Master Thesis in Informatics

Business Value of Electronic Invoicing

Veronika Cokešic & Maria Wendel
Göteborg, Sweden 2005

REPORT NO. 2005:14

Business Value of Electronic Invoicing

VERONIKA COKEŠIC & MARIA WENDEL

Department of Informatics
IT UNIVERSITY OF GÖTEBORG
GÖTEBORG UNIVERSITY AND CHALMERS UNIVERSITY OF TECHNOLOGY
Göteborg, Sweden 2005

Business Value of Electronic Invoicing

VERONIKA COKEŠIC & MARIA WENDEL

Report no 2005:14
ISSN: 1651-4769
Department of Informatics
IT University of Göteborg
Göteborg University and Chalmers University of Technology
P O Box 8718
SE – 402 75 Göteborg
Sweden
Telephone + 46 (0)31-772 4895

Chalmers Repro
Göteborg, Sweden 2005

Business Value of Electronic Invoicing

Veronika Cokešic & Maria Wendel

Department of Informatics

IT University of Göteborg

Göteborg University and Chalmers University of Technology

Abstract

This thesis discusses how the business value of an invoice system could increase with the use of IT. The issue is analyzed in purpose to determine what business value an electronic invoice system can contribute to from a sender's perspective and to create a decision base for a recommendation on the eventual usage of electronic invoicing at Volvo Penta.

We have performed an inductive exploratory research in order to perform a productive decision analysis. Desk research and in-depth qualitative interviewing were performed during the case study in order to obtain a full overview of the problem area and the present situation.

The most obvious business value that comes from an implementation of electronic invoicing is gain in time and cost. Businesses that use electronic invoicing benefit from decreased invoice handling costs, reduced number of days outstanding for receivables and payables data and faster dispute resolution. Depending on how the invoice is distributed; different value can be achieved. The greatest business value is achieved when the electronic invoicing is connected to payment. The most attractive and value adding solution for Volvo Penta is EDI and Web EDI.

Keywords: Business Value, Electronic Data Interchange, Electronic Invoicing and Electronic Invoice Payment and Presentment.

Business Value of Electronic Invoicing

Veronika Cokešic & Maria Wendel

Institutionen för Informatik

IT Universitetet i Göteborg

Göteborgs Universitet och Chalmers Tekniska Högskola

Sammanfattning

Hur tillämpandet av IT i ett faktureringssystem kan bidra till att öka affärsnyttan är ämnet som det här examensarbetet baseras på. Ämnet analyseras i syfte att fastställa vilken affärsnytta ett elektroniskt faktureringssystem kan bidra till, från sändarens perspektiv, och för att skapa en beslutsgrund för en rekommendation angående en implementation av elektronisk fakturering på Volvo Penta

En induktiv explorativ undersökning har utförts i syfte att genomföra en produktiv beslutsanalys. En skrivbordsundersökning och djupgående kvalitativa intervjuer har genomförts under fallstudien för att skapa en helhetssyn av problemområdet och den nuvarande situationen.

Den mest givna affärsnyttan som en implementation av elektronisk fakturering bidrar till är vinst i tid och kostnad. Minskad hanteringskostnad av fakturor, minskat antal utestående betalningsdagar och snabbare dispythantering är några av de fördelar som elektronisk fakturering bidrar till. Beroende på hur fakturan distribueras kan olika former av affärsnytta uppnås. Den största affärsnyttan uppnås dock när den elektroniska faktureringen kan kopplas till betalning. Den mest attraktiva och värdegivande lösningen för Volvo Penta är EDI och Webb EDI.

Det här examensarbetet är skrivet på engelska.

Nyckelord: Affärsnytta, Electronic Data Interchange, Elektroniska fakturor och Electronic Invoice Payment and Presentment.

Acknowledgements

We have had the pleasure of spending most of our time at our case company, Volvo Penta in Gothenburg. All of the people that we have been in contact with have received us kindly and welcoming. It has been very fulfilling to realize this work at an external case company and the time we have spent at Volvo Penta has provided us with valuable experience for the future.

At Volvo Penta we wish to thank our case assigner and guide, Hans Tall, CIO and co-guide Margareta Pernland Eriksson, for knowledge sharing and guidance during this study period. Further we wish to thank all the people that have taken part in our interviews and conversations, without you this could not have been done.

At the IT University of Gothenburg we thank our supervisor Kalevi Pessi for guidance, critical examination and reflections.

We wish to give a special thanks to Maija Wiltermuth for reviewing and correcting the language in this paper.

Gothenburg, January 11th, 2005.

Veronika Cokešic & Maria Wendel

Table of contents

Table of Figures

Appendix

1 Introduction

This chapter gives an introduction to the study and thesis. The background is presented leading to the purpose and focal question, followed by delimitations. Finally, the thesis disposition is presented.

1.1 Background

The Information Technology (IT) has developed quickly the last years, which has led to many advantages but also many disadvantages. The businesses of today have accepted that IT creates competitive advantages and this has led to increasing investments in Information Systems (IS). But the businesses want to predict what business value an investment in IS/IT could lead to before they invest.[1]

This thesis ascertains how the business value of an invoice system could increase with the use of electronic distribution. This is done by an analysis of what business value an implementation of an electronic invoice system could lead to. Established theories in the area are put together and an empirical study is performed in order to illuminate important aspects and present new angles of incidence.

The term business value does not only imply tangible, economical advantages as decreased costs and time savings but also intangible factors as employees' opinions and thoughts.

"'IS Business value' is the sustainable value added to the business by IS, either collectively or by individual systems, considered from an organizational perspective, relative to the resource expenditure required."[2]

The foundation of the analysis is the empirical study. The study objective is the business value that may increase when transitioning from manually sent invoices (by fax, phone, or e-mail) to electronic invoicing. This transition can contribute not only to increased cash flow and better invoice survey but also decreased administrative time and cost.

1.2 Purpose and Focal Question

To have a focal question that is as clear and delimitated as possible is very important. If necessary, the focal question may be divided into sub questions that together answer the main question.[3]

The purpose of this thesis is to ascertain how the business value of an invoice system can increase with the use of IT. The focal question is:

[1] Lindberg, Pessi & Plantén, 2003

[2] Cronk and Fitzgerald, 1999, p 44

[3] Lekvall & Wahlbin, 2001

"*What business value can an electronic invoice system contribute to from a sender's perspective*?"

This thesis focuses on the invoice process after the invoice is created and does therefore not comprise order handling. This thesis illuminates the business value an electronic invoice system can contribute to from a sender's perspective only. The term electronic invoicing implies invoices that are distributed electronically. System security is, despite its high importance, not comprised in the study. Neither are economic calculations as Payback time or Return on Investment (ROI). The recommendation is written with respect to the European Union (EU) Directives and Swedish laws and recommendations.

