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Perceived Customer Value and Software Usability: a Multiple Case Study in Electronic Invoicing

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Master's thesis

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Abstract of master's thesis

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Abstract

Objectives of the study

The objective of this thesis was to study perceived customer value of electronic invoicing and the possible effects of usability of electronic invoicing software on customer value. The purpose was to gain understanding into the benefits and sacrifices of electronic invoicing, as well as into the implications of usability on those benefits and sacrifices, and ultimately on customer value.

Academic background and methodology

This research was conducted as a qualitative multiple case study including 13 case companies. The case companies were accounting firms utilizing electronic invoicing. Contextual inquiry, which incorporates interview and observation, was used as the research method. Existent literature from the fields of customer value, electronic invoicing and usability were utilized.

Findings and conclusions

The main perceived benefits of electronic invoicing found in this research were benefits to the end-customer, ease of finding information, and increased workforce productivity. The main sacrifices found were usability related issues, price, learning costs, and Internet access. Usability appeared to affect case companies in relation to the number of benefits and sacrifices they perceived. Furthermore, all the case companies with high usability perceived electronic invoicing as value creating, while the case companies with low usability were divided into two groups: those who perceived electronic invoicing as valuable and those did not. It is possible that the lack of information on competing solutions, and therefore bounded rationality, affected perceptions of value.

Keywords Customer value, electronic invoicing, usability

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Tutkimuksen tavoitteet

Tutkimuksen tavoitteena oli tutkia sähköisen laskutuksen koettua asiakasarvoa ja ohjelmistokäytettävyyden mahdollisista vaikutuksista sähköisen laskutuksen muodostamaan asiakasarvoon. Tarkoituksena oli lisätä ymmärrystä sähköiseen laskutukseen liittyvistä hyödyistä ja uhrauksista, sekä käytettävyyden vaikutuksista näihin hyötyihin ja uhrauksiin, ja lopulta asiakasarvoon.

Kirjallisuuskatsaus ja metodologia

Tutkimus toteutettiin kvalitatiivisena monitapaustutkimuksena, joissa oli mukana 13 tapausyritystä. Yritykset olivat tilitoimistoja, jotka hyödyntävät sähköistä laskutusta. Tutkimusmenetelmänä käytettiin havainnointihaastattelua, joka koostuu haastatteluista ja havainnoinnista. Kirjallisuutta hyödynnettiin asiakasarvon, sähköisen laskutuksen ja käytettävyyden aloilta.

Tulokset ja päätelmät

Tärkeimmät sähköisen laskutuksen havaitut hyödyt tässä tutkimuksessa olivat loppuasiakkaalle muodostuva hyöty, tiedon löytämisen helppous, ja työvoiman tuottavuuden lisääntyminen. Tärkeimmät havaitut uhraukset olivat käytettävyyteen liittyvät ongelmat, hinta, oppimiskustannukset, ja Internet-yhteys. Käytettävyys näytti vaikuttavan tapausyritysten kokemien hyötyjen ja uhrauksien määrään. Lisäksi kaikki yritykset, joissa oli korkea käytettävyys, kokivat sähköisen laskutuksen luovan asiakasarvoa. Toisaalta yritykset, joissa oli alhainen käytettävyys, jakautuivat kahteen ryhmään: niihin, jotka kokivat sähköisen laskutuksen arvoa tuottavana ja niihin jotka eivät. On mahdollista, että tiedon puute kilpailevista ratkaisuista, ja sen takia rajattu rationaalisuus, vaikutti koettuun arvoon.

Avainsanat Asiakasarvo, sähköinen laskutus, käytettävyys

Table of Contents

List of Figures

List of Tables

1 Introduction

Marketing academics have recognized customer value as one of the most important research agendas and it has been a widely researched area for the past 20 years (Spiteri & Dion 2004). The Marketing Science Institute has included customer value in its list of research priorities and several journals have had special issues on the topic (see, for instance, *Journal of the Academy of Marketing Science* in 1997 and *Industrial Marketing Management* in 2001) (Ulaga & Eggert 2005). More recently, the introduction of Vargo and Lusch's (2004) service-dominant (S-D) logic has directed more research interest into value, and especially into customer value (Woodruff & Flint 2006). As well as in academia, value has become an important construct in business management. Understanding and delivering customer value is seen as vital for creating competitive advantage (Woodruff 1997).

Technology-based companies are no exception in realizing the importance of value construct. In the last few years, technology-based companies have started to include customer value in the core of their strategic focus. Understanding what is valuable for customers and what is the potential value of offerings is seen as critical for success. Consequently, technology-based companies are concentrating more and more on selling customer value rather than products. (van der Haar, Kemp & Omta 2001) This change in strategy, from selling products to concentrating on customer value, has been fuelled by the realization that customers do not purchase a product or a service per se, rather they purchase the outcome or the value, which they gain from the use or ownership

of a product (van der Haar, Kemp & Omta 2001; Gummesson 1995, 250) or as Phillips et al (1999) put it, customers purchase the service capabilities of a product or a service.

Usability could be considered as one of the factors creating value for customers with technology-based products. However, there is very little research regarding usability and customer value. Existing literature concentrates mainly on research of method and tools for the development and testing of user-centric products and services (Babbar, Behara & White 2002). However, there is some research on the connection between usability and product quality, where the ease-of-use is considered as a central feature of product quality (Babbar, Behara & White 2002), and on usability and user satisfaction. For instance, a study done by Kekre, Krishan and Srinivasan (1995) found that usability is one of the most dominant factors driving customer satisfaction and the most important factor to end-users. They also found that how natural the user interface feels to the user and the uniformity of user interfaces across different products, improve usability. Product usability is also considered as one of the most important factors for users in their purchase decisions (Han et al 2000). A recent study in the field of electronic invoicing, focusing on the criteria businesses consider when choosing their electronic invoicing providers, found that end-user usability is one of the main factors buyers consider when conducting purchase decisions. The study also found a considerable difference in customer value between average and high usability. (Myllynen 2011)

This thesis has been written as a part of the Real-Time Economy (RTE) Program. The RTE program is collaboration between Aalto University School of Economics, Tieto and Aditro. The aim of the program is to research and promote technologies, processes and concepts that enable creation of real-time economy. The empirical study was executed in association with the

Association of Finnish Accounting Firms and Aalto University School of Science's Strategic Usability Research Group.

1.1 Aim of the Study and Research Problem

This study is a multiple case study, with an aim to explore perceived customer value and the effects of usability in customer value. The objective is to gain insight into what customers perceive as value creating and more specifically into the perceived benefits and sacrifices that determine the perceived customer value or lack thereof. In addition, the objective is to create understanding into how usability affects these perceived benefits and sacrifices and ultimately the perceived customer value. Lastly, the goal is to explore customer value and usability in the context of electronic invoicing.

Customer value concept builds on the notion that customers do not purchase products or services; they purchase the ability to create value for themselves. Use situations are often emphasized in customer value literature (e.g. Woodruff 1997) as that is when a customer can achieve value through the product use. As use situations are important in customer value creation, usability of technology-based products is expected to be one of the attributes of customer value. If one cannot use, or has difficulty using, a product, how can they gain value through use of the product?

The research question is:

What are the implications of usability on customer value in electronic invoicing?

Supplementary research questions are:

1. *What are the customer perceived benefits and sacrifices of electronic invoicing?*
2. *How does usability affect the perceived benefits and sacrifices of electronic invoicing?*

1.2 Scope of the Study and Limitations

This thesis focuses on customer value purely from the customer perspective. Supplier perspective on customer value is not covered, even though it is acknowledged that there could be a gap between what suppliers expect to be value creating for customers and what customers perceive as value creating. Also, this study concentrates on the customer value of electronic invoicing in an industrial context. Therefore, business-to-consumer electronic invoicing is left outside of the scope. Finally, as this study focuses on accounting firms, electronic data interchange (EDI), which is a method of exchanging electronic invoices between large companies, is left outside of the scope. The observation part of the empirical study concentrates on observing the handling of purchase invoices as purchase invoicing is where the most benefits, and therefore the most value, can be expected to be achieved.

1.3 Structure of the Thesis

This thesis is divided into six chapters. First the introductory chapter discusses the topics covered in this thesis in brief. Chapter two concentrates the theoretical background of customer value and usability. This chapter discusses on the concept of customer value in greater detail as well as usability, which is

presented through Jakob Nielsen's framework of usability and the ISO 9241-11 standard on usability. In chapter three the research context of electronic invoicing is presented. Also, the methodology of this study is explained and the methods of data collection and analysis are presented in chapter three. Chapter four covers case study analysis and discussion. Finally, conclusions of the study are put forth in chapter five.

2 Theoretical Background

This chapter begins with a review of the existing literature of customer value. Then customer value is differentiated from the concept of customer's values, as well as from the conceptually close constructs of quality and customer satisfaction. Also, the attributes of customer value are discussed. Finally, usability is described through Jakop Nielsen's framework of usability and the ISO usability standard.

2.1 Customer Value

In marketing and organizational management value has been researched essentially from two perspectives: value-of-the-customer and value-to-the-customer. Value-of-the-customer research focuses on the seller's perspective of value: the value of customer captured by the seller. (Ulaga & Eggert 2005) One dominant field of study concentrating on the value-of-the-customer is the Resource-Based View (RBV). The research in RBV concentrates on the attributes that can contribute to a sustainable competitive advantage i.e. how firms create and capture value. As with all value research, there has been a lot of debate over the concepts of value, value creation and value capture within the RBV field and how those terms should be defined (e.g. Priem & Butler 2001; Makadok & Coff 2002). These terms are used in slightly differing ways and in slightly different meanings, nevertheless value creation (and value capture) is mostly understood as the process by which a firm or several firms create and capture value, thus the aim of this research stream is to explain firm profitability. (Makadok & Coff 2002)

Value-to-the-customer, on the other hand, concentrates on the value the customer receives or perceives (Ulaga & Eggert 2005). This concept that only customers can determine the value of products and services was put forth by Levitt (1983) and has been one of the focal points of marketing research for the last 20 years (Grönroos 2006). In this thesis, I will concentrate on value-to-the-customer (demand-side) perceptions of value.

There have been a multitude of terms used to refer to the demand-side perception of value, for instance, customer value (Woodruff 1997; Gale 1994; Holbrook 1994), perceived value (Zeithaml 1988), customer perceived value (Ravald & Grönroos 1996), and most recently value-in-use (Vargo & Lusch 2004). Even though the definitions of these terms are not identical, the underlying notions appear to be the same (Woodall 2003). The term customer value will used in this thesis, as it appears to be the most commonly used term in literature (Woodall 2003). Essentially, customer value is a value concept that considers value from the customer's perspective. Customer value is the customer's perception of value rather than value that is created for the seller. (Woodruff 1997) It must be noted, though, that the term customer value has been utilised also in the value-of-the-customer research stream. In value-of-the-customer, customer value is understood as the value realized from a specific customer, although lately the term customer lifetime value (CLV) has been used in this regard. (Woodall 2003)

As there is no consensus on the terminology for the concept of customer value, there is also a multitude of definitions. In spite of great amounts of research interest and an abundance of studies, further clarification is still needed and no common concept has yet been reached (Ulaga 2001). There are several reasons contributing to the fact that a universal definition has not been achieved

(Sánchez-Fernández & Iniesta-Bonillo 2007), such as the fact that value is a complex (Lapierre 2000), subjective (Zeithaml 1988) and dynamic (Woodruff 1997) concept.

