in order to motivate customers to use the e-commerce solution.

4.4.8 B2B e-commerce challenges

In the previous sections (4.4.1-4.4.7), we have described and analyzed the challenges within B2B e-commerce along the buying process. Twenty challenges have surfaced which are summarized in the following table.

Figure 13. Buying process-related challenges with B2B e-commerce implementation

Process stage	Challenges	Why a challenge?
Need recognition	1. Low interest	Need for active approach/push
	2. Predetermined scope	One size does not fit all
Define specification	3. Pricing	Need for different pricelists
	4. Technical information	Different maturity levels
	5. Reference information	Competition and lack of network effects
Product selection	6. Differing product categories	Need for different value proposition
	7. Different customer strategies	Need for different sales pitch
Contracting	8. Unique framework agreements	Requires customization
Ordering	9. Incomplete scope	Need for cross-functional collaboration
	10. Planned and bulk ordering	Complexity and integration
	11. Transportation cost calculations	Difficult to automate
	12. Transportation planning	Difficult to automate
	13. Integration	Very costly and difficult to standardize
	14. Self-service	Customer does not want responsibility
	15. Different portfolios	Customization and integration
	16. Different supply flows	Integration and increased lead times
Expediting	17. Order tracking	Internal system integration
	18. Order alterations	Loss of customer touch point
	19. Trust and security	IT security concerns
Entire Process	20. Many people involved	Who is the user and who to address?

Looking closer at the identified challenges it turns out that they can be grouped into three categories; *general e-commerce challenges*, *challenges related to differences between industrial- and consumer buying*, and *case-specific challenges*.

Challenges 4, 11, 17 and 19 from figure 13 are categorized as general e-commerce challenges, and these are most likely to occur regardless of the context. Calculating transportations costs and providing order tracking is dependent on factors like order attributes (e.g. weight and size) and internal system integrations, and therefore disconnected from the B2B context. Also maturity levels and the level of IT security concern vary on individual basis and are not related to the B2B context. Hence, these challenges are likely to be found, however with variations in magnitude and complexity, in most e-commerce implementation processes regarding product offerings, possibly even those focusing on B2C markets.

Other identified challenges can be related to the differences between B2B- and B2C buying. Remember that B2B buying mainly differs due to the small number of buyers, high buying

power, close and long-term relationships, high degree of customization, rational decision making, and high complexity. The first two aspects can be seen as market characteristics, that is, how the industrial landscape and its dynamics look like. The third and the fourth aspect can be seen as relational characteristics, that is, the way people interact in B2B settings. The final two aspects capture organizational behavior and structures. Thus, the challenges we have included in this category are explained by the market, relational, behavioral and structural characteristics of B2B buying (see Figure 14).

Figure 14. Challenges related to B2B and B2C buying differences

Implementation Challenge	Buying Characteristic	B2C	B2B
3. Pricing 5. Reference information 13. Integration	Market	Many buyers/ low power	Few Buyers/ high power 
3. Pricing 7. Different customer strategies 8. Unique framework agreements 18. Order alterations	Relational	Short-term relationship/ Standardization	Long-term relationship/ Customization 
3. Pricing 10. Planned and bulk ordering 12. Transportation planning	Behavioral	Emotional decision-making	Rational decision-making 
3. Pricing 20. Many people involved	Structural	Low complexity	High complexity 

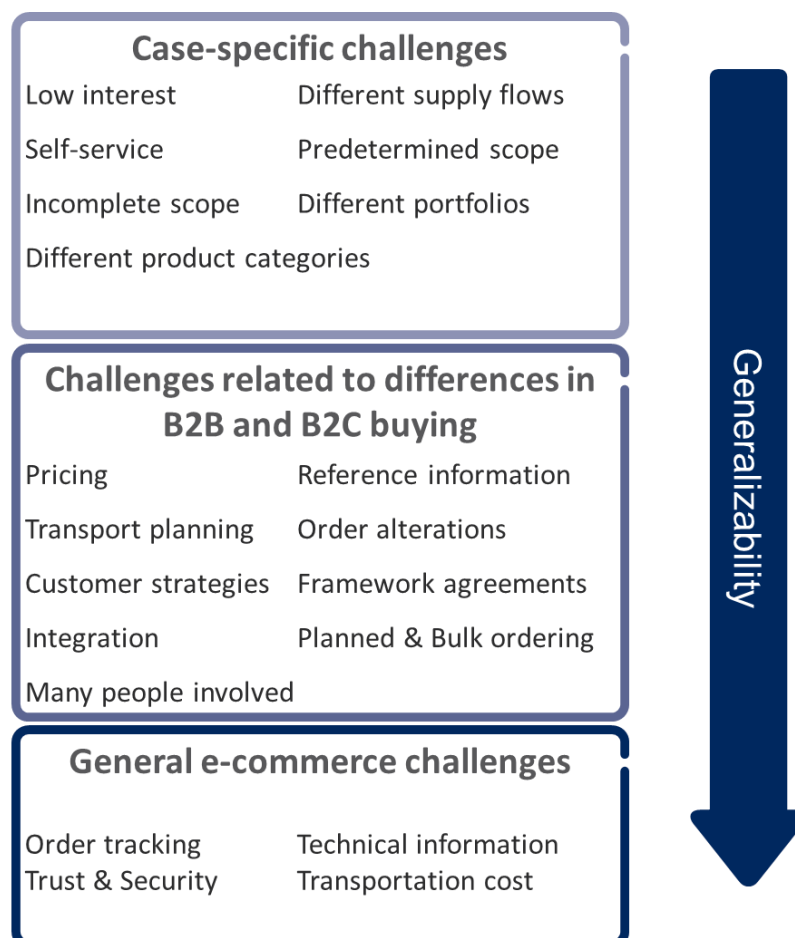
For example, it remains clear from our interview data that a small number of buyers and high buying power is problematic when it comes to reference information during the define specification stage. Close and long-term relations go hand in hand with unique framework agreements which complicate the contracting stage. A high degree of customization is found to be needed in every stage of the process in order for the e-commerce solution to be relevant. Rational decision making is mostly related to problems in the product selection stage as this calls for elaborate product information and value propositions as well as long-term planning within ordering. High complexity is shown by the large amount of people involved in all stages and the handoffs this subsequently requires.

The heading of our thesis states; ‘B2B e-commerce, how hard can it be?’ but figure 14 raises another important question; “how B2B are you?” Since the identified implementation challenges included in figure 14 can be so strongly related to differences between B2B- and B2C markets, they are believed to be generalizable to other typical B2B business contexts.

Not all B2B contexts however include all of the characteristics covered by figure 14. The figure can then be used to anticipate which implementations challenges are likely to occur. For example, if a B2B market is categorized by a vast number of buyers with a low level of buying power, it is likely less that challenges 3, 5, and 13 will arise, at least not to the same magnitude as in this study.

Challenges 1, 2, 6, 9, 14, 15, 16 are placed in the third category. These challenges are believed to arise from specific conditions discovered by the case study, such as pre-defined product scopes and the order bundling of site products with other product categories. Namely, multiple product portfolios and an incomplete product scope are not necessarily a consequence of B2B buying characteristics nor general e-commerce challenges. This category of e-commerce implementation challenges is therefore likely to occur in a business context similar to Ericsson's. The three categories of buying-process related challenges identified by this study is summarized by figure 15.