The case company where the empirical study is conducted at is Volvo Penta and the study is limited to their region Europe. The recommendations may be considered useful for all businesses even though they are adjusted to Volvo Penta.

1.3 Disposition

The first chapter of this thesis presents the background to the study leading to the purpose, focal question and the delimitations.

Second chapter outlines the methodology used in developing this thesis. Presentations on different methodological aspects are made followed by a presentation of the used report and study procedure and possible sources of error.

In the third chapter the frame of reference is presented. The information is secondary data collected in a desk research. A presentation of business value, e-commerce, Electronic Data Interchange and electronic invoicing is made. Followed by a presentation of Electronic Invoice Presentment and Payment, direct debit and finally laws and directives.

The fourth chapter presents the empirical findings of the thesis. A presentation of the Volvo Group and the general and legal structure at AB Volvo is made. This is followed by a detailed presentation of the case company Volvo Penta. The information is both secondary and primary data collected in interviews.

Chapter five presents the final analysis based on theoretical and empirical findings. Beginning with an analysis on several solutions and continuing with the business value of the solutions, this is followed by and illumination of benefits and obstacles from an implementation of electronic invoicing. Finally points on what a business should think about when implementing electronic invoicing are presented.

In chapter six conclusions and recommendations for the case company is presented. Additionally future research is suggested.

In appendix there is a collection of the abbreviations used in the thesis and a comparison of the different presentment models. Finally there is a presentation of Volvo Penta's key customers.

2 Methodology

This chapter clarifies the method used for developing this thesis. A general presentation of research approaches, research design, data collection and analysis is made. This is followed by a presentation of the used report and study procedure and possible sources of error.

2.1 Research Approach

A method is a systematic procedure and a tool for achieving the research goals.[4] If the method is well thought through the research reliability will increase.[5] The method is chosen depending on the research problem, the focal questions or the wanted result.[6]

Exploratory research is applied when there is very little knowledge about the problem area and a deeper insight into a particular problem is desired. Research is conducted for learning as much as possible in order to carry out a productive decision analysis.[7]

Descriptive research is carried out to describe "how it is" without interpretation. A mapping research is conducted to find data about well-defined problems.[8]

Explanatory research takes a step further and is used when trying to explain causal connection. The difference between descriptive and explanatory research is somewhat subtle. One difference is that descriptive research is based on a wider range of variables while explanatory research focuses on a rather small amount of variables.[9]

2.2 Research Design

The distinction between qualitative and quantitative has different meanings for different scientists, and almost everyone has its own favourite.[10] It is hazardous to try to divide up the two methods too much.[11] Basically it is a question of how the investigated data is presented and analyzed.[12]

The distinction between quantitative and qualitative methods does not necessarily imply a distinction in perspective, paradigm or attitude. Perspective should not be confused with method.[13]

[4] Holme & Solvang, 1997
[5] Backman, 1998
[6] Merriam & Nilsson, 1994
[7] Lekvall &Wahlbin, 2001
[8] Lekvall &Wahlbin, 2001
[9] Lekvall &Wahlbin, 2001
[10] Starrin & Svensson, 1994
[11] Svenning, 2000
[12] Lekvall &Wahlbin, 2001
[13] Backman, 1998

Qualitative methods aim to bring a greater understanding for the research object and dig deeper into the problem. One main purpose of the qualitative method is to exemplify, conclusions can later be drawn from these examples. Experimental studies with qualitative methods are rarely performed. The method is close to the empirical world and much less abstract than quantitative methods. The empirical work helps demonstrating that a theory or generalization is possible. It has its strength in focusing on the total situation and is predominantly inductive.[14]

In qualitative research: the analyzing often starts directly after the first interview.[15] A consecutive analysis can give rise to ideas on how to proceed with the research and enrich the inquiry with material not considered, the ideas might otherwise not turn up until the final phase.[16] The analysis is not a final point in the qualitative research but more inductive.[17]

Quantitative methods often transform the information to numbers and volumes and give opportunity to perform statistical analyzing. Variables are manipulated for the purpose of testing hypothesis which theories are later drawn from. The focus is put on what is common, average or the representative. An analysis is not often commenced until all the data is collected. It is not until then that it is meaningful to seriously look for patterns.[18]

2.3 Data Collection

Source material can be divided into secondary and primary. Secondary data is an interpretation of objects and things that have occurred and are based on primary data. This kind of research is often known as desk research. Primary data means collecting data from the original source and is discovered during the period of the project. An inquiry based solely on primary data hardly exists, while absolute desk research is more common. [19]

2.3.1 Desk Research

When beginning research with the intent to solve a problem, there can be valuable information already published. This kind of information is usually called secondary data and can be found in various databases on the Internet, public statistics, branch studies, economic overviews and libraries. Other sources for information can be found in the companies' own archive. This method for gathering secondary data is referred to as a desk research, often used in the beginning of a project and is cheap or free to find. It is important to keep in mind that secondary data should be viewed critically. [20]

2.3.2 Case Study

A case study involves selecting one or more objects for a study and performing different kinds of data collection; interviews, observations or surveys. For interviews, only individuals suitable for interviewing should be selected. A list can be made containing persons from

[14] Svenning, 2000
[15] Svenning, 2000
[16] Patel & Davidson, 2003
[17] Svenning, 2000
[18] Svenning, 2000
[19] Patel & Davidsson, 2003; Lekvall &Wahlbin, 2001
[20] Sifo, 2004

various categories. During interviews with persons from this list, new names can be mentioned and give rise to other interviews. This kind of selection is referred to as a snowball selection.[21]

In-depth qualitative interviewing is made with a few selected people that are asked questions around a certain topic, theme or given matter expressed in their own words. A must for this kind of interviewing is a tape recorder, because the interviewee can change topics fast and it can be very difficult to keep up when typing. Certain notes can be made on comments and ideas that arise during the interview.[22]

2.4 Analysis

Qualitative study methods lead to inductive analysis.[23] Inductive analysis signifies framing conceptions in the form of hypotheses or theories from scientific studies and data collected.[24] An inductive study is not anchored to an earlier established theory. A scientist that uses an inductive workflow can be said to follow the path of discovering.[25]

When new hypotheses are deducted from general principles and existing theories, surrounding a specific phenomenon, the analysis is said to be deductive. A scientist that uses a deductive workflow can be said to follow the path of proving.[26] Quantitative study methods lead to deductive analysis.[27]

2.5 Report and Study Procedure

The chosen procedure for this thesis follows a recommendation from Lekvall & Wahlbin[28] of how to plan and realize a study. This recommendation, with modifications, and the connection between the chapters is presented below in Figure 1.