Two of the most often quoted definitions in customer value literature are Valarie Zeithaml's (1988) and Robert Woodruff's (1997) definitions. According to Zeithaml (1988) "*perceived value is the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given*". Therefore, value is a trade-off between whatever the customer wants out of the product and what the customer gives up to obtain the product. Customer wants are highly subjective in nature, as are the customer perceptions of what is given. Customer's perception on what has been forfeit to acquire value can be, for instance, the cost of the product or other sacrifices made to receive the product, or a combination of these. Thus, sacrifices are monetary or nonmonetary costs, which can include, for instance, time and effort. (Zeithaml 1988)

Woodruff (1997), on the other hand, describes customer value "*as a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations*". Woodruff's definition is similar to Zeithaml's as it also defines customer value as the customer's subjective preference. Woodruff continues that customers in different segments can value different attributes in the same product, or they can value the same attributes in differing degrees of the same product. However, Woodruff's definition does not include any trade-off between what the customer receives and gives up. Rather, Woodruff characterises customer value through Woodruff and Gardial's (1996) means-end type customer value hierarchy model (see Figure 1).

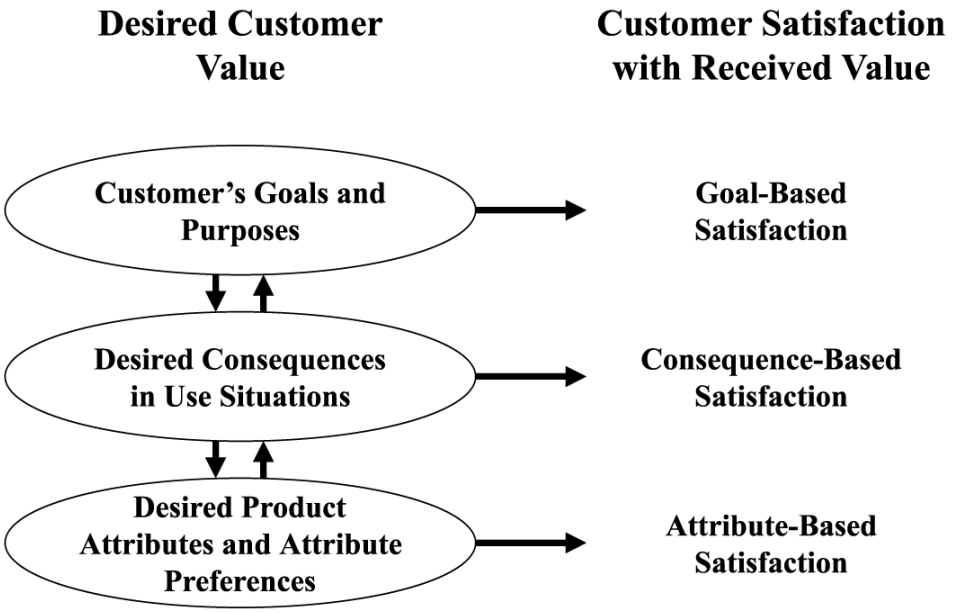

Figure 1. Customer value hierarchy model (Woodruff 1997)

The customer hierarchy model consists of three levels of customer perceptions of a product. On the most basic level, the customer considers a product based on its *attributes*. Attributes can be features or components of a product or a service, or activities that can be conducted with a product or a service. Attributes are very concrete and can often be defined objectively. One product or service can comprise of multiple attributes. On the second level of the hierarchy are the customer's considerations of positive or negative *consequences* which result from product or service use. Consequences are more subjective than attributes: where attributes describe the product, consequences consider the customer's experiences with the product and the outcomes of those experiences to the customer. The highest stage of the hierarchy is *customer goals and purposes*. This is the most abstract level, including the most elemental and essential motivators for the customer, whether they are a person, a purchasing unit or an organization. Customer goals are the ultimate objectives the customer is trying to achieve, including core values. Purposes of a product are the consumption goals the customer is trying to realize. Purposes of product can be broadly categorized as value-in-use and

possession value. Value-in-use is the outcomes and objectives that are fulfilled by product use. A product can entail several value-in-use outcomes that must be met. Possession value, on the other hand, is the value the customer gains from merely owning a product or using a service. (Woodruff 1997; Woodruff & Gardial 1996) Woodruff's definition of value concentrates on the aspects associated with products and services. Thus, value is achieved through the use or the possession of a product or a service, or most often, a combination of these.

Zeithaml's and Woodruff's definitions have been criticised for their product centric view of value. For instance, Ravald and Grönroos (1996) argued that value is not perceived during a single episode, but rather long-term, during the whole relationship between the customer and the seller. Moreover, the relationship per se can have an effect on customer value. Accordingly, both episode and relationship benefits, as well as episode and relationship sacrifices are taken into consideration by a customer. Thus, a customer does not just consider each offering individually, but is more likely to consider the whole relationship with the seller when judging value. Based on this line of reasoning, Ravald and Grönroos (1996) argue that relational value drivers should be considered in addition to the product and service related drivers. Relational value drivers can include, for example, the customer's trust towards the supplier, customer's perception of supplier's image, and the time or effort needed for the relationship (Lapierre 2000).

Even though the customer value construct is lacking in universal definition, there is still some consensus on key issues related to the matter. Ulaga and Eggert (2005) have identified four recurring characteristics in literature: 1) customer value is a subjective concept, 2) it is conceptualized as a trade-off between benefits and sacrifices, 3) benefits and sacrifices can be multifaceted, and 4) value perceptions are relative to competition. They suggest that "*on a*

high level of abstraction, customer value is defined as the trade-off between the benefits ("what you get") and the sacrifices ("what you give") in a market exchange". Holbrook (2006) offers a slightly different, though very complementary, set of value characteristics. He presents customer value as 1) *interactive* in that it entails interplay between a subject (e.g. a consumer) and some object (e.g. a product); 2) *relativistic* in three different ways: customer value is *comparative* as merits of one object depend on the relative merits of another, *situational* as value can vary in different contexts, and *personal* as value differs from one person to another; 3) customer value involves a *preference* or a judgement as there is some quality that is preferred over another; 4) value resides in consumption *experience*, rather than in an object or a product.

2.1.1 Value-in-use

According to Vargo and Lusch's (2004) service-dominant logic (S-D logic), value can be determined from two perspectives: value-in-exchange and value-in-use. In the *value-in-exchange view*, value is seen as an embedded part of a product. Thus, a product per se has value without any need for a customer. (Vargo & Lusch 2004) Michael Porter's (1985) value chain is an example of value-in-exchange view. The value chain consists of logistic activities, which are supported by services. In the chain, every activity adds value. The customer is not part of the chain. Gummerson (1998), for instance, has criticised this view of customer as a mere receiver of value, where customer value is the result of a firm's value adding or value creation activities. He argues that due to the fundamental role of the customer in marketing, absent the customer, no value can be created. Consequently, only a consumed product or service can have value. *Value-in-use*, on the other hand, is the view that value is created during the customer's use or consumption of a product or a service (Payne, Storbacka & Frow 2008). Value-in-exchange can also be seen as part of value-in-use; it

can be considered as the resources needed for value foundation in enabling the creation of the customer's value-in-use (Grönroos 2008).

According to S-D logic, the customer is always a co-creator of value and supplier's can only offer value propositions, they cannot deliver or create value on their own (Vargo & Lusch 2008a). Firms are assisting customers in their own value creation processes rather than providing customers with products or services (Vargo & Lusch 2008b). Grönroos (2008) agues, though, that if value can only be created during the customer's use of an offering, the customer should be considered as the creators of value, not as the co-creators. Thus, companies can be part of a customer's value generating processes, not the other way around. They can assist a customer's own value creation processes by providing resources for these processes. According to Grönroos (2008) companies can be seen as value foundation creators, who facilitate customer value by providing them with resources. "*When customers use these resources (goods or services) and add other resources (goods, services, and information) and skills held by them, the value potential of the resources is developed into value-in-use*". Suppliers should concentrate less on their current offerings and more on understanding their customers' everyday practises and value generating processes, and on the ways to assist those practices and processes in value supporting ways. (Grönroos 2008)

The construct of value-in-use discussed in S-D logic literature has its foundation in customer value research. Some researchers, for instance Grönroos (2008), argue that value-in-use is the same concept as customer value. Others, such as Macdonald et al (2011), give value-in-use its own definition. Macdonald et al (2011) define value-in-use as the *customer's outcome, purpose or objective that is achieved through service*. This definition appears to be very similar to the definitions of customer value. By arguing that there is no value in an offering until a customer uses it and thus creates value (e.g. Vargo & Lusch

2004; Grönroos 2008), value-in-use does take a slightly different stance on the concept of value vis-à-vis customer value. The customer value research has concentrated on the customer's view on what they consider as value creating and how they perceive value. The research interest in customer value has mostly concentrated on customer perceptions of value and less on whether that value exists without the customer. That being said, value-in-use research in S-D logic could be seen as a continuation of customer value research.

3.1.2 Customer Value versus Customer Values

Even though some researchers have used the terms value (singular) and values (plural) to describe one concept, it is important to understand the difference between these terms and consider them as separate, individual concepts (Sánchez-Fernández & Iniesta-Bonillo 2007). Values can be described as a customer's personal, fundamental and long-lasting beliefs and perceptions on what is right and wrong, or in a business to business setting, customer organization's central principles about how to act and operate. (Woodruff 1997) Value, on the other hand, refers to an interaction between a customer and a product or a service, and a preferential trade-off between benefits and sacrifices regarding that product or that service (Payne & Holt 2001). Flint et al. (1997) take a somewhat different approach and consider the customer's values to be part of the concept of customer value. Their definition of values is consistent with the definition above. However, they consider values to be one of the three elements comprising customer value. The other elements are desired value and value judgment. Desired value is something that customers are aspired to connect to their values and that enable customers to reach their desired end-states, where as judgment value is the evaluation of value received from a product or a service. (Flint, Woodruff & Gardial 1997)

2.1.3 Value, Quality and Customer Satisfaction

Value has a close conceptual relationship with quality and customer satisfaction. Both quality and customer satisfaction are popularly used measures in marketing. However, value was chosen as a research topic over quality and customer satisfaction due to certain shortcomings in the latter concepts. (Ulaga & Chacour 2001) Quality, which can be defined as the customer's judgement of overall superiority or excellence of a product (Zeithaml 1988) can be seen as too narrow to explain the customer's evaluation of an offering, as traditional quality models do not take into account the customer's perceived price or costs (Ravald & Grönroos 1996).

Customer satisfaction, on the other hand, has been mostly studied through the concept of the disconfirmation paradigm (Parasuraman, Zeithaml & Berry 1988). According to the disconfirmation paradigm, customer satisfaction is the outcome of evaluation between perceived performance and one or several of comparison standards, for example customer expectations. Thus, a customer is satisfied when they perceive that product performance is equal to what was expected (confirming) and very satisfied when product performance surpasses expectations (positively disconfirming). If the product performance does not reach the level of customer expectations, the customer will be dissatisfied (negatively disconfirming). Traditional customer satisfaction models have been criticized as they only include existing customers' evaluation of a firm's performance, therefore leaving out the role of competition. (Ulaga & Chacour 2001) For instance, a customer can be satisfied, but will still change to competition, if they offer something that better suit the needs of the customer. Also, the disconfirmation paradigm tends to simplify the customer's perceptions of a product or a service to one of three alternatives (negatively disconfirming, confirming, or positively disconfirming), which leaves out a lot of information on customer perception. Exploring customer value goes beyond

assessing quality or satisfaction, in that, it enables studying customer perceived benefits, the customer's own sacrifices to gain those benefits and, the trade-off between those two (Ulaga & Chacour 2001).

2.1.4 Customer Value Drivers

As it is widely agreed that customer value is a trade-off between benefits and sacrifices, to understand customer value, one must understand what the benefits and sacrifices are for the customer. Even as customer value has been a widely research construct, it is still "*in its research infancy*" (Ostrom et al. 2010). Most research in customer value has concentrated on defining customer value and there has been very little empirical research on the subject (Woodruff & Flint 2006, 184; Lapierre 2000). Lack of empirical studies could be due to the subjective and contextual nature of customer value, which can make it difficult to find common drivers of customer value. One of the studies on customer value is Ulaga and Chacour's (2001) study, in which they argue that value is a trade-off between quality and price, especially in the business-to-business context. They group customer perceived benefits into quality-related aspects and customer perceived sacrifices as price-related aspects. Quality can be divided into three categories of drivers: product characteristics (product-related components), service aspects associated with the product (service-related components), and drivers concerning promotion (promotion-related components) (see Figure 2). They argue that more specific drivers depend on the specific industry in question.