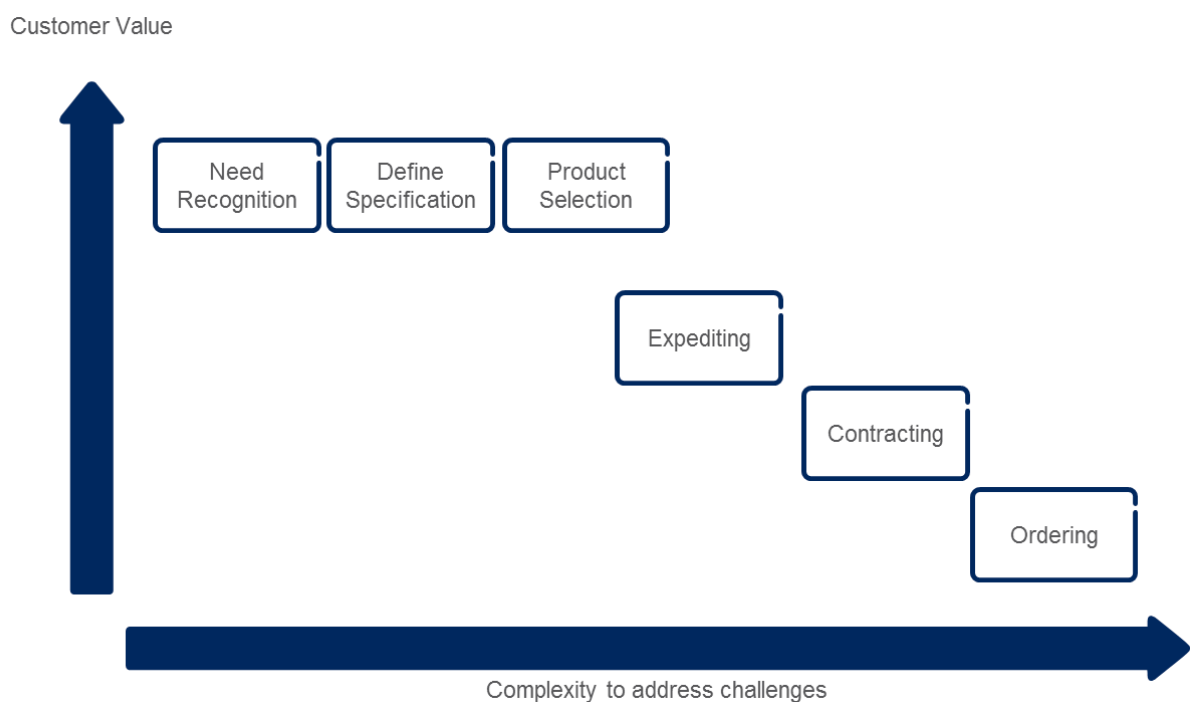
Figure 15. Summary of challenge categories



The question of “how hard e-commerce can be” can be addressed by other companies than Ericsson by analyzing which of the identified challenges are likely to occur. We argue that the general e-commerce challenges identified by this study are likely to occur regardless of the context. The likeliness of facing challenges related to differences between B2B- and B2C buying can be analyzed by the framework presented in figure 14. The likeliness of then also facing the case-specific challenges identified in this study can be estimated by comparing the implementation context to Ericsson’s current business conditions.

So far we have pointed out a list of challenges but we have not addressed how they relate to each other in terms of complexity. In order to give a recommendation on how to implement e-commerce it is important to know which challenges are most difficult to overcome. Both from our findings as well as consultation with Ericsson’s in-house experts on areas such as supply, product portfolio management, contract management, pricing, and IT, it remains that automated ordering through SWS is much more complicated than facilitating the pre- and post-purchase stages of e-commerce. This is also reflected by the high number of challenges we have found within ordering compared to the other stages. By mapping these challenges against the potential customer value of e-commerce (as discussed in section 4.4.7) our analysis results in a proposal for e-commerce implementation.

Figure 16. Mapping of Value vs. Challenges



As both the pre-purchase stages and post-purchase stages reflect most value on the customer side and least complexity on Ericsson's side it follows naturally that e-commerce has to support these stages first before order support is provided.

4.5 Theoretical Analysis of Empirical Findings

In chapter 3.1 we identified that the literature on B2B e-commerce can be divided into the four areas: consideration, adoption, implementation, and evaluation. In the following section, we have analyzed how our empirical findings relate to these four areas. A common method for studying the relationship between case findings and theory is identified by Keating (1995) who classified the theoretical contributions of case study research into: 1) theory refinement, 2) theory refutation, and 3) theory discovery. Our theoretical analysis has been conducted in a similar fashion. First, we classified our findings as theory refining if they supported the extant literature through clarification and exemplification. Second, findings were seen as theory refuting if they contradicted previous academic findings. Finally, findings were considered as theory discovering if they have not been previously discussed in the literature on B2B e-commerce.

4.5.1 Consideration

Our findings relate to the consideration literature by theory refinement. As shown in section 3.2.1 Baron et al. (2000) discuss that indirect items are often overlooked for sourcing through an e-commerce solution. The authors argue that there is significant value of automating the buying process of these types of products as they have little value in relation to the costs of the order process. Although site products are not indirect products in terms of Baron et al's definition – since they are a part of the production process of a site – the business case behind introducing SWS could be in line with the theory. Namely, our findings showed that the value of site orders is small in relation to the cost of going through the buying process. In other words, the cost of the buying process today can result in a situation in which site material costs more to order than it does to pay for. As such, the benefits of e-commercializing site products in our case share the same economic rationale as of those pointed out in the literature.

4.5.2 Adoption

Our findings also refine the theory on adoption. For example, Wu et al. (2003) identify the relationship between the intensity to which firms adopt their e-commerce solution and firm performance. Surprisingly, the authors show that order-taking and procurement intensity, which means the facilitation of online order taking, did not have an effect on any of the following performance variables: efficiency, customer satisfaction, relationship development, and sales performance. Our case findings present a possible explanation for the lack of effect on three of the four performance variables of Wu et al.. Namely, the companies in our study place orders in bulk today including other products than those available in SWS. Online ordering would mean that operators have to separate these bulk orders and split the products in terms of what can be ordered online through SWS and what not. It is not hard to imagine that this affects efficiency and customer satisfaction negatively. The lack of a positive effect on relationship development could be explained by our case finding that account managers did not want to move their customer interactions to an online (automated) platform as this reduced customer touch points and opportunities to bond and connect on a personal level with the operators.

4.5.3 Implementation

The empirical findings of this study relate to the literature on implementation in all three ways.

Theory refinement

In section 3.2.3, Asher (2007) provides guidelines for how to select trading partners for e-commerce based on transaction characteristics. In general, partners that represent a high frequency of low dollar transactions are best. Although it sounds contradicting to pursue low dollar per order partners it is beneficial to do so as this avoids problems with handoffs. The authors argue that high dollar transactions create the need for additional signatures which complicate the buying process. Our case findings clearly illustrate the relevance of Asher's recommendations. For example, for orders up to € 25 000 Case A hardly needed allowance while everything above required substantial approvals.

Another issue frequently pointed out in the literature on implementation is the need for functionality and integration (cf. Chan & Swatman, 2003; Asher, 2007; Legner, 2008). Not

surprisingly our case findings strongly confirmed that this is a crucial aspect within e-commerce. Especially during the ordering stage of the buying process as customers said to refuse entering orders twice (once in SWS and once in their own internal ordering system). But, our case findings are not only a mere illustration of the literature but also a specification. Whereas the literature mainly talks about system integration we have identified that cross-departmental integration is a crucial aspect as well, both on the provider as well as the user side. A complete product portfolio has to be available at the e-commerce channel which requires different product departments to collaborate on the provider side. As mentioned before, customers place orders in bulk spanning different product groups which are handled by different departments. On the user side, integration between the different actors (users, influencers, decision makers etc.) that are involved in the buying process is necessary to smoothen hand-offs and allow for automated buying processes. This especially becomes problematic if order values exceed certain approval levels as pointed out before.

Chan & Swatman (2003) conducted a case study on e-commerce implementation and concluded that many issues arose due to a difference in the capabilities of trading partners. Moreover, existing relationships and agreements also inhibited the utilizations of the e-commerce channel. Our case findings illustrate both findings of Chan & Swatman. Regarding the difference in trading partner capability, remember that Case B and Case D have their own product specialists while Case A and Case E rely on Ericsson's engineering expertise. The difference in the maturity of the operators leads to challenges within the define specification stage of the buying process as customers require different types of information. An issue due to existing relationships is well illustrated by the current order routines. Today, Ericsson is placing order for the customers and this makes Ericsson automatically responsible for mistakes within order entries. If the e-commerce solution of Ericsson would allow for a self-service type of ordering the existing distribution for accountability would be a serious inhibitor for customers to use the automated ordering function. This finding could also be an extra explanation for Wu et al.'s (2003) findings on e-commerce adoption for why automated ordering does not lead to increased customer satisfaction. Finally, the fact that an operator such as Case E orders site products within a full service contract provides a good illustration of how existing agreements create issues for e-commerce implementation.