[21] Svenning, 2000
[22] Svenning 2000
[23] Starrin & Svensson, 1994
[24] Holme & Solvang, 1997
[25] Patel & Davidsson, 2003
[26] Holme & Solvang, 1997; Patel & Davidsson, 2003
[27] Starrin & Svensson, 1994
[28] Lekvall & Wahlbin, 2001

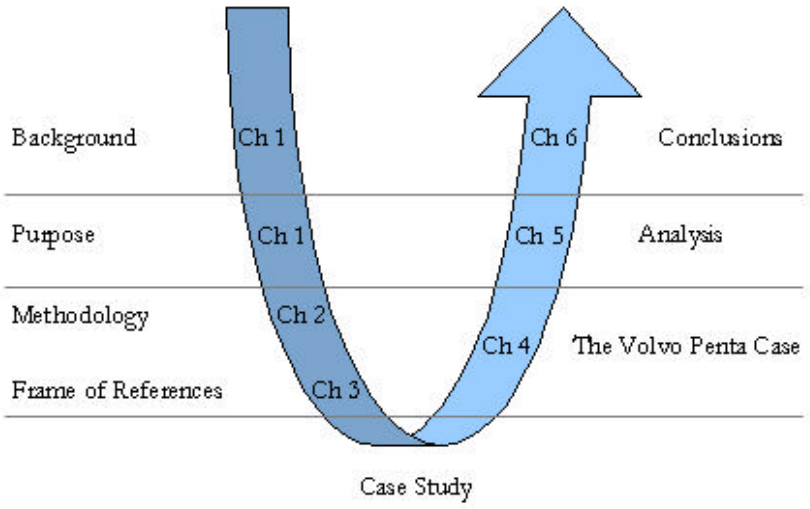

Figure 1 Workflow U (modified, Lekvall & Wahlbin, 2001)

In order to perform a productive decision analysis the exploratory research approach was used. Qualitative methods were used to create a deeper understanding for the research object and its entirety. The first step of the theoretical study was to gather information and facts about the invoice process. The use of desk research as method in this step brought the report a scientific base and an insight to the different concepts surrounding electronic invoicing.

In-depth qualitative interviewing was performed during the case study. A few interviewees were selected based on their job position. The interview questions were based on their job description. The questions were only guiding not fixed. The interviewee steered the interview, different questions were asked depending on the answers. If the interviewee recommended other interview objects these were followed up and in some cases interviewed, following the snowball selection. A total of eleven persons were interviewed. A tape recorder was used during the interviews and notes were written down at the same time. The notes were typed out as soon as possible after the interview and if any questions aroused the interviewees were contacted to avoid misinterpretations.

An inductive method, where theoretical findings are analyzed and recommendations and hypothesis are created, was used for the study analysis. The final analysis is somewhat based on subjective opinions from the interviewees.

2.6 Sources of Error

There are different sources of error that may occur in the different phases of the workflow. By knowing and analyzing these sources of error the writers may eliminate or diminish each source. Figure 2 below is based on the "Workflow U" mentioned above and it summarizes the sources of error for each phase. [29]

[29] Lekvall & Wahlbin, 2001

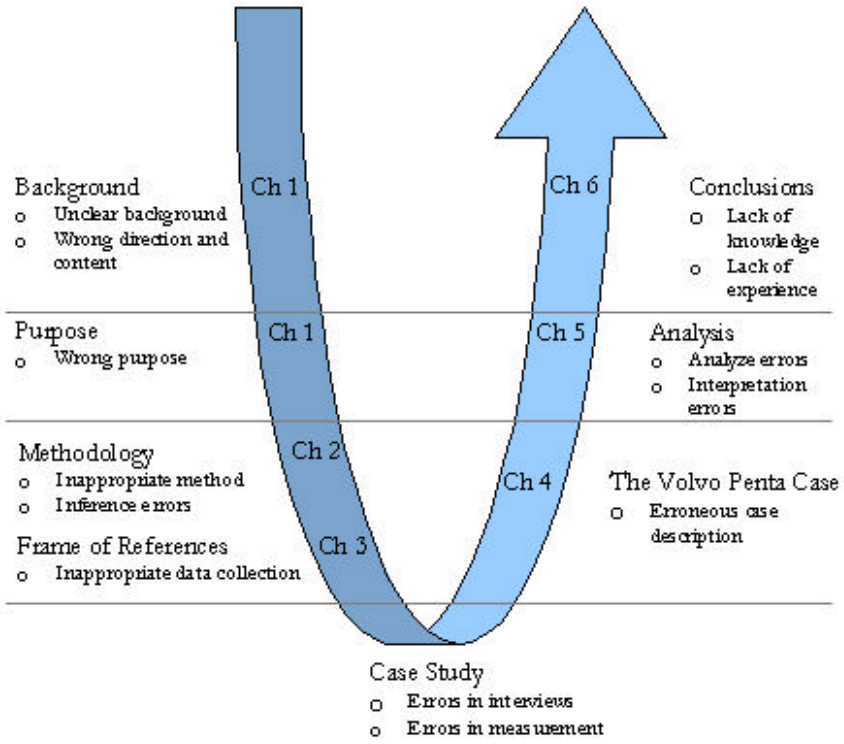

Figure 2 Error Sources (modified, Lekvall & Wahlbin, 2001)

Three errors may occur in the preparatory phase of the model: unclear background, wrong direction, content and wrong purpose. In the preparatory phase the relevance and quality of a thesis depends on the formulation of the background and purpose. If the task specifications are not correctly performed, it leads to wrong direction and content.[30] These errors are eliminated in this thesis by discussions of the direction, content and background with the tutor.

Choosing approach, method and technique is the same as technically drawing up the way to work out the study in a way that fulfils the specified task as much as possible. When choosing methodology, there is a risk to choose a model or an approach that does not fulfill the specified task. Inference errors occur when the conclusions are drawn up from what has been surveyed in relation to the "real" conditions that one is really interested in. In most cases, even at desk researches, inference errors occur when one is interested in a generalization of the results outside the examined area. Inappropriate method for data collection means the method does not give the kind of data requested to solve the task. These errors are partly bound up with the disposition of the study and accomplishment of the data collection.[31] The model for this thesis is worked out to suit the task and has been discussed with the tutor; the risk that the chosen model has no reasonable opportunity to fulfill the specified task is therefore eliminated. Inference errors are diminished by the

[30] Lekvall & Wahlbin, 2001
[31] Lekvall & Wahlbin, 2001

carefully choosing of interviewees so the majority of the task market is covered and the interviewees have a position that is significant to the task.