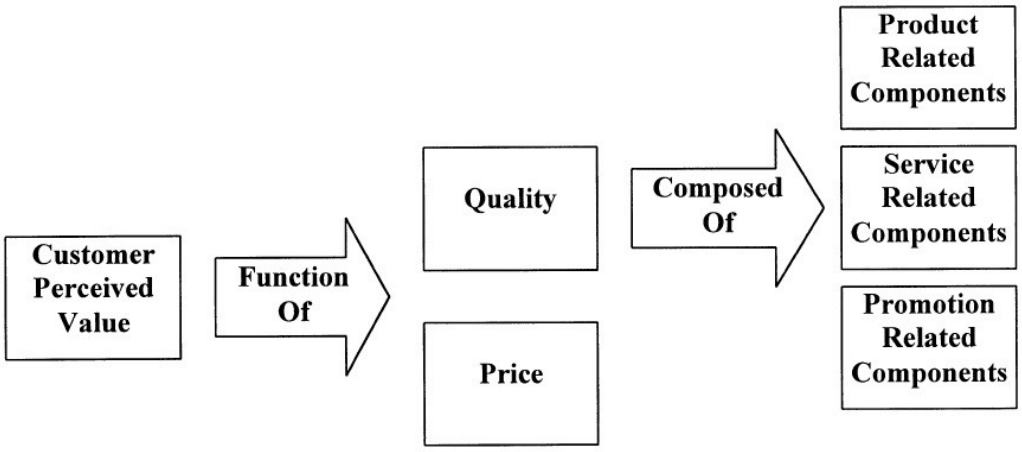

Figure 2. Components of customer-perceived product value (Ulaga & Chacour 2001)

Ulaga and Chacour (2001) mention that in marketing research the relationship between quality and price has been problematic to study. Firstly, it is typical that the seller understands the quality of a product better than the customer, thus the information availability is asymmetric. Therefore, customers often consider other cues, including branding, packaging, or word-of-mouth, to evaluate a product. Secondly, price can be perceived as a sacrifice, but it can also be perceived as a sign of quality or value, or as both of these. Nevertheless, Ulaga and Chacour (2001) argue that the above mentioned problems are more related to consumer-to-business markets and that business-to-business markets are characterized by symmetric information.

Lapierre (2000) studied customer value drivers in the business-to-business context in the information technology (IT) industry. In this study, 13 drivers of value were identified, out of which ten are benefit-related and three sacrifice-related. The drivers can be divided into product, service and relationship categories (see Figure 3).

Benefit attributes

1. alternative solutions (product related)
2. product quality (product related)
3. product customization (product related)
4. responsiveness (service related)
5. flexibility (service related)
6. reliability (service related)
7. technical competence (service related)
8. supplier's image (relationship related)
9. trust (relationship related)
10. supplier solidarity with customers (relationship related)

Sacrifice attributes

11. price (product and service related)
12. time/effort/energy (relationship related)
13. conflict (relationship related)

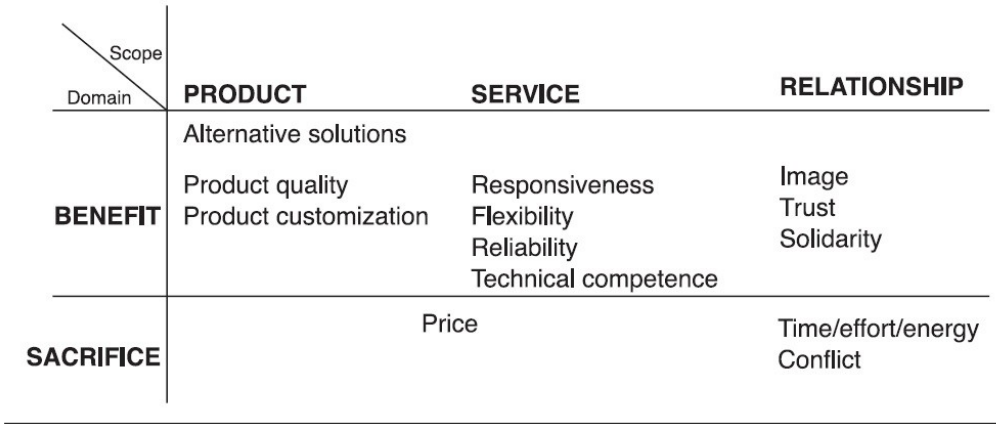

Figure 3. Total value proposition (Lapierre 2000)

Contrasting with Ulaga and Chacour's (2001) argument that value is a trade-off between quality and price, in his study, Lapierre (2000) found that with the exception of the conflict attribute, which accounted for less variance than the

other drivers, product quality was the driver that contributed the least to value. Price, on the other hand, was seen as an important attribute to value.

Woodall (2003) has identified an extensive list of customer value drivers from marketing literature (see Table 1). He divides benefits into attributes and outcomes, where attributes are the value creating benefits of the product or a service and outcomes are the realized benefits to the customer, resembling Woodruff and Gardial's (1996) customer value hierarchy model (see Figure 1).

BENEFITS		SACRIFICES
Attributes	Outcomes	
Perceived quality	Functional benefits	Price
Product quality	Utility	Market price
Quality	Use function	Monetary costs
Service quality	Aesthetic function	Financial
Technical quality	Operational benefits	Costs
Functional quality	Economy	Costs of use
Performance quality	Logistical benefits	Perceived costs
Service performance	Product benefits	Search costs
Service	Strategic benefits	Acquisition costs
Service support	Financial benefits	Opportunity costs
Special service aspects	Results for the customer	Delivery and installation costs
Additional services	Social benefits	Costs of repair
Core solution	Security	Training and maintenance costs
Customisation	Convenience	Non-monetary costs
Reliability	Enjoyment	Non-financial costs
Product characteristics	Appreciation from users	Relationship costs
Product attributes	Knowledge, humour	Psychological costs
Features	Self-expression	Time
Performance	Personal benefits	Human energy
	Association with social groups	Effort
	Affective arousal	

Table 1. Benefits and sacrifices (Woodall 2003)

As there is quite a lot of overlap between the presented drivers, Woodall proposes that the attribute drivers could be encompassed into 1) goods quality, 2) product features, 3) core product features, 4) added service features, and 5) customisation. Similarly, he proposes that the outcome drivers could be reduced

into 1) strategic benefits, 2) personal benefits, 3) social benefits, 4) practical benefits and 5) financial benefits. Finally, sacrifice drives could be reduced into 1) monetary costs and 2) non-monetary costs (see Figure 4).

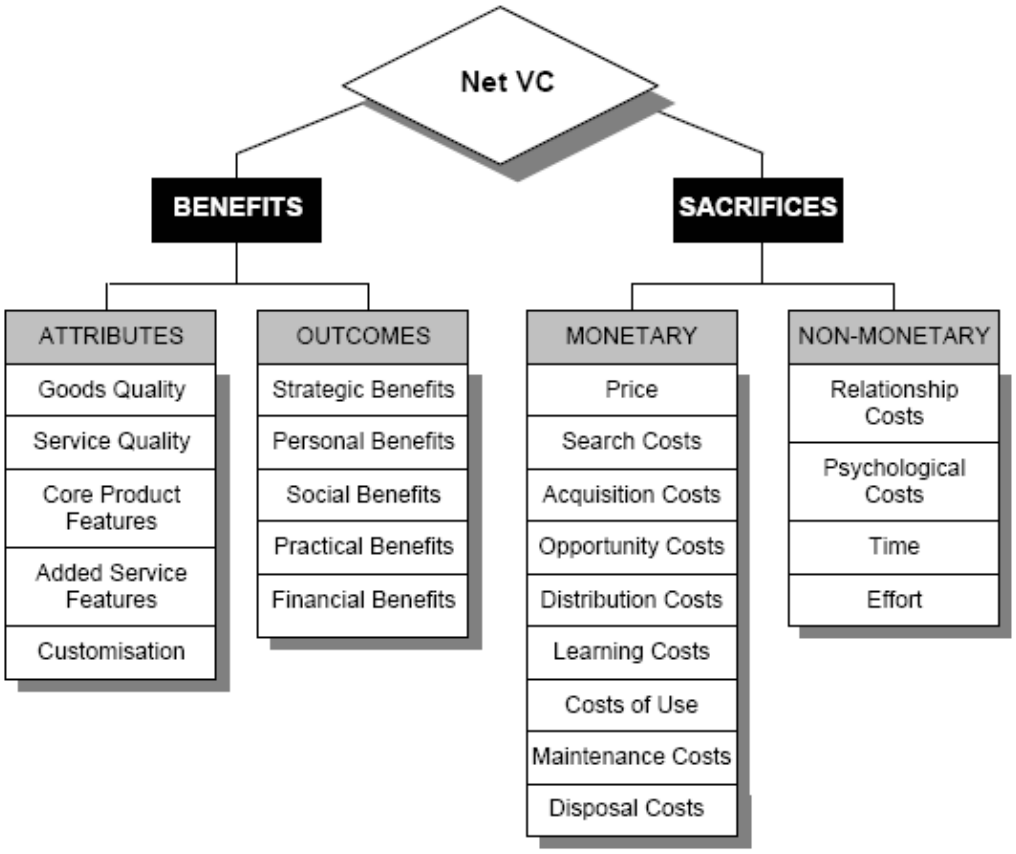

Figure 4. Benefits and sacrifices - diagrammatic form (Woodall 2003)

2.2 Usability

Usability is widely recognized as a critical factor in the product design literature as well as in the human computer interaction (HCI) literature (Babbar, Behara & White 2002). The objective performance of a product has been the primary objective of usability studies in the past (Nielsen & Lavy 1994), where the user's subjective view of usability has become recognized in recent years.

In this section, the two most commonly used usability frameworks, Jakob Nielsen's usability framework and the ISO standard on usability, are presented. Nielsen's definition is based on practical experience of usability testing and ties usability with other aspects of system acceptance. The ISO standard looks at usability through the context of use, intended objectives and usability measures.

2.2.1 Nielsen's Usability Framework

According to Jakob Nielsen (1993) usability is a part of the concept of system acceptance, which he defines as the degree to which a system satisfies the needs and requirements of users and other possible stakeholders. System acceptability consists of two attributes: social acceptability and practical acceptability (see Figure 5). Social acceptability relates mainly to the purposes of a system, for instance, if a system gathers information of the user that s/he might not want to disclose. Practical acceptability, on the other hand, is composed of all other attributes related to system acceptance. It can include categories such as cost of the system, availability of support, reliability and compatibility with other systems, depending on the needs and requirements of users and other stakeholders. However, usefulness is always a category of practical acceptability.