Theory refutation

Whereas the previous section related empirical findings in line with the extant literature, this section presents findings which are inconsistent with previous academic work on B2B e-commerce implementation.

The major contradiction of our case findings with the literature has to do with the proposed order of e-commerce development. Legner (2008) argue that firms go through three subsequent stages: a first generation e-commerce solution providing order functionality, a second generation providing pre- and post-purchase services, and a third and final generation providing full integration. Our findings on the other hand show that ordering has little value while pre- and post-purchase support has a lot of value for customers. This implies that Legner's proposed order of development is not applicable in our case. Namely, it would be better to start with providing pre- and post-purchase services and then providing full integration before opening up order functionality. Due to the low value for customers of ordering through SWS we argue that Ericsson has to fully develop everything else within the buying process first to tempt customers making use of the channel. In other words, if Ericsson can provide significant value in all other stages it might stimulate customers to eventually place orders as well through e-commerce.

Theory discovery

Now we have seen how our findings relate to the extant literature by either refining or refuting previous findings it is now time for arguably the most interesting question: do our findings raise topics which have not gotten any attention in the extant literature before?

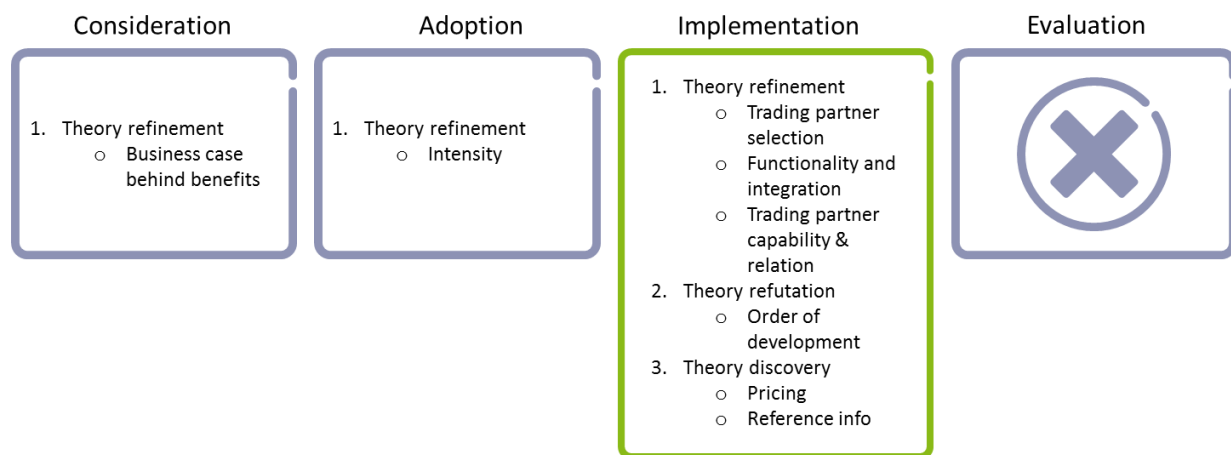
Price information has come forth as a surprising topic in our findings. To the best of our knowledge this has not been addressed by the extant literature on B2B e-commerce before. As we have seen in our findings pricing is a challenge for e-commerce in several ways. It leads to practical issues as Ericsson does not have a history of showing prices on an individual product level and now suddenly has to compile this for each individual customer. It also leads to strategic issues as showing individual product prices reduces the chance for increasing margins on the total order price since customers have increased insight in each cost component. Finally, there is a risk of customers using SWS only as a benchmarking tool like Pricerunner is on the consumer market.

Another topic that has received little academic attention is reference information in the form of customer reviews and ratings. Although this has become the golden standard for any respectable B2C web shop the B2B e-commerce literature has been slow on the uptake. So far, only trend reports have indicated the growing popularity of consulting this kind of information within B2B buying (cf. Gartner, 2013).

4.5.4 Theoretical contribution

The way the findings of our case study relate to the literature are summarized in the figure below.

Figure 17. Summary of case study findings



As this study is focused on e-commerce implementation it is to no surprise most theoretical contributions came forth in this area. Our findings even contribute through theory refinement within the ‘consideration’ and ‘adoption’ area. The findings within the evaluation area are limited and therefore we have not been able to make theoretical contributions within this area. This is explained by the simple fact that Ericsson has not come to this stage yet.

Combining our findings with the literature also leads to a reinforcement of our finding that ordering has the highest complexity and therefore should be implemented last (see section 4.4.8). Consider the following paradox. The low interest in SWS (challenge 1) calls for increasing the products scope in SWS with for example RBS as the need for site material is often recognized in relation to these products. However, including RBS significantly increases the value of the orders which make order automation subsequently more complicated due to the reasons Asher has pointed out.

5. Discussion and Conclusion

Our thesis has addressed e-commerce in a B2B context through a participative case study at Ericsson AB . First, a literature review was conducted in which we argued that previous academic work on B2B e-commerce can be divided into four main topics: consideration, adoption, implementation, and evaluation. E-commerce implementation was subsequently chosen as the main focal point for our empirical analysis as this area has received relatively little academic attention.

A combination of B2B buying models (Weele, 2005; Jobber & Ellis-Chadwick, 1995) was used as a guiding framework for our analysis and our case study was carried out in a two-step approach comprising two rounds of interviews. First, a pre-study was conducted to test the framework for analysis. This led to a revision of the analysis model by adding ‘need recognition’ as a starting point within the buying process and considering contracting as a pre-purchase support activity. In addition, product scope was considered as a moderating variable and modified rebuys were specified into two types.

This revised model was subsequently used to identify the challenges within B2B e-commerce through six cases. The cases differed on a combination of two company variables (maturity and size) and one market variable (ICT-penetration). Moreover, the cases spanned four different countries and three different continents which together with our case selection criteria ought to have benefited the richness and generalizability of our findings³. Our empirics have led to the identification of twenty challenges within the different stages of the buying process. These were subsequently grouped into case-specific challenges, challenges related to differences between B2B and B2C buying, and general e-commerce challenges. Other organizations can use these categories to analyze how hard their B2B e-commerce implementation is likely to be compared to Ericsson’s case.

In addition, relating these findings to previous academic work has led to theory refinement within the literature on e-commerce consideration, adaptation, and implementation and theory refutation and -discovery within implementation.

³ With generalizability we mean the robustness of our findings on Ericsson AB. Namely, by interviewing different kind of customers we have been able to test the sensitivity of our findings. Thus, we do not claim external generalizability here.

We concluded that the challenges within ordering are more complicated than the challenges within the pre- and post-purchase stages of the buying processes. In addition, we found that e-commerce has most value for customers within the pre- and post-purchases and little within ordering while for Ericsson this was the other way around. Therefore, the recommended order for e-commerce implementation is to first develop the pre- and post-purchase functionality before automated ordering is introduced. The rationale behind this is that by starting with what has most customer value customers are more likely to get hooked to the e-commerce channel and more likely to eventually place orders which is in turn most beneficial for Ericsson.

Our proposed order of implementation contradicts prior literature (cf. Legner, 2008) as they conclude ordering functionality to be the starting point for implementing e-commerce. A possible explanation of this could be that our thesis studied very complex products which necessitate elaborate pre- and post-purchase consideration. If we would have studied a B2B context concerning commodity products the results could have been different. The difference could also be explained by the fact that we have adopted a customer oriented view in favor of an inside out approach. With an inside out approach it is easy to understand why firms should have order functionality as the first step of implementation. Namely, due to many intangible benefits of e-commerce (cf. Standing & Lin, 2007) it can be hard to secure management support and the necessary resources for further development. In large organizations like Ericsson it is very common that different initiatives compete for resources. With orders and thus money coming in it is much easier to prove a channel's right for existence. However, we do not think that internal organizational politics should dictate e-commerce implementation.

Especially because changing the order of e-commerce implementation might also partly solve another issue pointed out in the literature. Slow adoption on the customer side is found to be a wide spread challenge within e-commerce (cf. Chan & Swatman, 2003). We believe that starting with what has most value for the customer has the potential to speed up adoption significantly and making e-commerce implementation less of a challenge.