The collecting of data is the most sensitive part of the study seen from the quality perspective. The interviewer may not have the right education and the interviewee may give the wrong answers. Wrong answers may occur due to different reasons – the structure and formulation of questions, the unwillingness of the answering person to answer the question truthfully, the person may not be able to answer the questions, etc. Interview effects can arise when the interviewer influences the answers by the way the questions are asked or by behaviour.[32] Interview errors are diminished by the use of an interview guide with predetermined questions. The interviewer effect is difficult to measure but has been diminished by the study of literature in the interviewing area and by showing a neutral attitude towards the interviewees so that they will not be steered in a certain direction. Letting involved and interviewed personnel at Volvo Penta read the empirical findings erase interview errors and errors in the case description.

When the description of the empirical findings is made the case description may be erroneous.[33] When analyzing the empirical findings, errors may occur such as; use of inappropriate analyze methods, incorrect use of analyze methods and lack in ability to read and understand the result of the analysis. Lack of knowledge about the analysis method may lead to erroneous conclusions and interpretation errors. The conclusions may not be connected to the purpose of the thesis and they may be expressed as less general than they are.[34] By consulting a tutor, opponents and other people familiar with the task area and by frequent use of the theoretical frame of reference, these errors are diminished in the thesis.

[32] Lekvall & Wahlbin, 2001
[33] Lekvall & Wahlbin, 2001
[34] Lekvall & Wahlbin, 2001

3 Frame of Reference

This chapter presents the frame of reference of this thesis. A presentation of business value, e-commerce, Electronic Data Interchange and electronic invoicing is made. This is followed by a presentation of Electronic Invoice Presentment and Payment, direct debit, and finally laws and directives. The information presented in this chapter is secondary data, collected in a desk research.

3.1 Business Value

It is very difficult to explain the term business value. Many different perspectives are presented in today's literature and there is no adequate definition of the term. Regarding the various perspectives along with the evolution of IS in organizations Cronk & Fitzgerald define IS business value as[35]:

"IS Business value is the sustainable value added to the business by IS, either collectively or by individual systems, considered from an organizational perspective, relative to the resource expenditure required."[36]

It is important to consider the contribution of IS to the business and weight it against the required expenses to gain the effect. A business may gain substantial value from an implementation of an IS but the costs may be excessive. If the costs are excessive the value cannot be sustained. The organizational perspective is necessary since two different systems may, although they are equally effective, contribute with different value to the business.[37]

Cronk & Fitzgerald[38] further present three dimensions of IS business value:

- System dependent dimension; value is added to the business through the system characteristics. This value can be measured in downtime, accuracy, response time, timeliness, etc.
- User Dependent; value is added to the business through user characteristics. This value can result in more or less effective usage of the system.
- Business Dependent; value is added to the business through business factors. This value can be measured in the realization of business goals.

If these dimensions are put together as sides in a prism they create the holistic form of IS business value.[39] The prism is illustrated in Figure 3 below.

[35] Cronk & Fitzgerald, 1999
[36] Cronk & Fitzgerald, 1999, p 44
[37] Cronk & Fitzgerald, 1999
[38] Cronk & Fitzgerald, 1999
[39] Cronk & Fitzgerald, 1999

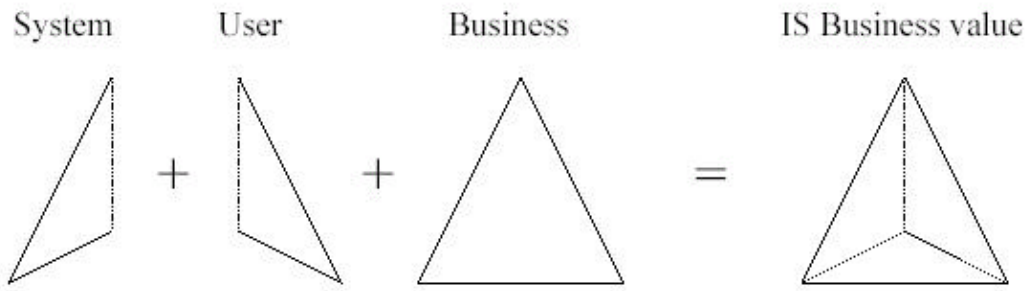

Figure 3 The IS Business Value Prism (Cronk & Fitzgerald, 1999)

3.1.1 Evaluation of IS/IT Business Value

Even though businesses often depend on the benefits that occur through IS (i.e. cost effectiveness and well organized work processes) they find it difficult to determine when to use IT and what kind of system to procure. Businesses also often expect to receive benefits on different strategic levels.[40] Despite from this, many businesses do not have any method for evaluating if the investments are in line with the business strategy. This means that many businesses are without a safety net.[41]

Measurement of business value can be divided into two groups, tangibles and intangibles. Tangible assets are factors that easily can be translated into financial value. Intangibles are more complex to identify and difficult to determine if they are positive for the business or not.[42] Even though the intangibles have not always been recognized they have always effected businesses performance. Recent methods such as economic value added, the balanced scorecard and value-based management are developed for measuring intangibles.[43]

Some methods for evaluating IS business value asses the interaction of two or all three dimensions of the IS business value prism. For example measurement of user satisfaction reflects the outcome of the interaction between the user and the technical characteristics. Cronk & Fitzgerald[44] label this kind of measurement as "cross-dimensional" as illustrated in Figure 4 below.

[40] Hallikainen, 2003
[41] Irani, 2002
[42] Lee, Pak & Lee, 2003
[43] Low, 2000
[44] Cronk & Fitzgerald, 1999

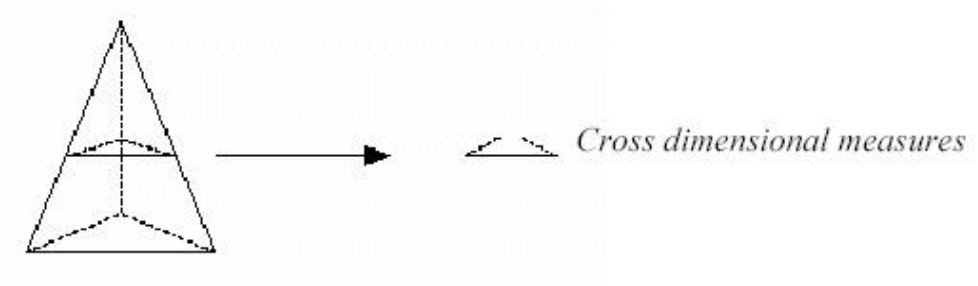

Figure 4 Cross-section of the IS Business Value Prism (Cronk & Fitzgerald, 1999)