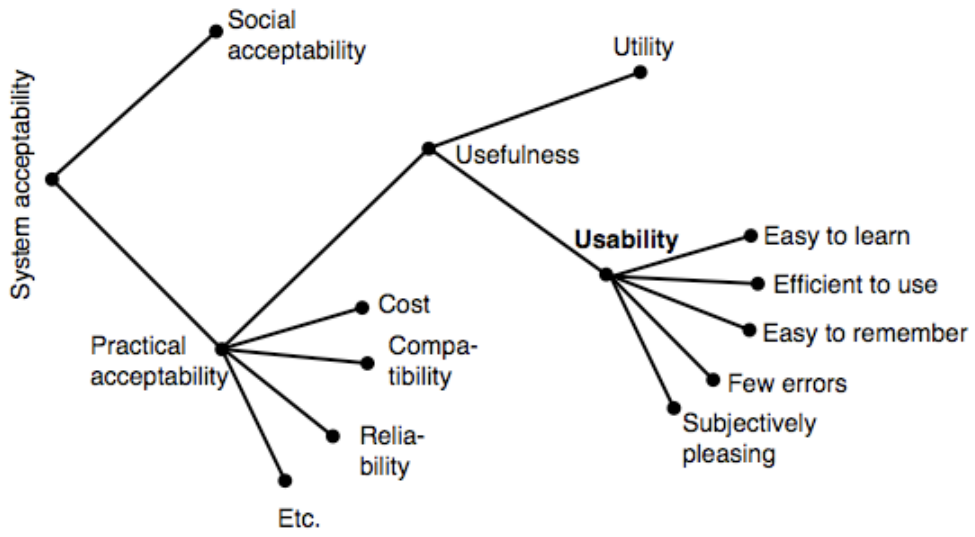

Figure 5. Nielsen's (1993) taxonomy of system acceptability

Usefulness refers to the user's ability to use the system to achieve a desired goal, and can be divided into utility and usability. Utility means the functionality of a system, whether it can be used to perform needed tasks. Usability means how well users can utilize that functionality. Nielsen considers usability to refer to all aspects of system use that users can be part of, also installation and maintaining a system. Some other researchers, such as Kekre, Krishan and Srnivasan (1995) regard installability and maintainability as attributes of user satisfaction of a system together with usability. Nielsen describes usability through five attributes: learnability, efficiency, memorability, errors, and satisfaction.

Learnability can be considered as one of the most important factors of usability as learning to use a system is commonly the user's first experience with it. The easier it is for the user to learn to use a system, the faster they can start utilizing it in their work. Hard to learn systems can also discourage users from using them and the user might either stop using the system completely or in a

mandatory use situation (user has no choice, but to use a system, for instance in a work setting) use the system as little as possible.

Efficiency of use denotes the performance level of a system after a user has learned to use it. Learnability of a system affects the time and amount of use needed for a user to become an expert. Therefore to measure efficiency of use, one has to consider the learnability of the system to establish the amount of use users would have to have accumulated to be considered as experienced user.

Nielsen divides users into three categories: novice users, casual users and expert users. Novice users have no experience in using a specific system and expert users have experience in using a system and use it somewhat regularly. Casual users have learned a system, but only use it infrequently. *Memorability* of a system relates mostly to casual users and how easy it is for them to remember how the system is used when they return to use it after a period of non-use. However, memorability can refer to any user that has once learned system use and returns to use it after having not used the system for a while. Memorability does not refer to, for instance, how well a user can recall what they have to do in a system to accomplish a certain task or contents of system when they are not on the computer. Thus, memorability does not mean how much of a system a user can recall while not using a system, but rather how easy it is for them to return to the use of a system.

Amount and severity of *errors* affects usability as users should make as few errors as possible and the user should be able to recover from those errors easily. Users always make some errors though. Therefore, users should be able to correct an error straightaway. Some errors are hard for the user to recover from, for instance, by preventing the user from executing a task or by damaging the desired end result. These are referred to as catastrophic errors.

How pleasant a system is to use is especially important in non-mandatory settings, where users can determine whether they want to continue to use a system or not. In a mandatory setting, where a user does not have a choice whether to use a system or not, the user still forms an opinion, whether a system is *subjectively pleasing* for them or not. The user's opinion on how subjectively pleasing a system is should be differentiated from the user's general attitudes toward computers. Even if a user has a negative attitude towards computers, they might be satisfied with a specific system and vice versa.

2.2.2 ISO 9241-11 Standard: Guidance on Usability

The ISO 9241-11 (1998) standard defines usability as "*the extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use*" Usability is therefore the user's ability to reach wanted objectives in use context. The ISO 9241-11 standard is created for an office work setting with visual display terminals. However, it can be employed in other settings, given that there is a user interacting with a product to accomplish some objectives.

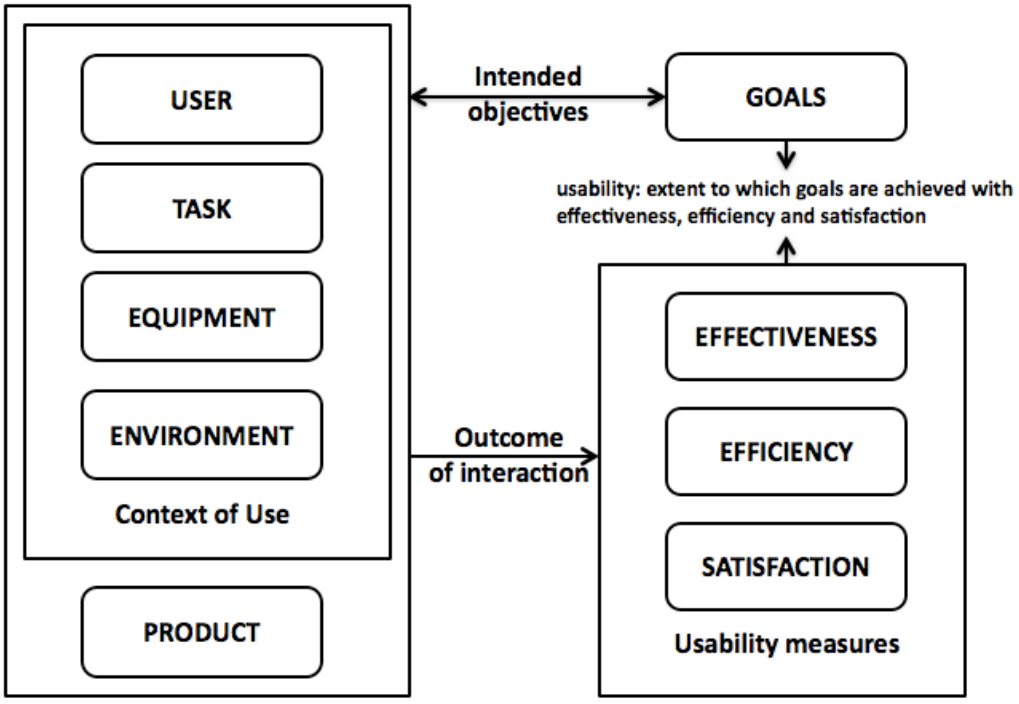

Figure 6. Usability framework (ISO 9241-11 1998)

The ISO 9241-11 usability framework (see Figure 6) puts emphasis on the situation in which a product is used and stresses that the contextual factors, such as the users, tasks, equipment (hardware, software and materials), and the physical and social environments can affect the usability of a product. Other components of usability are the product and the goals of use.

The ISO 9241-11 usability framework lists three usability measures: effectiveness, efficiency and satisfaction. *Effectiveness* is defined as "*accuracy and completeness with which users achieve specified goals*". Effectiveness could be measured, for instance, from what percentage of tasks is completed or the amount of errors when completing a task. *Efficiency* relates to the amount of resources needed in relation to effectiveness achieved. For instance, time, effort or financial costs can be relevant resources. *Satisfaction* is described as "*freedom from discomfort, and positive attitudes towards the use of the*

product" and can be measured in many ways, including asking the user's personal opinions of product and product use, or by recording the number of positive and negative comments during a usability test.

2.3 Customer Value and Usability

The subjective and contextual nature of customer value has made it difficult to identify common drivers for customer value. Value drivers can vary between different markets as well as different segments (Ulaga & Chacour 2001; Ulaga & Eggert 2005). However, most customer value frameworks include product quality as one of the drivers or components of customer value (see Section 2.1.4). As usability can be seen as a component of product quality (Babbar, Behara & White 2002), it is expected in this study that usability could have an effect on the product quality benefit and through that on the perceived customer value.

3 Methodology

In this chapter the methodology used in this study is presented. As electronic invoicing was the context in which the empirical study was conducted, the first section of this chapter discusses electronic invoicing in more detail. Following the electronic invoicing section, the research method of contextual inquiry is discussed, after which the case companies are introduced and the data collection and analysis is explained.

3.1 Electronic Invoicing

Finland is one of the leading countries in adapting to electronic invoicing, both in business-to-business and in business-to-consumer markets. Out of all Finnish companies, which employ at least 10 people, 79 percent were able to receive and 64 percent were able to issue electronic invoices in 2011 (Statistics Finland 2011). There has been a fast increase in the adoption of e-invoicing in recent years, as the same figures from the year 2008 show that out of Finnish companies only 34 percent were receiving and 32 percent were issuing e-invoices (Statistics Finland 2008).

The European Commission's Expert Group on E-Invoicing (2009) defines electronic invoicing as "*the sending or making available of an invoice and its subsequent processing and storage, wholly by electronic means*". They continue that during the whole process of e-invoicing data has to be fully structured enabling senders, receivers and other parties to process data automatically. By this definition an electronic image of an invoice (e.g. a

scanned copy of an invoice) and sending or receiving it, does not constitute electronic invoicing. This definition is quite strict as it allows no manual processing. In contrast, EBA's Invoicing 2010 Report (2010) discusses two types of electronic invoices: unstructured and structured. *Unstructured invoice document* can be either an electronically created document, such as text, pdf or an email, or a paper invoice, which is scanned into an electronic document, neither of which can be processed automatically by the receiver. *Structured invoice documents*, such as edifact or xml, is an invoice which has an agreed structure, format and content. Structured invoice documents can be processed automatically by both the sender and receiver. (EBA 2010)

Electronic invoicing, as invoicing, is part of a broader set of business processes between trading parties, including the placing and acceptance of an order, fulfilment, delivery and payment. These processes can be identified as the purchase-to-pay process from a buyer‘s perspective, and order-to-cash from a seller‘s perspective. (EBA 2010) As the concentration of this thesis is in electronic invoicing software, the other business processes are not discussed in detail.

3.1.1 Benefits of Electronic Invoicing

There have been several studies on the benefits of electronic invoicing (e.g. Penttinen 2008; Potapenko 2010). The European Commission's Expert Group on e-invoicing (2009) identified the following six major benefits of electronic invoicing:

1. Improved competitiveness through digitalization of business processes. Improved competitiveness can be achieved by raised productivity and customer satisfaction in particular.

2. Significant cost savings from migration to e-invoicing. Major elements that enable cost savings are the reduction of manual work and reductions in material and transport costs. Additional cost savings can be gained through full automation of financial processes and especially from full integration of physical and financial supply chain processes.

3. Improved cash flow through accelerated payments, and reduced credit losses. Processing times of invoices and payments are shorter and real-time accounting information can be accessed.

4. Increased workforce productivity. Electronic processes reduce the need for manual labour. Employees can concentrate on more productive work than for instance entering invoice information into accounting systems.

5. On the European level, the adoption of e-invoicing will promote greater integration and harmonization of standards and practices between European countries.

6. Decreased carbon emissions from a reduced need for paper and transportation. A recent study (Tenhunen 2011) found that the paper invoice carbon footprint is four times the carbon footprint of an electronic invoice.

These benefits are similar to the benefits found in a multiple case study (Penttinen 2008) of Finnish organizations. According to this study the main realised benefits of electronic invoicing are monetary gains through cutting costs, decreased circulation times, and elimination of manual errors and improvements in customer service. Table 2 summarized studied benefits from electronic invoicing.

E-invoicing benefits	Description	Source
Freed resources	Employees can concentrate on more productive work	Penttinen (2008)
Employee satisfaction	E-invoice processing appears more enjoyable for the invoice handlers than paper document processing	
Monetary gains through cutting costs	Paper invoices are more expensive than electronic invoices; invoice handling costs are lower for e-invoicing	Penttinen (Ed.) (2008)
Less errors in the handling process	Less need to enter information manually decreases the amount of errors	
Improved customer service	Improved processes enable better customer service	
Decreased circulation times	Time needed for content and payment approval has decreased	
Increased process transparency	Invoices and payments can be tracked online	
Enables real-time reporting	Up-to-date financial reports can be created any time	
Improved organizational image	Positive effect on organizational image and employee image	
Increased workforce productivity	Less time needed to accomplish the same work	Harald (2009)
Improved cash flow	Accelerated payments and reduced credit losses	
Standardised practices	Greater integration and harmonization of standards and practices	
Environmentally friendly	Decreased carbon emissions from a reduced need for paper and transportation	

Table 2. Electronic invoicing benefits

When looking at the benefits of electronic invoicing found in earlier studies, they all appear to be similar to Woodall's (2003) outcome drivers (see Section 2.1.4). Outcome drivers represent the realized benefits to the customer. None of the benefits seem similar to the attributes, such as product or service quality.