5.1 Limitations

This research was bound by a confidentiality agreement. This agreement refrained us from precisely describing the six cases and attach names to citations in order to keep the operators' identities secret. Although this has led to the exclusion of certain sensitive details in our work we believe these restrictions have not harmed our contribution and relevance to the underexposed field of B2B e-commerce. Namely, agreeing on confidentiality to the operators allowed us to gain access to them and secured that our respondents could speak freely.

This case study has been limited to study only a specific product scope within a single industry. Therefore the B2B implementation challenges identified might be hard to generalize. However, through our three categories of challenges we have attempted to make the findings as relevant as possible to other contexts though they only apply to product offerings and not to services.

We were also not able to meet with customer representatives in all six cases, but instead had to rely on feedback from Ericsson employees who work directly with the customer. This puts potential constraints on the data since only known customer behavior and opinions could be discussed, but not future plans or uncommunicated requirements.

However, due to the profile of the involved interviewees, it is our firm belief that this limitation does not affect the quality and accuracy of our findings and academic contributions. A couple of the case customers currently use another e-commerce solution provided by Ericsson, but has outsourced much responsibility to Ericsson, e.g. order placement and order tracking. Also, Ericsson-provided case feedback for a specific customer matched well with direct customer feedback received for another case with a similar profile and purchasing situation. We therefore feel comfortable to claim that our findings well represent customer requirements for all six cases.

Finally, we deviated from our analysis model in the evaluation stage of the buying process. To be consistent with our analysis model we should have asked about challenges within the evaluation stage of the buying process and identified which persons are involved in this final stage. However, we made this choice to add practical relevance to the discussion. By doing so we were able to evaluate and map the challenges within the different buying process

stage against the value of providing e-commerce support within these stages. This subsequently resulted in a revised order for B2B e-commerce implementation. Should we not have made this deviation we would have been less able to answer how the characteristics of the B2B buying process affects the implementation of B2B e-commerce and therefore we feel the deviation is justified.

5.2. Suggestions for future research

The chosen research approach; studying implementation challenges in regards to the buying process, would need to be repeated in order to test the generalizability of our findings. Also the B2B implementation process could be studied from more perspectives. Implementation processes can for example be affected by factors such as inter-organizational politics, organizational structures, and changes to business strategies.

Future research could also focus on repeating this study while the implementation process for SWS is still ongoing. SWS has recently been released to a couple of pilot customers, but no customer usage data has yet been collected. Follow-up interviews can shed more light on the accuracy of the identified challenges from this thesis,, but also identify additional challenges related to post-use evaluation.

As identified in section 4.5.3, pricing and the use of reference information seems to be relatively unexploited fields of B2B e-commerce literature. In our case, e-commerce pricing can be an issue since Ericsson does not have a history of showing prices on an individual product level and now suddenly has to compile this for each individual customer. This could have strategic ramifications interesting for future research.

Finally, there is a risk of customers using SWS only as a benchmarking tool like Pricerunner is on the consumer market. Reference information has in this study shown to be potentially valuable, however its confidentiality aspects of B2B business relationships constrains how it can be used. More research on how to develop effective pricing strategies, and effective use of reference information, for B2B e-commerce has both academic and practical relevance.

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Databases

Google Scholar.

Numbers in text are the outcome of searches performed in January, 2014.

Business Source Premier Database

Numbers in text are the outcome of searches performed in January, 2014.

Appendix

Appendix A

Figure A1. Journals used for initial search.

Top marketing journals	Top strategy journals	Expert Journals
Journal of Marketing	Academy of Management Review	(European) Journal of purchasing and supply management
Journal of Marketing Research	Academy of Management Journal	Industrial Marketing Management
Journal of Consumer Research	Strategic Management Journal	International Journal of Operations & Production Management
Marketing Science	Journal of Operations Management	
Journal of Retailing	Journal of Management	
Administrative Science Quarterly	Harvard Business Review	
Journal of the Academy of Marketing Science		

Figure A2. Cumulative number of academic publications relating B2B and B2C e-commerce

Year	B2B e-commerce	B2C e-commerce
2014	590	10 168
2013	587	10 131
2012	564	9 574
2011	531	8 848
2010	506	8 077
2009	464	7 330
2008	428	6 566
2007	373	5 886
2006	318	5 067
2005	269	4 338
2004	220	3 568
2003	148	2 723
2002	94	2 046
2001	59	1 475
2000	28	1 036
1999	15	712
1998	12	478
1997	8	284
1996	5	153
1995	4	68
1994	1	19

Figure A3. E-commerce adoption intensity framework

	Within-firm	Customer interface	Supplier interface
Communication processes	Electronic communication within firm	Electronic communication with customers	Electronic communication with suppliers
Administration Processes	Electronic internal administration	-	-
Order-taking processes	-	Online order-taking	-
Procurement processes	-	-	E-procurement

(Wu et al., 2003)

Figure A4. Summary and mapping of literature review on B2B e-commerce

	Type of e-commerce					Phase in the e-volution				Type of Research		
	EDI	WWW	E-procurement	Web-services	E-markets	Consideration	Adoption	Implementation	Evaluation	Conceptual	Contingency	Case Based
Kaplan & Sawhney (2000)					✓					✓		
Baron et al. (2000)			✓			✓						✓
Wu et al. (2003)							✓				✓	
Chan & Swatman (2003)		✓						✓				✓
Ratnasingam et al. (2003)		✓		✓					✓			✓
Barua et al. (2004)							✓				✓	
Zhu et al. (2005) Migration	✓	✓				✓					✓	
Zhu et al. (2005) Post-adoption							✓				✓	
Claycomb et al. (2005)		✓				✓					✓	
Albrecht et al. (2005)	✓	✓	✓	✓	✓					✓		
Thomson et al. (2006)							✓				✓	

Zhu et al. (2006)							✓				✓	
Standing & Lin (2007)									✓		✓	
Asher (2007)	✓							✓				✓
Sutton et al. (2008)						✓					✓	
Legner (2008)	✓	✓		✓				✓				✓
Cullen & Taylor (2009)			✓						✓			✓
Balocco et al. (2010)					✓	✓						✓
Hsu (2013)		✓		✓					✓		✓	
Sila (2013)							✓				✓	
Johnson (2013)					✓	✓					✓	

Appendix B

Figure B1. Steering of discussion during case study interviews

Situation questions
<i>Do you buy site products as of today from Ericsson? Yes or No</i>
<i>No: why and how do you buy site products somewhere else?</i>
Mapping current behavior and sentiment
<i>How do you buy site-products today and in what kind of situation (project, stand-alone, link to RBS)?</i>
<i>How do you look upon site products?</i>
Buying process
Need recognition
<i>How are needs recognized?</i>
<i>How do Ericsson Site-products come into the picture? (Push or Pull?)</i>
<i>Do you actively search for information about “new” products or just straight rebuy?</i>
<i>Which persons on both sides are key in this?</i>
<i>How to push for information/promotion?</i>
<i>Do the persons at the customer side have different portfolio purchasers?</i>
<i>Do the customer buy site by site or category based?</i>
<i>Are all categories bought at the same time?</i>
<i>Are some categories concerned as more difficult to understand/make decisions on than others?</i>
Define specification
<i>What type of information do you need?</i>
<i>Price (list price, final price, transportation?)</i>
<i>Lead-time info (how detailed?)</i>
<i>Lead-time (accurate vs. short It)</i>
<i>Technical info (product life-time, specs)</i>
<i>How important is compatibility information? (for which products)</i>
<i>Is it important to have reviews/recommendations?</i>
<i>Other?</i>
<i>What type of information do you have access to today and through which channels?</i>
<i>How do you know which products Ericsson have</i>
<i>Who influence?</i>
<i>Is this the same person as in need recognition?</i>
<i>Which info do you rely on when buying? (from Ericsson or from customer)</i>
Select supplier/channel/products
<i>Who selects?</i>
<i>What are the selection criteria?</i>
<i>Price</i>
<i>Lead-times</i>
<i>Quality/performance/compatibility</i>