In order to prevent that only one person's value perspective is included in an evaluation multiple value perspectives such as upper and middle management, system users etc. must be integrated with the organizational objectives.[45]

Evaluation can be used as a part of an investment justification, which can be either financial or concept based. Concept based justification gives directors and senior managers a strategic focus when analyzing the roles and effects of the investment. It involves the project stakeholders and larger populations of the business, which helps to raise the importance and payment of the investment towards the businesses growth and success. Financial justification gives the directors and senior managers a comparison of the investments costs with quantifiable savings and a presentation of what benefits that are expected to be achievable. Financial significance and impacts are the centerpieces of this justification method.[46]

Businesses often focus on a financial justification for evaluating capital investments. If financial justification is used for IT investments, the true value will often be underestimated since factors like customer satisfaction is left out. Customer satisfaction drives businesses future financial performance and is therefore very important.[47] And it is important to select appropriate performance measures since there is an important relation between IS/IT evaluation and alignment of IS/IT with the business strategy. The measures influence how the business will behave and where the emphasis will be.[48] The literature, however, presents conflicting advice. Some authors believe that managers should measure the effects of IS/IT in profit with existing financial measures, others believe that managers should look beyond the traditional financial indicators and measure what they think is important.[49]

Benefits from IT investments, like customer satisfaction, are very difficult to measure, insubstantial, and realized during a long period of time.[50] It can therefore be complicated to decide how valuable an investment is. According to Lee, Pak & Lee[51] it is those who receive the benefits of the investments that must decide the value by naming a price they are willing

[45] Cronk & Fitzgerald, 1999
[46] Irani, 2002
[47] Simmons, 1996
[48] Hallikainen, 2003
[49] Simmons, 1996
[50] Hallikainen, 2003
[51] Lee, Pak & Lee, 2003

to pay for it. The value should be considered as a trade-off between costs and benefits.[52] Low[53] believes that the better companies manage all their assets and liabilities, and not only those that are traditional and tangible, the more understandable and positive their measurements will be.

3.2 E-commerce

"Electronic commerce is any form of business or administrative transaction, or information exchange, that is using any information and communications technology."[54]

Electronic business signifies business systems that are connected to each other in networks for an effective way of information transfer. The difference between e-business and e-commerce is that e-business is not about technique, computers, network and complicated shortenings. There are solutions to make sure that the technique is working properly. Instead what it is about is an optimization of the business process with the support that the technique can offer, it is about a new way of making business.[55]

A transition to e-commerce means certain analysis work has to be done.[56] It requires planning to create and manage an e-commerce entity in the business. Planning is essential for a business's survival, and more and more businesses are discovering this strategy. They often have pressure from investors requiring them to execute and pay attention to their primary reason for being.[57] This is an opportunity for business to look over the routines in their activity.[58] Rethink the basics about the business and how to implement and deploy the massive changes required in people, processes and systems. With a plan, changes and experiments can be made much easier.[59] In many cases work can disappear, while in other cases the work can change and be simplified. It is only with a well-considered strategy that the real great benefits with e-commerce can be realized. The benefits that arise are significant for the company's competitive skill.[60]

There are different tactics to have in mind when planning a change:

- It is important that the CEO establishes this vision and gains commitment of all participants in the value chain, and creates a proper e-commerce entity.
- A creation of a new e-commerce entity will require substantial changes in the legacy system, legacy processes and legacy people.
- For all the plans and processes that are developed and implemented the customer should remain in focus.

---

[52] Sawhney, 2003
[53] Low, 2000
[54] Electronic Commerce Association, in Fredholm 2000, p 8
[55] Fredholm, 2000
[56] Fredholm, 2000
[57] Levy, 2001
[58] Fredholm, 2002
[59] Levy, 2001
[60] Fredholm, 2002

- The metrics should be realistic, measure success and be appropriate for the business goals.

When the planning is properly done it leads to a powerful self-running entity that can be open to rapid changes in the external environment.[61]

3.3 Electronic Data Interchange

The series of changes in technology has led to major changes in the electronic Business-to-Business (B2B) commerce: Electronic Data Interchange (EDI), area networks, and the Internet. Mainframe solutions focused initially on internal automation and proprietary EDI links with suppliers in the 1960s and 1970s. Due to the limited technical capabilities and the existence of multiple technical standards, EDI has primarily been used in the subcontracting area and has been proven most effective in supporting applications on an operational level. By focusing on Supply Chain Management, Enterprise Resource Planning (ERP), and Customer Relationship Management the client-server solutions in the 1980s to the mid-1990 broadened the scope of participants. But these approaches were expensive, difficult to implement and use and costly to maintain. Moreover, they only improved internal processes instead of addressing the needs of the entire supply chain.[62] With the introduction of Electronic Invoice Payment and Presentment (EIPP) technology in the early 1990s, the door opened for businesses of all sizes to take advantage of Internet-enabled presentment and payment processes.[63]

EDI is the most successful of many techniques and methods available for establishing e-commerce. There is a lack of standards for EDI communication, or as seen from a different perspective – many businesses are making their own standards in their companies. Although there are two more known standards, Electronic Data Interchange for Administration, Commerce and Transport (Edifact) and Extensible Markup Language (XML). Edifact and XML are elements of EDI, standards that defines structure and information of electronic documents, a.k.a. EDI-messages. These techniques and methods are used to improve a company's business procedures.[64] For handling the technical requirements on format, communication and controller, the business systems are connected with an EDI system, also called integration broker.[65] This makes it easy for different business systems to exchange information with each other, regardless of computer environment. [66]

There are several positive effects a business can experience when implementing EDI. Since manual inputting will be reduced with the use of EDI, the number of errors produced by the human factor will be gravely reduced.[67] For example: the company Owens Corning expects

[61] Levy, 2001
[62] McIvor & Humphreys, 2004
[63] Haschka, 2002
[64] Fredholm, 2000
[65] Dykert & Fredholm, 2004
[66] Fredholm, 2000
[67] Senn in Rönn, 2001

the number of invoices the company has to rework to be reduced by 70% by the end of 2004 due to the implementation of EDI.[68] The errors will also be easier to trace.[69]