3.1.2 Electronic Purchase Invoice Handling

Most time and resources at a company's finance department are spent on the handling of purchase invoices. Therefore, the greatest amount of benefits can be achieved by automating purchase invoice handling and making it more efficient. (Lahti & Salminen 2008)

From the accounting perspective the purchase invoice handling process starts when a purchase invoice is received at a company and ends when the invoice is entered into bookkeeping, paid and archived (see Figure 7) (Lahti & Salminen 2008).

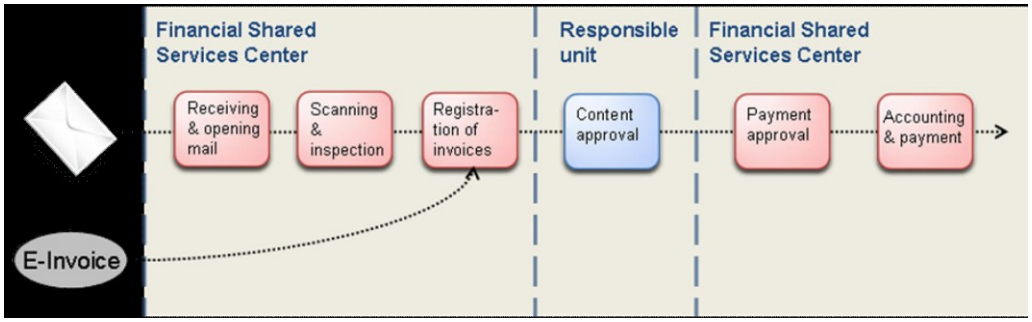

Figure 7. Purchase invoice handling process (Penttinen 2010)

An invoice can be received in many forms such as paper, email attachment, electronic invoice, etc. Paper invoices need to be scanned on to the computer and the invoice information needs to be entered into the electronic invoicing system, whereas electronic invoices arrive straight into the electronic invoicing system. After the invoice is received, it is passed on to content approval. Content approval is done by the person responsible for the specific invoice, for example a person responsible for a project to which the invoice relates to. Once invoice content is approved, the invoice is passed on to the responsible person for payment approval. Before electronic invoicing systems, in which invoices are sent for approval electronically, invoice were either taken to the responsible persons or sent to them by mail. This process often took days, if not weeks. Next, when the invoice is approved, the accounts payable person enters posting information into accounting system, including general ledger account number. Lastly, the invoice can be sent to the bank for payment. (Lahti & Salminen 2008; Penttinen 2010)

3.2 Contextual Inquiry

To gain an understanding into the customer value of electronic invoicing it was chosen to conduct a qualitative study. According to Woodruff and Gardial (1996, 158-160), studying customer value is based on the use of qualitative research techniques, since quantitative methods, such as surveys, can be somewhat constrained in the amount and type of data that can be acquired through their use. Woodruff and Gardial (1996, 160) continue that techniques that allow customers to use their own words and experiences are suitable for understanding customer value. They suggest interviews and observation as especially suitable methods. Observation is a valuable method, as it allows the researcher to see when the customer is using the product, while interviewing allows for in-depth conversations. (Woodruff & Gardial 1996, 167-8 & 174) To combine the benefits of observation and interviews, contextual inquiry, which is a commonly used research technique in usability and user experience research, was chosen as the research method. Contextual inquiry is designed especially for work context, which makes it well suited for this study. Contextual inquiry was used both for gaining understanding of customer value and to assess usability of electronic invoicing.

The main aspects of contextual inquiry are observing informants in the context of their everyday environment and interviewing them. Contextual inquiry has its roots in the fields of psychology, anthropology, and sociology. (Raven & Flanders 1996) It has its foundation in ethnographical research methodology and it can be seen as an application of ethnography or as a method derived from ethnography (Heikkilä 2005).

Contextual inquiry is based on four principles of interaction: context, partnership, interpretation, and focus. According to these principles, the interaction with the informant takes place in the *context* where they use the

object of study. Also, researcher and informant are on equal ground. Informant is seen as the expert of their field. Instead of the typical setting of interview, where the interviewer determines the flow of the interview and the questions asked, in contextual inquiry the researcher and the informant are trying to create understanding together, which is called a *partnership*. *Interpretation* means that the researcher tests their understandings and interpretations on the informant during the interaction. Lastly, a study has a clearly defined *focus* or object of interest. (Raven & Flanders 1996; Beyer & Holtzblatt 1998)

3.2.1 Context

As the name of the methodology is contextual inquiry, context is a central and critical aspect and basic requirement of contextual inquiry. Context can be defined as everything that relates to subject of interest; it is the reality in which the informant acts. Context is often used as a synonym for operational or working environment where the informant works and operates. (Heikkilä 2005)

According to Beyer & Holtzblatt (1998), people tend to summarize when they are asked to tell about their experiences in an interview. They often mention only things that are especially good or bad or give summarized version of the story. In contrast, when people are asked to discuss an ongoing experience, or in other words, something they are doing currently, they are more able to discuss even the smallest details of what they are doing. This was clearly visible during interviews and observations. Informants were interviewed first and then observed. Often, the most detailed and advantageous information was gained during observations when the informants were using the electronic invoicing system. Informants would clarify and add details to their earlier answers and in some cases were only able to answer certain questions when using the system. Beyer & Holtzblatt (1998) also mention that some aspects of work can be so automatic that people do not remember that they do those

things, unless they are currently doing them. Being in their everyday environment helps the informant explain their work and routines as well as enabling the researcher to observe the working environment, especially the aspects that can be very hard to explain in an interview, such as physical working environment, social environment and organizational culture (Heikkilä 2005).

3.2.2 Partnership

In contextual inquiry, the interaction between researcher and informant is seen as a partnership. The researcher is trying to learn about the informant's work and the informant can learn better ways to conduct their work. Beyer & Holtzblatt (1998) encourage the researcher to try to avoid typical roles such as interviewer - interviewee, guest - host, or expert - novice, as in these settings the informant might change their behaviour to please the researcher. Instead, the researcher is encouraged to treat the informant as an expert in their field and to go into the inquiry setting as an apprentice trying to learn from their mentor. This creates a more equal setting, where the informant as an expert is more comfortable to discuss and show their work. Apprentice role is also more than observing; an apprentice wants to learn not just observe. To establish partnership, in the beginning of each inquiry it was explained to the informants that the researcher is there to learn about the informants' opinions and ways of using electronic invoicing as the informants are experts in their particular system, not to evaluate informants or their abilities.

Holtzblatt and Jones (1993) suggest that recognizing informants as experts can be advantageous in the following ways: the participant understands that the inquirer did not come to visit to solve problems or answer technical questions, the inquirer can ask even naive questions, and there is a lesser possibility that

the inquirer misinterprets actions as they can ask the informant why they did something.

3.2.3 Interpretation

During the inquiries the researcher discussed observations and interpretations with the informants to create a common interpretation with the informant. This was mainly done by asking clarifying questions. Researcher's observations and interpretations can be wrong and discussing them with the informant allows the informant to correct misconceptions or validate true conceptions. (Beyer & Holtzblatt 1998)

3.2.4 Focus

Contextual inquiry has always a predetermined focus. This focus can be a certain perspective, from which research is conducted, or a number of issues or aspects, which are especially interesting to the researcher. Focus is set during the planning stage of the study. The focus in this study was creating understanding in the customer value of electronic invoicing, as well as, the usability of electronic invoicing software used at each case company. In contrast to a predetermined set of questions, focus allowed the researcher and the informant to discuss matters that the informant found important and matters that the researcher realized only after entering the context. In other words, focus gives more flexibility to the interaction between the researcher and informant, while ensuring that the data needed is acquired. (Heikkilä 2005)

3.3 Case Study Research

Case study was chosen as the research method, as according to Yin (2009), case studies are especially suitable when it is intended to understand contemporary complex social phenomena in their real-life context. Case study research can comprise of one or several cases. To understand customer value of electronic invoicing and especially how usability affects it, more than one case needed to be studied. Yin (2009) states that multiple case study should be used rather than single case study when possible, as results from multiple cases give strength to findings in comparison to results from a single case. In line with Yin, Miles and Huberman (1994) argue that case study research can benefit from using multiple cases as they add confidence to findings.

Accounting firms using electronic invoicing were chosen as the case companies for this study, as according to earlier research accounting firms have been slow to adopt electronic invoicing and have experienced problems with electronic invoicing software. According to a study done by The Association of Finnish Accounting Firms (2011), 43 percent of accounting companies are able to provide electronic invoicing services in 2010. This low number could be partly explained by the fact that most companies in the accounting industry are very small. In 2009 96 percent of accounting firms employed less than ten employees and there were only three accounting firms with more than 250 employees in Finland (Metsä-Tokila 2011). Same study found that 72 percent of accounting firms have experienced problems with electronic invoicing after initial implementation (including piloting and testing). 38 percent of these firms identified these issues as problems with software and operators. Usability issues could make using software slower, increase errors and decrease or even nullify the expected value forming benefits of electronic invoicing.

Case companies were chosen from accounting firms, which had participated in an earlier study concerning electronic invoicing, conducted by The Association of Finnish Accounting Firms and had volunteered for further studies. The chosen companies were small and medium sized accounting firms, which were using electronic invoicing, including electronic purchase invoice handling. 13 case companies were selected (see Table 3), a sample size within the recommended amount of cases in a multiple case study (Miles & Huberman 1994, 30). The sizes of the case companies ranged from 1 to 25 employees and from 10 to 400 customers. In 10 of the case companies, the amount of purchase invoices handled each month exceeded a thousand. The percentage of invoices received in electronic format varied greatly from one case company to another, but also within the case companies, as different customers received differing amounts of invoices in electronic format. Two of the case companies handled invoices only in electronic format; their customers either used scanning services for paper invoices or scanned invoices themselves.

Company	Representative	Employees	Customers
A	Chairman of the Board	10	200
B	Managing Director	12	100
C	Managing Director	17	200
D	Managing Director	6	150
E	Office Manager	10	200
F	Owner	1	10
G	Partner	4	60
H	IT Specialist	25	350
I	Finance Director	16	400
J	Managing Director	5	150
K	Managing Director	13	300
L	IT Specialist	10	200
M	Owner	1	22

Table 3. Case companies

3.4 Data Collection and Analysis

Data collection comprised of two parts, interviews and observation. One representative of each case company was interviewed. In each interview the person interviewed was first asked some background questions about the company and purchase invoicing within the company.

The main interview questions can be divided into three themes:

1. Initial implementation of electronic invoicing

Informants were asked about the time when electronic invoicing was first introduced to the company: why it was decided to start using electronic invoicing, what kind of expectations or objectives there were, whether or not those expectations or objectives have been met, and if training was needed. In cases, where the electronic invoicing system under study was not the first electronic invoicing system used in the case company, the informant was additionally asked about the reasons they changed to the current system.

2. Use of electronic invoicing system

Informants were asked about the electronic invoice handling process and the use of the electronic invoicing system. They were asked about their opinions on the efficiency of electronic invoicing, errors that occur, how easy it was to learn to use the system, and the need of instructions during use.

3. Value of electronic invoicing

Informants were first asked about their general opinions about electronic invoicing and then they were asked to discuss the benefits and sacrifices relating to their electronic invoicing software.

In most cases the same person was interviewed and observed. However, depending on the purchase invoice handling process in each company, differing amounts of people were observed in each case company. If there were different employees in charge of separate parts of the process, the employee in charge of each part was observed. During the observation, informants were asked to go through the purchase invoice process as they would when they are working. The purchase invoice process was chosen as the focus of the observation and usability assessment, as the purchase invoice process has been identified as the area where automation can add most value (Lahti & Salminen 2008). Both paper and electronic invoice processes were observed in case companies where both were in use. Two of the case companies accepted only electronic invoices; in these cases only the electronic invoicing process was observed.