Contract agreement
<i>Are site-products covered by contract?</i>
<i>Which categories? Which are not included?</i>
<i>Several contracts at the same time (based on projects)?</i>
<i>Willing to have separate contract for Site?</i>
<i>Which persons are involved?</i>
<i>Who has authority to accept?</i>
Ordering
<i>Who has the authority to place the order?</i>
<i>Which approvals are needed</i>
<i>How do you get them today (formal documents, or oral agreement)</i>
<i>How does the process look like today?</i>
<i>Flow chart</i>
<i>Where does determine specs and select supplier happen?</i>
<i>Assemble order: which info is needed?</i>
<i>Main pain points?</i>
<i>Order transmission, how does it work?</i>
<i>Internal</i>
<i>To Ericsson</i>
<i>Which system exists today?</i>
<i>Prepared to change system? For which benefit?</i>
<i>After order information</i>
<i>What do you expect? Show mock-ups</i>
Expediting
<i>What support systems would you expect from an e-commerce solution?</i>
<i>E.g. Order tracking,, order history, help-desk, contact information, chat functionality etc)</i>
<i>Which support systems are currently in place?</i>
<i>Order tracking</i>
<i>Help-desk</i>
<i>Other info systems</i>
<i>What are pain points</i>
<i>Who takes care of trouble-shooting</i>
Evaluation
<i>Which functionality does SWS have to offer to be of use for you?</i>
<i>What is crucial? What can we take away while SWS is still of use to you?</i>
<i>Which attributes are you looking for to be satisfied with SWS</i>
<i>Product search & comparison</i>
<i>Product reviews</i>
<i>Order functionality</i>

The steering document was used to ensure that all intended discussion topics were covered, but not shown to interviewees nor used as a questionnaire. Hence at times discussion touched upon topics not included in the steering document.

Figure B2. Use of analysis model during case study interviews

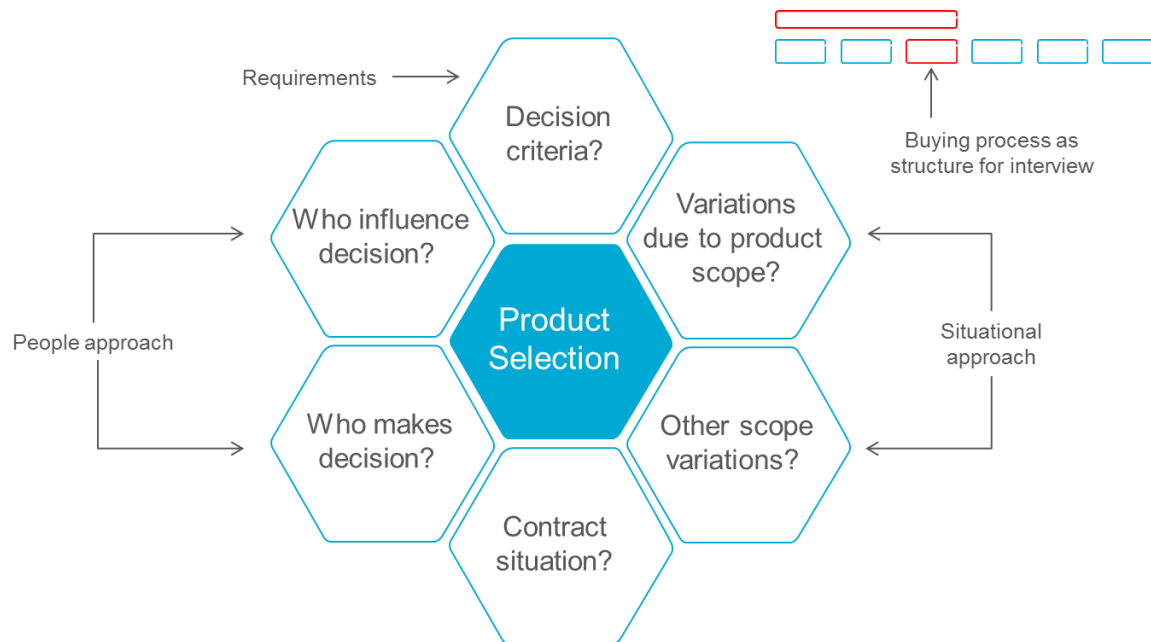


Figure B2 illustrates how the elements of the analysis model were combined to form the interview structure. Each buying process stage were cross-analysed according to people- and situational buying aspects, and also with requirements identified by e-commerce literature.

Figure B3. Use of e-commerce literature during case study interviews

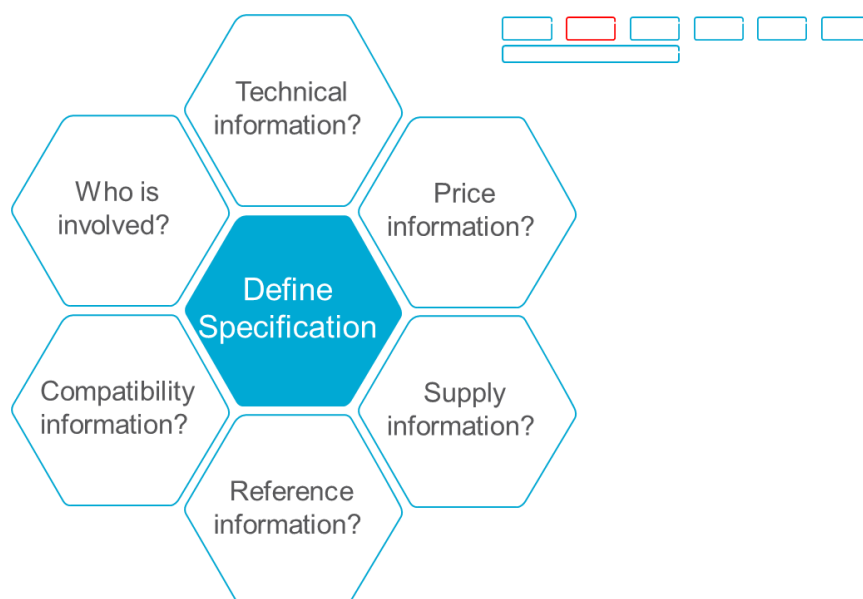


Figure B3 gives a specific example of how B2B e-commerce literature was discussed during the case study interviews. According to Johnson (2013) content levels and different types of information affect buyer satisfaction and purchasing decisions.

Figure B4. Use of mock-ups during case study interviews

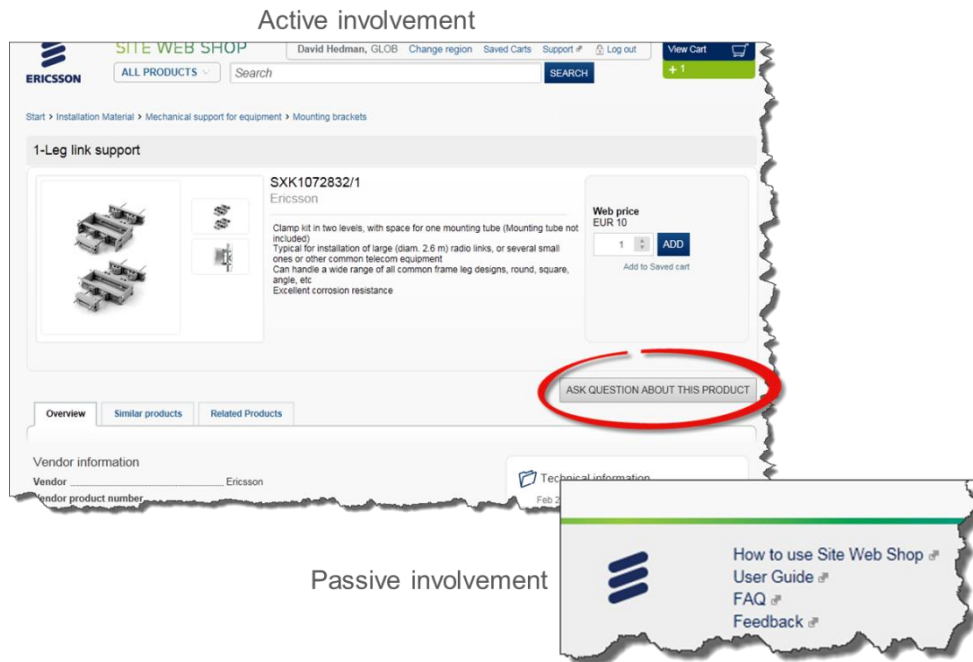


Figure B4 gives another specific example of the use of B2B e-commerce literature during the case study interviews, but now as a mock-up. Hsu (2013) has determined a number of web-site characteristics to be influential for the relationship quality between supplier and customer. Among those are the level of interaction and involvement of the service provider.