3.4 Electronic Invoicing

The differences between the market drivers for the Business-to-Business and the Business-to-Consumer (B2C) markets are fundamental. Reaching customers, building tighter relationships, fostering loyalty, and selling more to the customers are important market drivers in the B2C market. And by using electronic invoicing sellers may provide customers with convenience and value while they are getting closer to them. These capabilities of personalization, cross selling, and up-selling are much less important in the B2B market due to the fact that the person paying the bill often is not the one that ordered the goods or services. Instead, electronic invoicing is used in the B2B market to save money and time and accelerating the flow of funds. Another great difference between the markets is that B2B sellers do not necessary need all of their customers to participate in electronic invoicing; a few big accounts may be enough to justify the investment.[70]

Electronic invoicing enables presentment, payment, and posting of invoices over the Internet. The presentment includes the hosting of static statement invoice data on an interactive web-based bill presentment server. This gives businesses the opportunity to customize the user interface in the web to each individual customer.[71] Most solutions for electronic invoicing between businesses are seller-focused since the seller either uses an in-house solution or outsources the solution to a billing site where multiple payers access their bills or invoices.[72]

Korper & Ellis[73] present a simple example of the steps in a typical electronic invoicing transaction connected to payment:

1. The customer logs on to the web site and the invoice is presented.
2. When the customer has reviewed, analyzed and paid the invoice, the resulting transaction debits either the customers' bank account or credit card.
3. The transaction is posted to the Automated Clearing House (ACH) flat file.
4. The seller gets a success or failure response of the verification and posting of the transaction information.
5. The customer receives an electronic receipt, which indicates success or failure of the transaction.
6. The sellers' ACH file is reformatted and submitted for the account settlement.

[68] Hannon, 2004
[69] Senn in Rönn, 2001
[70] Patel, 2000
[71] Korper & Ellis, 2001
[72] Patel, 2000
[73] Korper & Ellis, 2001

3.4.1 Driving Forces

With the modern techniques as Just-In-Time and Total Quality Management a higher level of responsiveness and efficiency that is customer rather than supplier driven is demanded. This level of responsiveness that requires constant and immediate recognition of the demands is more effectively met by a computer-to-computer system.[74] E-commerce shortens lead-time and in many cases the order confirmation is replaced with an electronic message that informs exact what products that have been sent, and when they are expected to arrive. Other businesses only want deviation reports from orders or delivery plans. If no deviation report is received, the business knows that delivery will occur within the frames of the communication protocol in use.[75]

An electronic invoice system also eliminates the transfer of electronically stored information to paper and back again at different points in the billing and payment cycle. The maintaining of information in electronic form simply replaces the physical transportation of paper documents, which is more efficient.[76]

The paper invoices that are used today also lead to huge problems with lost or incorrectly documented invoices, followed by high tracing costs. If the invoices are stored electronically those costs will be erased. The electronic storage may also lead to the possibility to trace the invoices no matter where they are. An electronic invoice system will also reduce the number of irritated customers, since it will be easier to find the invoice information the customer needs.[77] These potential customer service savings should be the base in the final analysis whether to deploy an electronic invoicing system just as much as bill payment processing savings. Since immediate revenue increases from online invoices are difficult to measure, businesses considering the technology should therefore look at the potential financial gains from additional self-service features that can be tied to the electronic invoicing system.[78] Another benefit is the customer payback. In Zona Research's report, Buy Now, Pay Now: Internet-Enabled Billing Comes Of Age[79] 104 IT and business managers from companies that uses electronic invoicing ranked the customers payback in following order:

1. Simplified payment processing and record keeping.
2. Improved control of timing and amount of payments.
3. Improved efficiency of payments and storage online.
4. Increased ease of online administration.
5. Ability to check bills and pay anytime.

Fredholm[80] states that the ones who gain the most in an EDI-fiction are the customers, since they can receive more information more frequently, check invoices and get payment reminders immediately and automatically.

---

[74] Lawrence et al., 2000
[75] Fredholm, 2000
[76] Lawrence & Wenninger, 1999
[77] Senn in Rönn, 2001
[78] Webster, 2002
[79] Zona Research, in Greenemeier, 2001
[80] Fredholm, 2000

Rombel[81] presents other benefits from electronic invoicing. According to Rombel the businesses that use electronic invoicing benefit from more efficient payment routing approval processes, decreased invoice handling costs, reduced printing and postage costs, faster dispute resolution, a lower overall cost of payment, and in some cases accelerated cash flows. These benefits arise partly from the facilitation to see and address cash flow and financing needs that appear when the billing and payment processes are handled online. Patel[82] also illuminates that electronic invoicing can smooth the progress of transactions settlement, lead to better cash management for the sender and receiver and reduce the average number of days outstanding (DSO) for receivables and payables data. Fredholm[83] illuminates that an electronic invoice can reach the customer sooner, which leads to profits interest. If implementation of electronic mechanisms is made in a way that improve effectiveness, efficiency and profitability and adds value to the business, the supply chain-customer relationships and electronic purchasing are also improved.[84] Haschka[85] argues that EIPPs' ability to improve business processes through automation and elimination of error-prone units (EPU) should be the determining factor for implementation.

It is, according to Rombel[86], difficult to measure how much invoicing and payment businesses are conducting online. Mearian[87] notes, since the anthrax mailings in fall 2001 the Stamford, Connecticut-based research and consulting firm Gartner Inc. reported a 20% increase in users of electronic invoicing. And according to Gartner Inc.[88], about 40% of B2B payments by large US-businesses will be made electronically in 2006.

3.4.2 Negative Aspects

There are speculations in what the causes of low EIPP adoptions are. Finance and IT personnel are taking a skeptical "show-me" approach toward all e-commerce projects. Banks are worried they might lose their position as the middleman in cash-management services if companies shift to EIPP, but are lately striking deals to resell EIPP vendor software.[89] And Haschka[90] states that the fear of losing human authority over the payment process is the major reason for business's unwillingness to adopt EIPP as their only payment system.

According to Dalton[91] the businesses that use e-commerce are finding out that online bill presentation has not given them the advantages they were promised. The savings are, Dalton continues, elusive and the technology is complicated. Due to the fact that potential users of electronic invoicing realizes that savings can be hard to achieve, Check Free Corp. and TransPoint LLC, two major companies selling online invoicing technology and services, no

[81] Rombel, 2004
[82] Patel, 2000
[83] Fredholm, 2000
[84] Lawrence et al., 2000
[85] Haschka, 2002
[86] Rombel, 2004
[87] Mearian, 2001
[88] in Rombel, 2004
[89] Study Finds EIPP Saves $7.15 Per Invoice, 2002
[90] Haschka, 2002
[91] Dalton, 1999

longer promise big cost savings. Instead, the companies use the benefits businesses get from having an interactive relationship with their customers as their selling argument.[92]

According to Zona Research's report[93] the cost of paper versus Internet-based invoicing depends on the complexity of a business's IT system and the quality of the electronic invoicing infrastructure. Weighting the overhead of staff salaries, processing fees, printing, and investments in technology, Zona Research estimates paper-based billing costs from 80 cents to 90 cents per invoice, and electronic invoicing costs to range from 52 cents to $1,20 per invoice.