The collected data was analyzed from two perspectives: value of electronic invoicing and usability of electronic invoicing. Data was analyzed according to Miles and Huberman's (1994) Flow Model, which includes data reduction, data display, and conclusion drawing / verification. Interviews and observations were conducted with a usability expert from Aalto University School of Science's Strategic Usability Research Group. Each case company's electronic invoicing system usability was assessed with him.

Some of the case companies had several software solutions for electronic invoicing in use, however, in each case observations and interviews concentrated on one predetermined software product. 6 different electronic invoicing software solutions were studied. Solutions under study can be divided into two categories: SaaS (Software as a Service) solutions and traditional installed software solutions. Traditional installed software solutions have always at least some components installed on the computer (or server), even though some of the software use can be conducted via web browser. SaaS solutions are used entirely through a web browser. Studied solutions could also

be grouped according to the degree of integration; purchase invoice circulation and bookkeeping can be part of one integrated solution, or they can be separate software solutions.

4 Analysis of Case Studies

In this section the usability and value analysis of case studies are presented. As result of the usability assessment, the case companies were divided into two groups according to the usability of their software. The perceived benefits, sacrifices and customer value are analysed and discussed through these groups.

4.1 Usability

Jakob Nielsen's (1993) usability framework (see Section 2.2.1) was utilized for the usability assessment. Nielsen's framework was chosen instead of the ISO 9241-11 Standard's (1998) usability framework, as the latter's measurements were seen as more suitable for usability tests, where larger amounts of users are tested and results are in a quantitative format.

In accordance to Nielsen's (1993) framework, usability was assessed through five attributes: learnability, efficiency, memorability, errors, and satisfaction. As all informants had experience using their electronic invoicing system, they were considered as expert users. As the informants were expert users, *learnability* was assessed by asking informants about how easy it was for the user to learn to use the system, and by asking them whether they initially needed or still need written instruction to use the system. *Efficiency of use* was assessed based on the users' views expressed during interviews and observation, as well as on the time needed to accomplish the purchase invoice handling process and the amount of steps in the process. As informants were expert users who use their electronic invoicing system on a regular basis,

memorability of the system was taken into account only in cases where the user had difficulty remembering how to do something during observation. Amount and severity of *errors* was assessed by the errors made by users during observation and by users' opinions of the amount and severity of errors that occur when they normally use the system. User *satisfaction* of the system was assessed based on the user's opinions about the software.

Learnability

In almost all cases, users assessed their electronic invoicing software as easy to learn and did not see a need for written instructions. Only in two cases there were some issues in learning to use the system and in one case learning was considered as very difficult. Written instructions were in use in two case companies and in one case the user expressed the need for written instructions.

Efficiency

Efficiency of use showed clear differences between programs. In six case companies users described use of electronic invoicing software as very efficient.

> *"I have calculated that for my company moving from traditional invoice handling to electronic invoice handling has decreased work-load by 40 percent."*
>
> Owner, Company F

> *"The biggest surprise with this program was that I felt like I haven't even done anything yet, but all the invoices were ready, waiting to be paid."*
>
> IT Specialist, Company H

In two cases users described use of electronic invoicing software as “okay”; they did not perceive the use as efficient or inefficient. In six case companies use of electronic invoicing software was described as inefficient.

> *“Using electronic invoicing is not easier or faster for us than when we were using only paper invoices. Information has to be transferred a lot and we have to check if everything was transferred properly.”*
>
> Managing Director, Company C

> *“In our case electronic invoice handling is pretty difficult and complicated. It is very slow and takes a lot of time.”*
>
> Managing Director, Company K

> *“Electronic invoicing doesn't work at all at the moment. We have to input all the data by hand.”*
>
> Managing Director, Company J

There were also significant differences in the amount of steps in the invoice handling processes. Invoice handling process steps were calculated both when an invoice arrives at the case company in paper format and in electronic format. The amounts of steps varied from 10 steps for electronic invoice handling and 12 steps paper invoice handling to 23 steps for electronic invoice handling and 29 steps paper invoice handling. The amount of steps in the process explained differences in times needed to accomplish the invoice handling process.

Memorability

Only in one case a user forgot how to do a certain step with the electronic invoicing software. Other than that, users had no difficulty remembering how to use the software.

Errors

In all but one case there were no significant errors during observation. In one case the user sent data from one system to another and the data was received twice. The user could not fix the problem during the observation. When asked about their opinions about errors, in most case companies errors were perceived to not happen very often and as easily fixed when they did happen. In two cases errors were seen as a problem. In one case company users could not understand what errors codes meant and due to that did not know how to fix them. In several cases, users needed software provider to fix errors, but the software providers were not perceived as very responsive.

Satisfaction

In four of the case companies users were very satisfied with their system. In two cases users were dissatisfied and in one case the users were very dissatisfied. In other cases users were satisfied with some aspects of their system and dissatisfied with some other aspects. However, in these cases users could be considered ultimately as satisfied, because they emphasised the aspects they were satisfied with and there were more aspects that they were satisfied with than aspects they were dissatisfied with.

> *"Program should not expect that every user is an engineer. I would not purchase this software anymore."*
>
> Managing Director, Company B

> *"We have been very satisfied. Everything is so easy. Even credit card invoices come with each expense on its own row."*
>
> IT Specialist, Company L

Based on the usability assessment case companies were divided into two categories: high usability and low usability. Case companies F, G, H, I, L and

M were assessed to have electronic invoicing software with high usability and case companies A, B, C, D, E, J and K were assessed to have electronic invoicing software with low usability. High usability group includes six case companies and low usability group seven. Even with the knowledge about large number of accounting firms experiencing problems with their electronic invoicing software, the amount of case companies assigned into the low usability group was unexpected.

High Usability	Low Usability
F	A
G	B
H	C
I	D
L	E
M	J
	K

Table 4. Case companies categorized by usability

4.2 Perceived Benefits

Table 5 shows the benefits of electronic invoicing found in earlier studies and the number of cases mentioning those benefits in this study. It also shows whether a certain benefit was experienced in both usability groups or only in either group. Decreased circulation times, improved customer service, standardized practices and environmental friendliness were not mentioned as benefits by any of the informants. Decreased circulation times was possibly not perceived as a benefit as circulation is dealt with by the end-customer and circulation times affect accounting firms' work very little. Even though improved customer service was not expressed as a benefit, many informants

mentioned benefits electronic invoicing provides to their customers, such as easier access to their invoices and decreased costs. Several informants mentioned lack of standards and different concurrent standards as a problem and expressed that they are looking forward to better integration of standards in electronic invoicing.

E-invoicing benefits	Number of cases	Usability group	Description
Increased workforce productivity	9	Both	Less time needed to accomplish the same work
Enables real-time reporting	3	Both	Up-to-date financial reports can be created any time
Employee satisfaction	4	High	E-invoice processing appears more enjoyable for the invoice handlers than paper document processing
Increased process transparency	3	High	Invoices and payments can be tracked online
Monetary gains through cutting costs	2	High	Paper invoices are more expensive than electronic invoices; invoice handling costs are lower for e-invoicing
Freed resources	2	High	Employees can concentrate on more productive work
Improved cash flow	1	High	Accelerated payments and reduced credit losses
Less errors in the handling process	3	Low	Less need to enter information manually decreases the amount of errors
Improved organizational image	2	Low	Positive effect on organizational image and employee image
Decreased circulation times	0	-	Time needed for content and payment approval has decreased
Improved customer service	0	-	Improved processes enable better customer service
Standardized practices	0	-	Greater integration and harmonization of standards and practices
Environmentally friendly	0	-	Decreased carbon emissions from a reduced need for paper and transportation

Table 5. Electronic invoicing perceived benefits from earlier studies

As well as benefits found in earlier research, some other benefits were mentioned by the case companies. Table 6 outlines the other electronic invoicing perceived benefits found in this study. Differences in benefits could

be due to the fact that value and therefore benefits are very subjective in nature (e.g. Ulaga & Eggert 2005). Value can also differ in different segments and this study concentrated on accounting firms, which can be considered as differing segment from previous studies (Woodruff 1997).

E-invoicing benefits	Number of cases	Usability group	Description
Benefits to the end-customer	12	Both	Electronic invoicing is beneficial to accounting firm's customers
Ease of finding information	11	Both	Information can be found easily and fast when needed
Freedom from paper	6	Both	Handling and storing vast amounts of paper decreased
Ability to offer more or better services	4	Both	New service possibilities created by real-time information and software features
Attracting new customers	2	Both	Electronic invoicing makes it easier for customers to outsource their invoicing
Ability to work from home	3	High	Possibility to work from anywhere, anytime
Price	3	High	Price enables extra revenue

Table 6. Other electronic invoicing perceived benefits

Benefits will be discussed in more detail in the following sections. As there were differences in perceived benefits in the high and low usability groups, benefits that were perceived in both groups, only in high usability group, and only in low usability group are discussed separately.

4.2.1 Common Perceived Benefits

In this section benefits that were experienced both in the high usability cases as well as in the low usability cases are discussed. Table 7 summarizes common perceived benefits.

E-invoicing benefits	Number of cases	Description
Benefits to the end-customer	12	Electronic invoicing is beneficial to accounting firm's customers
Ease of finding information	11	Information can be found easily and fast when needed
Increased workforce productivity	9	Less time needed to accomplish the same work
Freedom from paper	6	Handling and storing vast amounts of paper decreased
Ability to offer more or better services	4	New service possibilities created by real-time information and software features
Enables real-time reporting	3	Up-to-date financial reports can be created any time
Attracting new customers	2	Electronic invoicing makes it easier for customers to outsource their invoicing
Freed resources	2	Employees can concentrate on more productive work

Table 7. Common perceived benefits

All but one case company mentioned *benefits to the end-customer* as a benefit of electronic invoicing. They mentioned at least one benefit of electronic invoicing that regarded their customers. In earlier studies (see, for instance, Penttinen ed. 2008) it has been found that electronic invoicing can enable better customer service through improved processes. These benefits are different as they do not involve better customer service, but rather the accounting firms' perceptions of the positive impacts of electronic invoicing for the end-customer. In six case companies out of the seven companies in the low usability group mentioned benefits to their customers' as a benefit of electronic invoicing. In these six case companies access to invoices online was perceived as a benefit to their customers. In four cases customers' access to invoices anywhere, anytime was expressed as a benefit, where in two case companies it was perceived that electronic invoicing saves customers' time as electronic invoicing is less work for them.

"Electronic invoicing is faster and easier for our clients."

Managing Director, Company C

"Electronic invoicing frees customers from having to call our office during working hours to get information on some invoice. They can access that information from anywhere and anytime."

Managing Director, Company D

The benefits to the accounting firm's customers were slightly different in the high usability group. In one case a customers' ability to access information anywhere, anytime was mentioned. In three case companies transparency of processes and information was mentioned as a benefit to the accounting firm's customers as the customers and the accounting firm have access to the same data. Finally, in two case companies in the high usability group electronic invoicing was seen as more cost effective for the customers. This was justified by the fact that using electronic invoicing is more efficient for the accounting firm, therefore they charge their customers less.

In all but two case companies (one in the high usability group and one in the low usability group) *ease of finding information* when needed was mentioned as a benefit of electronic invoicing. Many informants mentioned that as information is in electronic format it can be searched much easier than paper invoices in file folders. Also, information can be accessed by many users at the same time and it is not as easily lost. Many informants also mentioned that ease of finding information freed up their resources as customers did not need to call to inquire about their invoices and as information is much faster to find in electronic format when it is needed.

"Invoices stay in one system and can be easily found. Before invoices were lost all the time."

IT Specialist, Company H

"Customers who do not use electronic invoicing call often to ask us to check something from an invoice."