Appendix C

Figure C1. Summary of interview results

	Case A	Case B
Need Recognition	With a small sales force, only four people working in the CU, the amount of effort dedicated to promoting site product from Ericsson is very limited. CASE A instead recognize their needs mostly from browsing through the product catalogs from manufacturers such as Kathrein. Needs are recognized on project basis, currently upgrading (either new rollout or product swapping) to LTE (4G network). For certain product categories, like antennas and installation material, Case A can themselves identify what products they need, while for other, like power solutions, they rely on Ericsson. Site products can be needed both as stand-alone items and as part of a package, depending on the project scope, and are often planned well ahead. Case A holds site products in a local warehouse and then transports them to site locations later when installation is to take place.	At CASE B, a menu of (site) product packages is composed at a central organizational level. Products can be added to the menu after it is approved by an extensive test procedure which can take up to several years. The menu is subsequently spread across the organization (i.e. the different regions). People in the region are only allowed to buy products from this menu. As such, one can speak of a PULL situation when it comes to need recognition since CASE B knows exactly what to order. A PUSH situation only occurs if the environment in which a site is built puts unusual requirements on the site products. In such a case, Ericsson advises CASE B what products are needed in this particular environment.
Define Specification	Even though technical information is considered most valuable at an early stage, Case A has much of that information available already. What is valued is instead a possibility to compare the technical information for different products. For such comparison technical parameters and data sheets are important. How products are compatible with other products are not as important. Another aspect of product comparison is the price. However, since comparison is the main objective actual unit price is not crucial, but instead price ranges and ratios. Due to the limited geographical area of the country, Case A's supply flow is quite standardized; the local warehouse contributes by making up the main delivery address. Therefore, even though supply information is valuable, it is in general secondary to the technical information.	CASE B is a very well educated customer. Therefore, technical information on existing products is not of as much value as price and availability. However, for new products technical information is all what matters. Due to CASE B's elaborate testing procedures compatibility information is not very relevant either. Because of CASE B's high expertise and testing procedures reference information (i.e. reviews and recommendations) are not of interest to them. They simply do not care about what others think which is not a strange attitude considering they are a market leader.
Product Selection	Case A's wished market position is to have the best performing network in the country, hence the products' performance and quality is in general the most influential product selection criteria. Price and delivery times follow as important influential factors as well. Alterations to the decision criteria are mostly caused by time plans. If projects are facing a tight schedule, the delivery times will naturally gain importance, and can even replace product performance as the main criteria.	When it comes to selecting products CASE B is not price sensitive at all. Supply information is crucial during product selection because the speed of delivery determines whether CASE B's people get their bonus for on-time roll-outs. In addition, according to Ericsson none of the factors should be a deal breaker when CASE B is selecting products. For example, if certain products cannot be delivered in time Ericsson still has to say yes to the order and find a way to work around it as an account manager puts it "CASE B is like the queen of England". This indicates the extreme power CASE B has. Finally, supplier knowledge and responsibility is extremely important during this stage in the sense that CASE B has a very long memory when things go wrong and might bypass a supplier for several years after a mistake.
Contracting	A framework agreement is in place making Ericsson the sole supplier for parts of the site portfolio. Certain product categories such as antennas and feeders, are however not included in the contract and Case A purchase these products directly from the manufacturer.	Since CASE B composes a menu with product packages that fit their technical spectrum framework agreements are in place.

Ordering	No system integration exists between Ericsson and Case A, and purchase orders are therefore sent in through e-mails. Before orders are transmitted to Ericsson they must pass through a rigid approval process, which at times can be very time consuming. In fact, Case A identifies its internal part of the order process as a current pain point. Orders for site material can be placed as stand-alone items or as parts of a larger package. Even if the orderable product scope could in theory vary greatly, it is in reality limited by the geographical spread of the network. Case A's network only consists of about 500 radio sites, and the number of network configurations is therefore kept fairly low.	When it comes to ordering, CASE B has a central group sending purchase orders based on the predefined menu. Orders are always bulk orders and planned well ahead. For example, they communicate to Ericsson that they need 500 antennas over the coming three months. CASE B will never place orders in a system that is not integrated and because of their power and established way of working they most likely will not adapt their format. Order confirmation takes several days. This is not an issue however because there are strict contracts on lead-time in place that makes sure Ericsson is penalized when lead-times are violated. Ericsson sends orders to CASE B's central buying hub after which products are distributed internally across the organization.
Expediting	Order alterations are sometimes necessary, and then mostly after delivery; due to product malfunction or that the wrong product has been ordered. Order tracking in another support that is highly valued. In general Case A experience is that it can be difficult for them to receive attention for eventual questions/concerns from suppliers, both from Ericsson and manufacturers.	After ordering there is little information available on order status and order tracking. This is mostly a problem for Ericsson internally. As long as the customer knows when it is coming they are fine and do not need to know where the products are exactly. Order support mainly happens over the phone and there is no desire to change/automate this. Namely, Ericsson wants to have as many (and lengthy) customer touch points as possible to build and maintain a tight customer relationship.
Evaluation	An e-commerce solution could bring value throughout Case A's entire buying process, and improve the efficiency level of the business relationship between Ericsson and Case A. Challenges in the ordering phase, with a rigid internal order process at Case A and security concerns, makes that implementation stage more challenging than pre- and post-purchase support.	When looking at the whole chain of stages in the buying process, an e-commerce solution is only of value during the need recognition phase if it could provide for browsing through the predefined menus and product packages. Due to Case B's established way of working there is no interest in placing orders in a new way (there is already an EDI link). Due to the customer's extensive knowledge and power there is little interest for reference information from other parties (including Ericsson and other operators). New product information on the other hand would be highly valuable to communicate through an e-commerce channel.
	Case C	Case D
Need Recognition	Within the CASE C account, needs are only recognized by the customer and one can therefore speak of a PULL situation. There is no focus whatsoever on promoting site material actively to the customer. Because of this, there is a great value of pushing the existing portfolio and promoting new products to the customer through an e-commerce solution. The reason for the lack of attention today is that the presales process is extremely long and complex (many loops between Ericsson and customer) while the dollar value is relatively low for site products. Site products are bought both as part of a larger package or project as well as stand-alone. Customers tend to order the same products over and over again if the process is smooth and the result satisfying.	Ericsson puts emphasis on promoting the site portfolio, and Case D is in general interested in hearing about new products. However the interest level for site products is significantly lower than for other product areas, since Ericsson mostly provide third-party products which can be sourced locally. In addition, local regulations state that Case D must spend ten percent of its purchases on local suppliers, and has made a strategic decision to include most site products in that scope. When site products are bought through Ericsson, they are never bought as stand-alone items. Instead they are bought as parts of a larger order, often including RBS. These packages however are specified down to individual item level. Currently Case D has rollout plans which cause their need recognition to be planned well ahead. They often realize needs in terms of "in quarter x we need x amount, in quarter y we need y amount".
Define Specification	During the define specification phase technical information and price are most important. The level of detail for the technical information should be on a product level (as opposed to a system level) and for the price information on a reference level that is rather accurate. In the past, discounts up to 80%	Technical product information is most crucial at an early stage, especially for antennas since those have to meet set performance requirements. Technical parameters and product data sheets are the most crucial technical information, with pictures as a nice add-on. Compatibility information is not too important since Case D is quite