3.4.3 Implementing Issues

According to DeJong[94] if a business considers purchasing an EIPP-solution, the business must consider the following issues.

- Think strategically. If a business is considering moving their procurement systems to the Internet they should take the invoice-to-pay process to account at the same time since they will have to link the systems later. And if the business has already begun to implement an e-procurement application they should work with their current vendors to integrate invoice payment systems.
- Allocate a budget. The costs for buying software and integrate it into the buyer's and supplier's accounting systems will exceed $2 million including linking to procurement and inventory systems.
- Calculate ROI. DeJong refers to Gartner when presenting the following numbers:
  - Delivering an invoice online costs $1,64 as opposed to $5 for manual delivery.
  - Dispute resolving via e-mail runs about $10, versus $20 over the telephone.
  - Transferring funds over the Internet costs about $1,90 per transaction, compared with $4,50 per transaction for a paper check.
  - Some sellers spend $20'000 plus annually to ship invoices by federal express to be able to prove that the buyer received the goods.
- Pick a partner and get going. The business should identify their key partner in transaction volume, analyze how their current invoicing process works with that company, and determine how many days elapse between invoicing receipt and payment. The business should also question the partner's opinion on automating the process because the answer will help to resolve other questions on standards and vendors.
- Do not wait for others to dictate. Buyers will soon command that sellers enable them to adjudicate disputes electronically and standards will emerge when huge buyers move to EIPP. This will make them the ones that dictate the standards and it is therefore important to be among the leaders.

The business also needs to remove several obstacles according to Reyes-Stolker[95]. To do so, Reyes-Stolker suggests the business needs to fully analyze its cost structure and benefits from

[92] Dalton 1999
[93] Zona Research, in Greenemeier, 2001
[94] DeJong, 2001
[95] Reyes-Stolker, 2004

the transactions to be able to obtain a realistic picture of expected benefits and savings. Also, the business should turn to a bank to get the right EIPP solution since banks core competency is managing payables and receivables. If the changes are presented clearly and in a co-coordinated manner customers will welcome these solutions.

It is rather difficult to demand that your customers use electronic invoicing. Therefore it is important to invest in flexible solutions so that the customers can connect in a way that suits them best.[96] EIPP is much easier to implement than EDI and is therefore more accessible to more of the buying community.[97] Another way to make the customers connect is by giving discounts or better terms. Some larger parties have helped their customers by providing them with necessary software for a small or no cost at all.[98] The Council for Electronic Billing and Payment [CEBP] formed by NACHA, The Electronic Payments Association, believes that many businesses have not promoted the use of electronic invoicing aggressively enough. The businesses should try harder to convince the customers about the benefits with this payment method, and some customers need to get reassured that the process is safe and guaranteed.[99]

3.4.4 Electronic Invoicing in Sweden

There are six different types of electronic invoicing in Sweden.

- EDI-invoice
- The banks own e-Invoice and e-Giro
- Self-billing
- Invoice files via e-mail
- Value added services, Web EDI and marketplaces
- Scanning of paper-invoices

EDI-invoice

An EDI-invoice is sent from the senders invoice system directly to the receiver's business system where it is automatically read and controlled. The communication goes both ways, which creates great value for both the sender and the receiver. The largest potential for rationalization is at the receiver end because the invoice can automatically be registered, controlled and allocated into the receivers system. If the order and delivery is already confirmed and/or attested, then there may not be a need for manual handling; in this case the cost for an EDI-invoice is almost zero.[100]

The EDI-invoice can be sent directly between the systems or through a Value Added Network (VAN), an outsourcing service for EDI. The VAN company makes sure that the receivers get their business transactions the way they desire.[101]

---

[96] Fredholm, 2000
[97] Reyes-Stolker, 2004
[98] Fredholm, 2000
[99] Unger, 2002
[100] Dykert & Fredholm, 2004
[101] Dykert & Fredholm, 2004

e-Invoice and e-Giro

Since 1997 it is possible to present invoices on Internet banks. In Sweden there are two types of services for this: e-Invoice and e-Giro. All of the largest banks and several of the smaller banks co-operate on this. This way of presenting an invoice is often addressed to private consumers but can just as well be used by a smaller company that might not be able to receive an EDI-invoice but is used to paying invoices through an Internet bank. One disadvantage is that there is no connection with the receivers accounting system and therefore registration has to be done manually.[102]

Self-billing

The buyer creates the invoice instead of the seller; this is referred to as self-billing. This cannot be used for all invoicing, but only with the purchase of well-defined goods or services that are agreed upon and updated in the buyers system. According to the Swedish law "Lag (1968:430) om mervärdeskatt" it is the seller that is obliged to make out the invoice. For self-billing it is required that a contractual agreement is established between the seller and buyer. Although the seller always has the responsibility of making sure that correct tax is paid and that accounting is done.[103]

One of the conditions for self-billing is that input value added tax and output value added tax is the same at both the seller and the buyer, therefore a Settlement Note is sent back to the seller via fax or electronically. If it is electronically it can be in the form of an adjusted Edifact message called self-billing invoice. The control work is then assigned to the seller who has to deal with eventual deviation with the buyer.[104]

Invoice Files via E-mail

Many companies send invoices via e-mail the same way as they do with other documents. It is the sender that gets the benefits not having to use paper, envelope, postage and other administration needed, while the receiver often prints and manually has to handle the invoice. There are also certain risks involved when sending a document that can be changed by the receiver or if it is a template where previous text can be traced. The use of a reading receipt or signatures and cipher is recommended. This is probably the cheapest form of electronic invoicing without investment requirements, but the company should evaluate other methods for electronic invoicing before deciding on this one.[105]

Value Added Services

- Print out services

  There are a lot of operators on the market managing print out for companies. Invoices are collected in a large file and sent to the supplier who in turn has an effective way of printing and distributing the invoices.[106]

- Invoice and message switch

[102] Dykert & Fredholm, 2004
[103] Dykert & Fredholm, 2004
[104] Dykert & Fredholm, 2004
[105] Dykert & Fredholm, 2004
[106] Dykert & Fredholm, 2004

One typical case is a VAN service that collects electronic invoices and converts them to the format requested by the receiver. Another typical case is when some invoices are sent out electronically while others are distributed manually.[107]