Chairman of the Board, Company A

"When invoices are in electronic format, they are so much easier to find. One does not have to find the receipt number, and then find the file folder and finally the invoice. One does not have look from different places and waste time if information is in electronic format. It is so much faster; we save a lot of time."

IT Specialist, Company L

In all of the case companies with high usability *workforce productivity* had increased with the use of electronic invoicing. In the low usability cases, three out of seven case companies perceived increased workforce productivity. One case company estimated a 40 percent decrease in work load due to electronic invoicing and another 20 to 30 percent decrease in work load.

"With same amount of personnel we can do more work, create more revenue and a lot more profit."

IT Specialist, Company L

"Work can be done faster in all steps in the process, especially in posting invoices."

Chairman of the Board, Company A

Six companies (three high usability companies and three low usability companies) appreciated *freedom from paper* or the fact that they do not have to deal with paper or file folders anymore. A few companies also mentioned that reduced need to archive paper saves them a lot of space. In one case company it was mentioned that they would have had to rent extra space for archiving file

folders if they would not have an electronic archive in their electronic invoicing system.

Four case companies (three high usability companies and one low usability company) said that using electronic invoicing has *enabled them to offer more or better services to their customers*. Consulting, budgeting services and forecasting were mentioned as examples of new services offered to customers. Although the ability to offer more or better services is closely connected to the benefit of freed resources (employees can concentrate on more productive work), it is different in the sense that ability to offer more or better services builds on the availability of information and on the features of electronic invoicing software such as forecasting.

> *"We can offer our customers better services than just saving information from purchase invoices into the computer. We can offer, for instance, consulting and concentrate on developing our operations instead of just getting invoices paid."*
>
> IT Specialist, Company L

Three companies (two high usability companies and one low usability company) mentioned *real-time information and reporting* as a benefit. They said that real-time information enables better and faster reporting. Furthermore, it was mentioned that consulting would be very difficult if information would not be up-to-date. Two of these companies mentioned also that due to the more real-time information they have they have better information about their customers. In one case real-time information had helped to deal with a customer on the verge of bankruptcy.

"A group of companies were on the verge of bankruptcy and I was able check beforehand what it would mean for my business if any of the companies would go bankrupt. I was able to take measures and be prepared for the situation."

Owner, Company F

Informants in two case companies perceived that electronic invoicing made it easier for customers to outsource their invoicing and thus enabled them in *attracting new customers*. One of these companies was also able to attract bigger customers as they offered electronic invoicing.

"One of the main benefits of electronic invoicing for us is the fact that it helps us in attracting bigger clients as we can offer more extensive services. With electronic invoicing large customers can outsource their financial management. Without electronic invoicing it would be basically impossible."

Finance Director, Company I

Even though nine case companies experienced increased workforce productivity, only two case companies mentioned that employees can concentrate on more productive work, thus, considering *freed resources* as a benefit.

"As our software does routine work automatically we have more time to monitor our customers' finances and we can offer more forecasting and budgeting services."

Managing Director, Company J

4.2.2 Perceived Benefits Only in High Usability Cases

In this section benefits that were experienced only in the high usability case companies are discussed. Table 8 summarizes benefits perceived only in high usability group.

E-invoicing benefits	Number of cases	Description
Employee satisfaction	4	E-invoice processing appears more enjoyable for the invoice handlers than paper document processing
Ability to work from home	3	Possibility to work from anywhere, anytime
Price	3	Price enables extra revenue
Increased process transparency	3	Invoices and payments can be tracked online
Monetary gains through cutting costs	2	Paper invoices are more expensive than electronic invoices; invoice handling costs are lower for e-invoicing
Improved cash flow	1	Accelerated payments and reduced credit losses

Table 8. Perceived benefits only in high usability cases

Four case companies felt that with electronic invoicing there is less manual and tedious work and therefore electronic invoicing increased *employee satisfaction*. They said that as the software does simple tasks, accountants can concentrate on work that requires expertise making the work more enjoyable. In one case it was mentioned that work is more evenly divided with electronic invoicing as invoices arrive all the time in comparison to the old way of working where end-customer would bring their paper invoices once a month or even once a year and all the invoices would have to be entered into the computer at one go.

> *"The accounting job is now more enjoyable. There is much less entering data on to the computer. Accountant can use ones expertise."*
>
> Finance Director, Company I

Three case companies with high usability mentioned the *possibility to work from home* as a benefit. In one case company electronic invoicing enabled the informant to move outside of Helsinki, where most of the customers are located, as all the information moves through electronic means.

> *"The best aspect is that the system can be used anywhere, even from a boat if one has Internet connection. I can work at the office, home or at a customer's place and I do not have to carry any paper with me."*
>
> Owner, Company M

> *"Before we could not work from home, because of reasons related to data security. Now our company has laptops which all employees can use if they want to work from home or they can use their own computer. If one works from home, they do not need to take any file folders home. One could also work from home if there were any problems with the Internet connection at the office."*
>
> IT Specialist, Company L

In three cases in the high usability group *price* was mentioned as a benefit. In one of these cases the accounting firm's customers paid for the use of the system and therefore there were no cost for the accounting firm. In other case the accounting firm's customers paid slightly more for the use of the system than the accounting firm paid. Thus the use of the electronic invoicing software created extra revenue for the accounting firm. In the third case company price was mentioned as a benefit as the system was cheap enough that it could also be offered to small clients.

"We actually make a little bit of profit from the electronic invoicing software. We get the software slightly cheaper and sell it to our customers with the normal price."

IT Specialist, Company L

In three case companies *transparency of processes and information* was mentioned as a benefit. However, the informants in these case companies mention increased transparency as a benefit to their customers as customers and accounting firm have access to the same data.

"From a process perspective information is more transparent. Customer and accountant have access to the same data."

Owner, Company F

Two of the case companies in the high usability group had experienced *decreased costs* due to electronic invoicing. In one case lower invoice handling costs had an influence on profit and in another costs related to paper invoices, which are more expensive than those of electronic invoices, had decreased.

"Our accounting firm's profit has increased due to electronic invoicing as invoice handling takes less time."

IT Specialist, Company L

"Costs decrease in the way that there are less costs related to postage and post handling."

IT Specialist, Company H

Improved cash flow was mentioned in one case company. They mentioned that payment periods are shorter as electronic invoices are received and approved much faster.

4.2.3 Perceived Benefits Only in Low Usability Cases

In this section benefits that were experienced only in the low usability cases are discussed. Benefits perceived only in low usability case companies were "fewer errors in the handling process" and "improved organizational image".

Three case companies with usability problems mentioned *lesser amount of errors in the handling process* as a benefit.

> *"Number errors are minimized when invoices are received as electronic invoices."*
>
> Managing Director, Company C

Two case companies mentioned *improved organizational image* as a benefit. In one case company being seen as a technologically knowledgeable company had been an objective. They perceived that offering electronic invoicing supported this image. Another case company offered electronic invoicing as they wanted to be seen as a company that can offer all accounting services.

> *"Our goal has been to be seen as a knowledgeable and technologically knowledgeable accounting firm."*
>
> Managing Director, Company D

> *"We have state-of-the-art services. We do not want to be in a situation that we have to turn down a customer as we do not offer a service that the customer wants."*
>
> Chairman of the Board, Company A

4.3 Perceived Sacrifices

In this chapter the perceived sacrifices found in this study are discussed. Due to lack of previous studies related to sacrifices of electronic invoicing previous studies are not discussed. Table 9 summarizes the perceived sacrifices mentioned by the case companies.

E-invoicing sacrifices	Number of cases	Usability group	Description
Usability related issues	6	Both	Issues related to the usability of the software
Price	4	Both	Price of electronic invoicing
Learning costs	4	Both	Cost of learning the system use and other related knowledge
Internet access	4	Both	Problems with Internet access affects work greatly
Resistance to change	3	Both	Resistance to change by employees or customers
Implementation	2	Both	Time and effort spend on implementation
Lack of support from software provider	4	Low	In problem situations difficulty of getting assistance from the software provider
Increased work load	4	Low	Increased amount of work or new areas of work
Difficulty to compare software products	2	Low	Difficult to attain knowledge on different software options
Development work	1	Low	Time and effort spend on developing software with the software provider
Trust	1	Low	Trust of the external service provider
Increased customer expectations	1	High	Customer expectations on speed of invoicing services

Table 9. Perceived sacrifices of electronic invoicing

4.3.1 Common Perceived Sacrifices

In this section sacrifices that were perceived both in high and low usability case companies are discussed. These sacrifices are summarized in table 10.

E-invoicing sacrifices	Number of cases	Description
Usability related issues	6	Issues related to the usability of the software
Price	4	Price of electronic invoicing
Learning costs	4	Cost of learning the system use and other related knowledge
Internet access	4	Problems with Internet access affects work greatly
Resistance to change	3	Resistance to change by employees or customers
Implementation	2	Time and effort spend on implementation

Table 10. Common perceived sacrifices

Usability related issues with the software were the most commonly perceived sacrifice of electronic invoicing. Usability related issues were mentioned as a sacrifice in four low usability companies and one high usability company. Even though some of the usability related issues caused lost time and increased effort, the usability related issues do not appear to correspond with any one of the typical sacrifice drivers. Rather, usability related issues could be described as lack of product or goods quality, in other words, lack of a benefit attribute.

> *"We only have one employee as a user of the software as it would be hard and time consuming to explain how everything works in the program as it is so clumsy to use."*
>
> Office Manager, Company E

> *"We have to constantly consider which programs our electronic invoicing software is compatible with and whether we can transfer information from one program to another and how much work is that going to be."*
>
> Chairman of the Board, Company A

"We cannot receive any electronic invoices into our system currently as there is some problem. We have to scan all invoices into the system currently."

Managing Director, Company J

Price of electronic invoicing was mentioned as a sacrifice by only four case companies. It was interesting that so many case companies did not perceive price as a sacrifice. Two case companies mentioned that as the price of electronic invoicing is so high for them, they cannot offer electronic invoicing to their smaller customers as small customers do not have large enough quantities of invoices to benefit from electronic invoicing.

"Ability to receive purchase invoices in electronic format should not be this expensive. We had to invest in a big, expensive program."

Managing Director, Company B

"The problem is the price. We have to charge so much for electronic invoicing that it is too expensive for our small customers."

Managing Director, Company D

In four case companies (two in the low usability group and two in the high usability group) *learning cost* of having to learn how to use the software was seen as sacrifice. This cost includes the cost of having to train employees and the time needed for learning.

Four case companies (three in the low usability group and one in the high usability group) mentioned that they are very dependable on *Internet access* and cannot work if the Internet connection is down. Previously, when they worked only with paper invoices the Internet connection was not so important, now in a

worst case scenario, problems with Internet access can prevent work completely. Internet access could be considered as a lack of reliability of electronic invoicing Therefore, a lack of benefit attribute rather than a sacrifice. An interesting aspect of Internet access is the fact that the electronic invoicing software provider has no control over their customer's Internet access. However, as Internet access is a basic requirement for electronic invoicing, it can be one of the attributes customers consider when thinking about the value of electronic invoicing.

> *"There have been situations when the Internet connection has been down and we have not been able to do any work."*
>
> Managing Director, Company J

Resistance to change was mentioned by three case companies. In two cases employees were mentioned as having a difficult time accepting and learning a new way of working. One case company mentioned that sometimes customers can be afraid of change and have a difficult time accepting new ways of working. Finally, in two case companies the time and effort spent on *implementation* of the electronic invoicing software was mentioned as a sacrifice.

4.3.2 Perceived Sacrifices Only in High Usability Cases

The single sacrifice perceived in only high usability cases was *increased customer expectations*. Increased customer expectations were mentioned by one case company and they explained that when customers get used to electronic invoicing, they expect other aspects of invoicing and accounting to happen as fast. According to the case company, increased customer expectations make their work more hectic as, for instance, they still receive a lot of paper invoices and these invoices have to be scanned into the system as fast as possible.

4.3.3 Perceived Sacrifices Only in Low Usability Cases

Sacrifices experienced only in the low usability cases are discussed in this section. These sacrifices are summarized in table 11.