	could be given but there is a strong desire to move away from this pricing strategy. When it comes to supply information lead times are more important than inventory levels and delivery options to support the customer's planning process. When it comes to reference information reviews from Ericsson seem to be of most value. Because the customers within the CASE C account are small and have relatively little expert knowledge they rely heavily on the expertise of their suppliers. In addition, there is a desire for a one-stop-shop. Due to the limited resources of customers in this account they prefer to deal and keep a relationship with only one supplier.	technically skilled, and assume system compatibility for products bought by Ericsson. Supply information is desired due to planning purposes, and should be provided on week-detailed level. Even though price information is sought early as well, it can be postponed to later stages. Also, prices are most interesting on a package/system level, not for individual units.
Product Selection	In general, order history determines which products are selected because the customer can be sure it works in their configuration. Then, availability and speed are the most important decision criteria during product solution. Quality and performance is of higher relevance for antenna systems than other product categories as this has the most impact on network performance and its requirements are very specific.	Due to the performance requirements that exist for antennas, the product selection criteria tend to differ for those compared to other site product categories. Case D can therefore be less price- and supply sensitive, and also more vendor-loyal for antennas, while those two criteria tend to be most influential for site products in general.
Contracting	Not all site products are covered by contracts today and contracts can be created on a project-basis. Framework agreements are created based on what the customer unit believes to be beneficial for the customer. Usually, the customer stays within this frame which is a logical consequence since there is no push from Ericsson to promote other products and the customer does not know what else products exist in Ericsson's portfolio.	Historically, framework agreements have been negotiated annually or every two years. Site products should be covered by these agreements, and have set prices and delivery requirements (lead times). Case D usually used e-auctions, or similar processes, for the procurement of framework agreements.
Ordering	Currently, CASE C customers send orders in a PDF file and there is no system integration at all. The customer can wait up to a week before an order is confirmed. Even though some customers explain, they generally accept this way of working but it is nevertheless a pain-point in the order process. Customers do not get an exact delivery date when placing the order but a final price including transportation is set. Because of all the above there are a lot of gains if a customer can place an order through an e-commerce solution. A very important plus with an e-commerce solution is the 24/7 accessibility due to the different time zones in the country.	Some level of system integration between Case D and Ericsson exists for invoicing, but not for ordering. Purchase orders are therefore most often transmitted in PDF format as e-mail attachments. Due to the planning aspects highlighted in the need recognition stage, bulk orders are common. Also, since orders tend to stay within the framework agreement scope, and that orders are places for complete packages, Case D places plenty of straight-rebuy orders. Due to the lack of B2B system integration, order confirmation is delayed. Depending on the quality of the purchase order (i.e. the provision of correct/required information) order confirmation can be delayed from 5 minutes to 5 days. The most important information provided by the order confirmation is the delivery date, since most other information is already known at this stage.
Expediting	At the moment there is no dedicated role for purchase support and "whoever gets the e-mail" will handle queries. Also, there is no way to keep track of orders today and the only way to find about order status is through escalation.	Even though order alterations occur, they are rarely initiated by Case D. Instead they can often be related to mistakes or internal system requirements at Ericsson. The most crucial expediting activity is therefore order tracking. From a planning perspective Case D needs to know when products arrive on site, and from an invoicing perspective they need to know when products reach customs. Changes in the delivery date is the most frequently asked-for information, and is also a current pain point in the relationship between Case D and Ericsson (i.e. effective order tracking service is a challenge for Ericsson).

Evaluation	For the Case C customers it is worthwhile having an e-commerce solution for all stages of the buying process. Especially a solution for the pre-purchase that allows them to browse through Ericsson's site portfolio is of great value. This stage is mostly neglected because three interrelated factors: the customer is small, the process is complex, and the dollar value for site products is low.	Considering Case D's current buying behavior, an e-commerce solution is most likely to be of most value in the pre-purchase stages of the buying process. Value can also be provided in the expediting stage if a more effective order tracking service can be offered. Given the current ordering situation, with planned bulk orders on given product packages, no potential e-commerce value is identified given SWS's current product scope.
	Case E	Case F
Need Recognition	Case E relies heavily on Ericsson when it comes to recognizing the need for site products. Usually Case E turns to Ericsson due to a recognized need for a system or solution, e.g. a new rooftop radio site, and Ericsson is then responsible for providing Case E with suggestions for suitable site products. Ericsson has therefore taken a more passive role in terms of promoting the site portfolio; since customer needs are recognized on a more aggregate level. Case E has put together a set of type-sites towards which they can map their recognized needs. Product level needs are therefore quite easy to predict, due to the limited variations in the type-site scope. Case E must obey local requirements to spend ten percent of its purchases on local suppliers. Site products are often included in that scope however Case E does value a one-stop-shop. It is therefore common today that Ericsson provides Case E with a complete package with products sourced from local suppliers.	Case F and Ericsson has a very integrated relationship, which expand over a long time period. The CU has regular visits at customer offices to inform about new releases and changes in the product portfolio. However, during these sessions little, if any, emphasis is on site products. Instead Case F discover their needs independently since they are considered competent enough, and in many cases prefer to purchase directly from manufacturers. Needs for site products are often recognized on site-by-site basis, and ordered as part of larger product packages. If packages are bought from Ericsson, site products are grouped with other product categories, such as RBS. Needs are recognized by a central organization within Case F, and a predefined product scope is created from which products later can be chosen.
Define Specification	Technical information is the most valued information for site products, but reference information is also important due to Case E's reliance on Ericsson's product recommendations. Technical parameters and data sheets are important information sources, but pictures are also valued to increase the awareness and understanding of new products. Since Case E are interested in purchasing complete type-sites, price information on unit level is not too crucial. Prices can be given on system/solution level and are not necessarily specified down to the product level. Supply information is important from a site planning perspective, however supply information for site products alone is not relevant because of the type-site purchases. Supply information must therefore be given for the whole radio site to be relevant.	Technical information is most important for products which have not been purchased before. Since Case F's central organization creates an approved set, technical information for other products should already be available to them. Compatibility information however is important for all products, since Case F needs to know how products perform together at a system level. Even though price- and supply information certainly would be valuable, it is of less importance than the technical information. This since the central organization has approved the products, and hence price levels and delivery lead times are considered acceptable.
Product Selection	Even though price and supply aspects are very important, they are not necessary specified for site products. For product selection Case E is relying much on product recommendations, and the supplier's knowledge and responsibility are influential factors. Also, the existing network configurations are influential since Case E wishes to keep the number of these to a minimum.	The main product selection criterion is in general product performance, and product decisions are therefore much influenced by technical product specifications. Even though Case F is currently putting effort into reducing their capital expenditures, they are trying to do so without lowering their network performance. Product selections can sometimes therefore be heavily influenced by price, especially for high-value purchases, but the selected products must still meet the performance requirements.
Contracting	Site products are covered by a service contract, with site products sold as part of a larger scope and identified by Ericsson. All site products are therefore covered by a contract, with set terms and conditions. These terms however does not necessarily cover set individual unit prices.	Framework agreements are written on the predefined product scope identified by Case F's central organization. However, site products are not necessarily specified down to product level, but grouped as product categories or as parts of a larger product package. During the contracting and stage, Case F tend to be quite price sensitive.

Ordering	No B2B system integration exists between Case E and Ericsson. Purchase orders are transmitted by e-mail and are usually received in PDF format. Orders are not placed for stand-alone items, but for type-sites. The order quantity can therefore vary from large bulk orders to individual sites, but variation in the ordered product scope is limited. The limited type-site scope causes plenty of straight rebuy orders. Order confirmation is delayed due to the lack of system integration. When confirmation is given Case E most desire to know the delivery date. Case E wishes to get its deliveries directly to the planned site build area, and sends payment upon delivery.	No system integration exists between Case F and Ericsson, and orders are transmitted in PDF format after first being placed in Case F's internal system. Process efficiency is important for Case F and e-commerce ordering without system integration is considered "not attractive." Orders are placed on pre-defined product packages and on site-by-site basis. Therefore, even though alterations in the product scope occur, Ericsson knows beforehand what products that can /cannot be ordered and the level of surprise is fairly low. Order confirmation is given by Ericsson within 48 hours, since those are the terms dictated by the framework agreement, and an estimated delivery time should be given at this point.
Expediting	The service contract implies that Ericsson handles much of the order expedition process. Case E is however interested to check up on their placed orders, and order tracking is desired. Changes in delivery dates are important pieces of information, especially since deliveries often include complete radio sites and no installation can be completed in advance.	Due to the pre-defined product scope, and the high maturity of Case F's purchasing department, the level of order alterations and cancellations are kept low. Case F
Evaluation	Because site products are handled by a service contract, an e-ordering solution makes little sense given the current situation. Instead customer value can be generated by offering good post-purchase support and increasing efficiency in the pre-purchase phase. However, the product scope then should not be individual products (i.e. current SWS scope) but instead include the type-site portfolio.	Because of Case F's current purchasing behavior, with demands on system integration and own order tracking efforts, an e-commerce solution would be of most value in the pre-purchase stages of the buying process. However, due to the fact that only pre-approved products can be purchased, portfolio filtering is necessary. If Case F's pre-defined product scope cannot be visible on the e-commerce platform, the solution would be valuable only to Case F's central organization in the need recognitions stage.

Figure C2. Process flowchart Case A and C

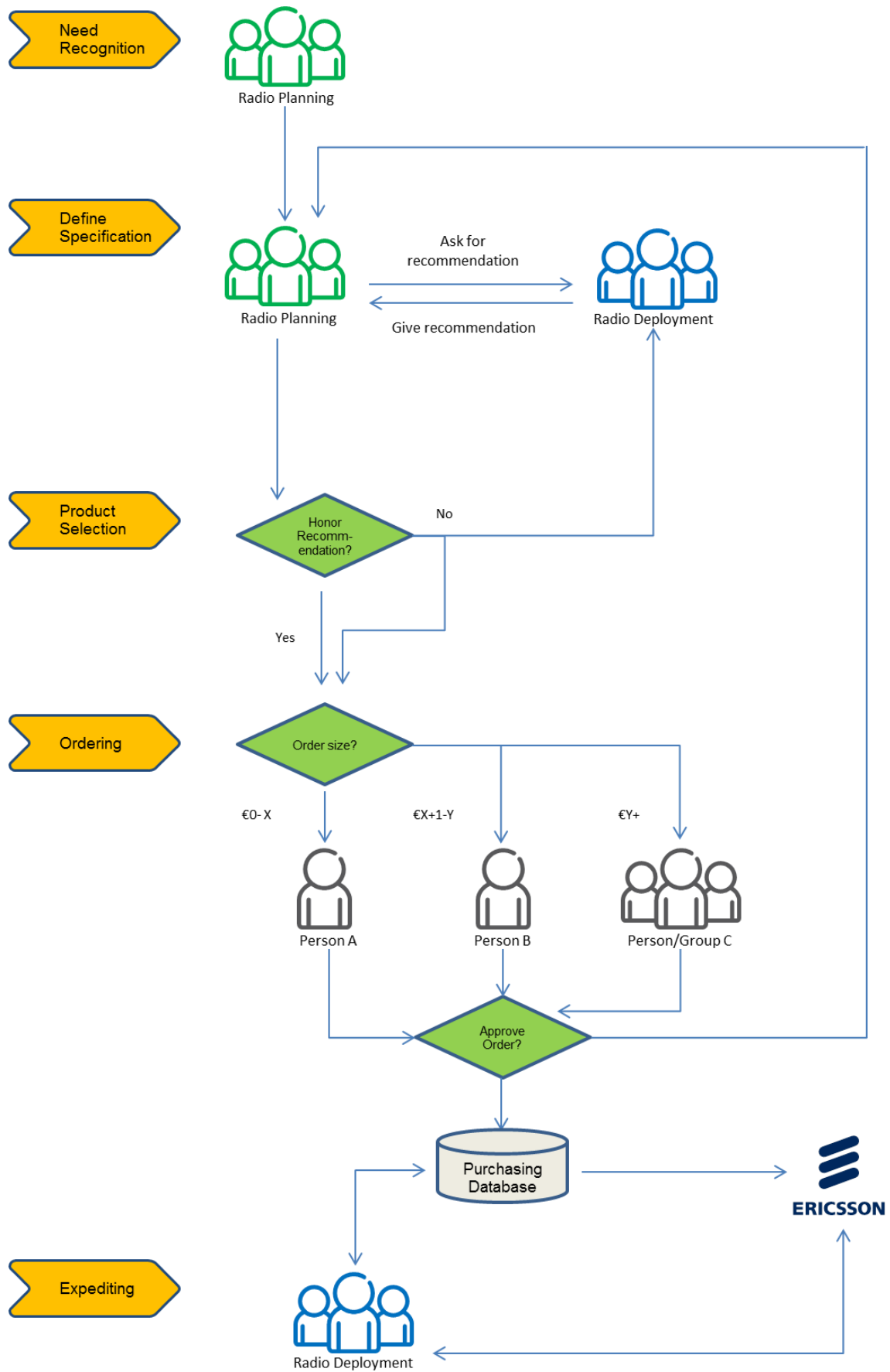


Figure C3. Process flowchart Case B, D and E

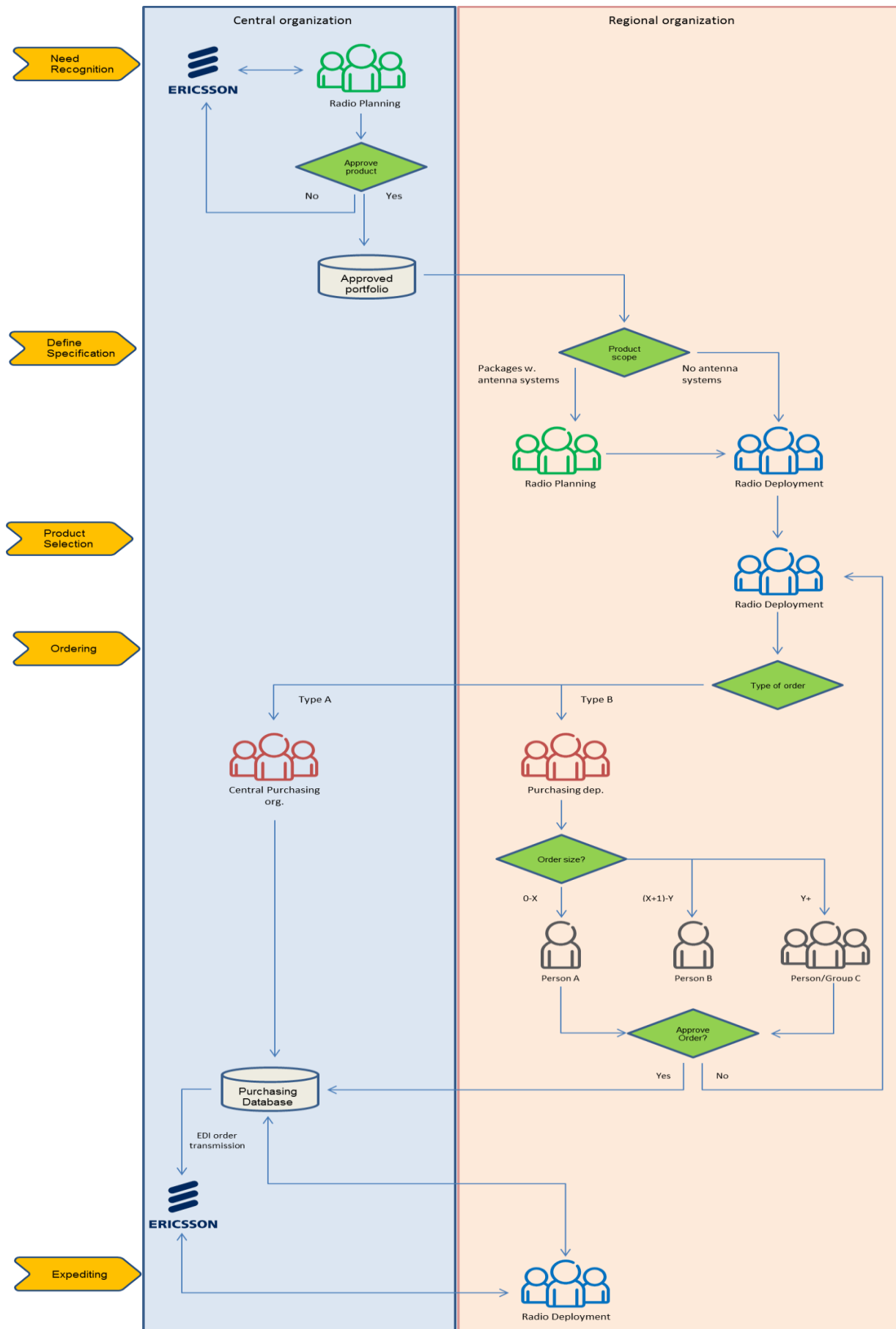


Figure C4. Process flowchart Case F