E-invoicing sacrifices	Number of cases	Description
Lack of support from software provider	4	In problem situations difficulty of getting assistance from the software provider
Increased work load	4	Increased amount of work or new areas of work
Difficulty to compare software products	2	Difficult to attain knowledge on different software options
Development work	1	Time and effort spend on developing software with the software provider
Trust	1	Trust of the external service provider

Table 11. Perceived sacrifices only on low usability cases

Lack of support from software provider was mentioned as a sacrifice by four companies in the low usability group. They mentioned that in problem situations they have to be able to solve their own problems as their software provider is either very slow or unable to provide help. Lack of support from software provider could be seen as a lack of service quality benefit attribute. Informants from two case companies explained that their software provider has grown rapidly in the last few years and are too busy to provide assistance in problem situations. These informants seemed very understanding of their software provider's inability to provide assistance. One case company had to seek help from an outside consulting company for software related issues. An informant from one case company mentioned that they have to be able to help in their customers' software problems as well.

"Many software providers have grown very fast and supporting services track behind. At least our software provider has this situation. We have to be able to solve our problems; they do not have resources to help. Resources are directed towards growth and development."

Managing Director, Company J

"My work has changed from an accountant to IT consultant. We have to able to give advice to our customers regarding IT issues."

Office Manager, Company E

Four case companies in the low usability group perceived that their *work load had increased* with the introduction of electronic invoicing. They mentioned that electronic invoicing had introduced them with new tasks. The content approval process and getting suppliers to send electronic invoices are two of these new tasks. Two case companies perceived that the time needed to process an invoice was longer than with traditional invoicing. One case company mentioned that after every new update, something in the software stops working and it is hard to figure out how to fix it.

"I was surprised how much time invoice handling process takes with our software. It is not faster, but rather we have to do added work."

Office Manager, Company E

"The amount of times we have to do something to an invoice has increased from what it was with traditional invoicing. In certain parts the amount of work has increased."

Managing Director, Company C

Two case companies mentioned that it was *difficult to compare different software options* prior to purchase and that even after purchase it is difficult to know whether a the correct decision was made.

> *"It was very difficult to decide on electronic invoicing software as you do not know how the software works in practise. Finding out pricing and comparing pricing was very difficult, because pricing models are very different and there are only little information available on different systems. And there are a lot of systems available."*
>
> Managing Director, Company C

Finally, one company mentioned *development work* with the software provider to develop and enhance the electronic invoicing software as a sacrifice and another company mentioned having to *trust* the service provider to keep all the information secure.

4.4 Perceived Value

All the case companies in the high usability group were satisfied with their electronic invoicing software. They perceived their software as value creating or the benefits outweighing the sacrifices. On the other hand, in the low usability group, four companies out of seven were satisfied with their electronic invoicing software and perceived that the benefits outweighed the sacrifices. The remaining three companies were not satisfied with their software and felt that the sacrifices outweighed the benefits.

4.5 Discussion

4.5.1 Perceived Benefits

In keeping with earlier studies concerning electronic invoicing benefits (see Table 2), the benefits perceived by the informants in this study had less to do with the actual product or services related to it, than the outcomes that the use of the product enabled. Even though the informants discussed features and aspects of the product, services related to the product as well as relationships with the software provider during observation and interviews, they did not mention those aspects when asked about benefits. When considering benefits of electronic invoicing, informants seemed to be more interested with what they perceived to have gained out of use of electronic invoicing rather than, for instance, the beneficial aspects of the products, or the beneficial services they were receiving. Accounting firms did not appear to perceive value through beneficial attributes, such as presented in, for instance, Lapierre's (2000) and Ulaga and Chacour's (2001) frameworks. The prior (see Figure 3) considering product, service and promotion related attributes, and the later (see Figure 2) considering product, service and relationship related attributes. Rather, accounting firms appeared to consider value in a similar way that value is considered in service-dominant logic (see Section 2.1.1). When considering the value of electronic invoicing, the accounting firms expressed the ways electronic invoicing helped them in what they perceived valuable (for instance, ability to work from home) or the ways electronic invoicing assisted them in their own value creation (for instance, attracting new customers), which is in line with Grönroos' (2008) argument that companies can merely be part of a customer's value creation processes by providing them with resources. This is not to argue that, for instance, product, service and relationship related attributes do not exist, but rather that those attributes are the foundation for perceived benefits and that perceived benefits can have their foundation on

several benefit attributes. In this study, customers did not appear to consider benefits through product, service and relationship related attributes. For instance, the benefits of "increased workforce productivity" is most likely mainly due to product related attributes. However, service related attributes, such as training, or relationship related attributes, such as perfecting the software with the software provider to meet specific customer needs, could affect the perceived benefit of "increased workforce productivity" as well.

The benefits perceived by accounting firms in this study appear to correspond with Woodall's (2003) outcome benefits (see Figure 4). However, it might be difficult to place each perceived benefit under a specific benefit category. For instance, "ability to work from home" could be seen as a personal or practical benefit depending on the perspective. When considering the employee's choice to work from home it could be seen as a personal benefit for the employee. On the other hand, "ability to work from home" could been seen as a practical benefit as employees can work from home if there are problems with the Internet connection at the office (a problem mentioned by several informants) Similarly, "attracting new customers" could be placed under strategic benefits or financial benefits depending on the perspective.

4.5.2 Perceived Sacrifices

When considering the benefits of their electronic invoicing software, accounting firms appeared to concentrate on the beneficial outcomes of electronic invoicing enabled them to achieve. When asked to consider the sacrifices related to their electronic invoicing software, accounting firms mentioned some monetary and non-monetary sacrifices, such as price and learning costs. However, they also mentioned some sacrifices, including usability related issues and lack of support from the software provider, which appear to fit, for instance, Woodall's (2003) benefit attributes better than

sacrifice drivers (see Figure 4). These could be considered as lack of a benefit attribute rather than as sacrifices.

Price was mentioned as a sacrifice only by four case companies (see Table 9). This is surprising as in existing literature price is one of the key drivers of customer value. This might relate to the subjective nature of customer value (e.g. Ulaga & Eggert 2005) and possibly other sacrifices were perceived as more important. Price was also perceived as a benefit by three case companies in the high usability group. There appears to be differences in the pricing or pricing models of electronic invoicing systems as can be seen from the quotes related to pricing (see Page 53-54 versus Page 58). Differing perceptions on price could be due to the comparative nature of customer value (e.g. Holbrook 2006) and possible knowledge of competitive products and their pricing. Alternatively an absolutely opposite explanation is possible as well: differing perceptions on price could be caused by asymmetric information about pricing (Ulaga & Chacour 2001), where customers lack in the knowledge about pricing of competing systems.

4.5.3 Perceived Customer Value and Usability

Most commonly perceived sacrifice of electronic invoicing in this study was usability related issues. These issues were mentioned as a sacrifice in four low usability companies and one high usability company. Usability related issues could be portrayed as lack of product or goods quality, in other words, lack of a benefit attribute. Thus, usability problems appear to have an effect on customer value by lessening the product or goods quality benefit.

Usability also appears to affect the amount of benefits and sacrifices case companies perceived from electronic invoicing. The case companies with high usability perceived a higher number of benefits than the case companies with

low usability. Even though there were two benefits perceived only by low usability firms, there were a high number of benefits that were not experienced in low usability case companies at all. As there were a number of electronic invoicing benefits experienced only by high usability case companies, it could be argued that issues with usability in electronic invoicing software can possibly prevent companies from achieving benefits of electronic invoicing. In most of the high usability firms, informants mentioned only one sacrifice and in one case company in the high usability group, the informant could not identify any sacrifices. Conversely, in low usability cases, all informants indentified a minimum of three sacrifices. Some of the sacrifices perceived by low usability cases, such as lack of support from software provider and increased work load, can be seen as connected to usability issues or possibly even as a result of usability issues.

It is interesting that four case companies in the low usability group perceived their electronic invoicing software as value creating. The usability issues in these cases were not minor and the differences to case companies with high usability were considerable. In one of these cases the accounting firm and the electronic invoicing software provider had had a long relationship together and the accounting firm had been actively involved in the software development process for several years. The informant was very understanding of the usability issues and of the fact that the software provider was not very prompt in fixing problems. In this case it is possible that the relationship itself or some relational value drivers affected the perception of value, as argued by Ravald and Grönroos (1996), even if no relational benefits were explicitly expressed.

Many informants mentioned that it is difficult to gather information on different software solutions pre-purchase as well as after purchase (though, only two informants mentioned it as a sacrifice). This departs from Ulaga and Chacour's (2001) view that in business-to-business markets information is symmetric. The

concept of bounded rationality could explain why case companies were satisfied even though their electronic invoicing software had issues with usability. Bounded rationality is a cognitive bias according to which managers are not perfectly rational. Managers have to make decisions based on only a sub-set of available information and are therefore boundedly rational. (Simon 1979; Tiwana et al. 2007) Case companies with low usability could perceive their software as valuable as they do not have information on competitive offerings and cannot then compare their software to other options. It is also possible that due to a lack of information on competitive options, informants were comparing electronic invoicing to traditional invoicing and perceived electronic invoicing as more value creating than traditional invoice handling even with usability issues.

Even though comparing software solutions was seen as difficult, competitive products were often mentioned when discussing perceived value, highlighting the comparative nature of value (e.g. Ulaga & Eggert 2005). In some cases informants had experience in using the other software they were comparing to, but mostly informants were discussing their perceptions of other software. Almost all of the informants in the high usability group perceived that they had chosen the right software and the choice of this software enabled them to attain electronic invoicing benefits. Many mentioned competing software options and problems with those options. On the contrary, all but one informant in the low usability group, who were dissatisfied with their software, perceived that the low value was due to common problems in all of electronic invoicing solutions rather than issues in their particular software. Even as two out of the four dissatisfied case companies had mentioned the difficulty of finding information about different electronic invoicing solutions. These informants even mentioned certain features, which would make electronic invoicing valuable for them. These features were lacking from their software, but were included in other software solutions.

5 Conclusions

The objective of this study was to gain understanding into the benefits and sacrifices of electronic invoicing, as well as into the implications of usability on those benefits and sacrifices, and ultimately on customer value. The multiple case study research was concluded as contextual inquiry, which appeared to be a well suited research method for customer value analysis as it integrates interview and observation. In the first stage of analysis case companies were divided into two groups based on the usability assessment. Six case companies were assessed to have electronic invoicing software with high usability and seven with low usability. In the second stage of analysis case companies' perceived benefits and sacrifices were analyzed according to their usability groups.

In this research, the main perceived benefits of electronic invoicing were benefits to the end-customer, ease of finding information, and increased workforce productivity (see Tables 5 and 6 for all perceived benefits). All of the perceived benefits appeared to relate to realized benefits to customers rather that value creating attributes. The main sacrifices were usability related issues, price, learning costs, and Internet access (see Table 9 for all perceived sacrifices). Few of the perceived sacrifices, including usability related issues, lack of support from software provider, and increased work load, appear to be connected to usability issues. Customers did not appear to just consider the benefits they get and the sacrifices they make, but also the benefits they were lacking. These could be benefits they expected to attain or benefits they perceived as basic functionality of the product.

High usability case companies appeared to experience more benefits from electronic invoicing and perceived fewer sacrifices related to electronic invoicing. Similarly, low usability case companies appear to perceive fewer benefits and a larger amount of sacrifices associated with electronic invoicing. All the case companies with high usability perceived electronic invoicing as value creating, where as four case companies with low usability perceived electronic invoicing as value creating and three as not value creating. The perception of value in low usability cases could be due to a lack of available information on competitive software and therefore bounded rationality.

A key limitation of this study was the fact that customer value of electronic invoicing was studied in the context of accounting firms. Accounting firms are just one segment that utilizes electronic invoicing software, and therefore, the findings of this research might not be transferrable to other segments. However, this is mainly due to the subjective and contextual nature of the customer value concept.

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