- Web EDI

The EDI solution can be complemented with a Web EDI, with web interface, which means that there is an EDI solution at the sender and a web solution in the other end at the receiver. The invoice is sent as an EDI message directly from the larger companies business system to a web service from where the customer then collects it. This is a more attractive solution than having different routines for different customers.[108]

Fredholm[109] gives an example of how the process with an electronic invoice may work for the customer. The customer gets a message via e-mail or sms from the supplier of a product or service. This message announces that there is an invoice to collect from the web. After logging on to the Internet portal the customer receives its invoices on a screen. All the information is complete and the only thing the customer has to do is to click on a button to confirm or not confirm the invoice.[110]

- On-line business and marketplace

A business can have its entire economy system on-line in a so-called Application Service Provider (ASP). This is an attractive alternative even for the smallest company because the cost is reasonable at the same time as it provides modern technology with a rational way of working.[111]

Scanning of Paper Invoices

An incoming paper invoice is scanned into a digital copy and later circulated around in the organization for approval and attestation. Some businesses use scanning with the motivation that they cannot handle all incoming invoicing in a rational matter. There are some suppliers that of security reasons do not open their economic system or invoice system to the world around, for them scanning is the only alternative unless they choose to save the electronic invoice to a disc and transfer it into an open system, which is a pretty unattractive alternative.[112]

3.5 Electronic Invoice Presentment and Payment

The B2C process by which bills are presented and paid through the Internet is gradually becoming a standard tool for businesses that regularly bill a large number of individual consumers. This process is named Electronic Bill Presentment and Payment (EBPP). The corresponding process in the B2B market is named Electronic Invoice Payment and Presentment (EIPP). EIPP is a promising tool in a market that has not yet achieved

[107] Dykert & Fredholm, 2004
[108] Dykert & Fredholm, 2004
[109] Fredholm, 2000
[110] Fredholm, 2000
[111] Dykert & Fredholm, 2004
[112] Dykert & Fredholm, 2004

significant adoption rates.[113] Steve Hopper, vice president and product line manager for electronic payments at Mellon Bank and co-chair of the CEBP at NACHA explains that progress for EIPP has come slow because of the systems lack of accepting outputs in a variety of popular formats.[114]

In the beginning, businesses scanned their paper invoices and stored them on a server in electronic format. Later selected customers or suppliers could access these invoices through the extra-net environment. The next step in the move towards EIPP was to enable users to dispute the invoice online and argue about paying the invoice or not, this is generally referred to as "dispute handling". Online payment was later added so that customers could make payments immediately. Although this was effective in the B2C market it did not prove to be popular in B2B market space. Due to the fact that many businesses prefer in-direct payment channels and do not trust on the use of Internet to transfer large volumes of money.[115] But the new technological capabilities and the necessity to accommodate both established and spontaneous relationships in a real-time environment challenge the traditional business processes and relationships.[116]

Many businesses found the few old standard ways to make payments electronically impractical because they did not convey much information other than who, when and how much. Important information as the invoice number, whether the invoice was paid in full, and which account to credit the payment was left out.[117] An invoice also passes through a lengthy approval process before a buyer pays a supplier. In this process each item is matched against shipping documents and original purchase orders and when disputes arises, buyer and supplier usually must work them out by fax or phone. Since EIPP allows you to present, reconcile, dispute, and pay invoices online, EIPP promises to make the process both easier and faster.[118] The value of EIPP solutions are, according to Anachron B.V.[119], not only that businesses are able to control invoices and monitor their progress but also the ability to integrate the invoice data with existing ERP, Accounts Receivable (A/R) or Accounts Payable (A/P) software. Reyes-Stolker[120] states that the value is even greater when the EIPP is integrated with an online payment method such as direct debit or credit cards. According to Scheier[121] the processing costs can be extremely reduced by using a B2B e-payment system. But, Scheier remarks, substantial integration and business-process change are required. Since e-payment leads to an automating of all processes from how the seller presents an invoice to how a customer pays it the most obvious savings, according to Scheier, comes in paper, postage and staff however 85% of the benefits are said to be resulting from the elimination of manual work such as negotiating about disputes and cutting refund checks.[122]

---

[113] Council for Electronic Billing and Payment, 2001
[114] in Gamble, 2004
[115] Anachron B.V, 2002
[116] Council for Electronic Billing and Payment, 2001
[117] Trombly, 2002
[118] DeJong, 2001
[119] Anachron B.V., 2002
[120] Reyes-Stolker, 2004
[121] Scheier, 2003
[122] Scheier, 2003

CEBP[123] summarizes the benefits that motivates a migration towards EBPP and EIPP:

- Shortened transaction cycles and accelerated revenue cycles.
- Improved cash flow management.
- Increased marketing opportunities.
- Improved productivity.
- Reduced direct costs (e.g. postage and printing).
- Enhanced customer service.

When a business has decided to purchase an e-payment system, no matter if they choose to implement software or buy a service, a model must be chosen for how to link the system to the existing applications and data required for automated invoice payment and dispute resolution. This includes product return or credit data from an inventory control system, records of past bills from the billing system and past payments from the A/R system.[124] To be able to increase the customers' willingness to use Electronic Payment Systems (EPS) a number of issues must be taken into consideration according to Lawrence et al.[125]. These issues are listed below:

- Corporate strategy – EPS may lead to a change in the market share and the opportunities for organizational development and growth.
- Corporate processes and structures – the businesses may have to employ more or less staff and the administrative procedures may have to change.
- Political governance – it is important to consider which effects EPS has on the levels of government interference in consumers and suppliers behaviors.
- Product features.
- Regulation.
- Social processes and structures – transaction anonymity and transaction monitoring are important issues that must be considered.
- User needs.

3.5.1 Presentment Models

According to Schaeffer & Prescott[126], CEBP[127] and Reyes-Stolker[128] the three basic EIPP-models are:

- Seller Direct, can also be referred to as Seller-centric or supplier-centric.
- Buyer Direct, can also be referred to as Buyer-centric or customer-centric.
- Consolidator model.

Schaeffer & Prescott believe that the Consolidator or the Buyer Direct model will be the most common model in the future, even though the Seller-centric model is the best model for dispute resolution today and it is also the model that gives the users the greatest access to

[123] Council for Electronic Billing and Payment, 2001
[124] Scheier 2003
[125] Lawrence et al., 2000
[126] Schaeffer & Prescott, 2004
[127] Council for Electronic Billing and Payment, 2001
[128] Reyes-Stolker, 2004

information. Steve Hopper explains that if a buyer has quite a bit of control over its suppliers, it can impose a Buyer-centric solution. And when the seller has quite a bit of control over its customers, it can impose a Seller-centric solution. Down the road, Seller-centric and Buyer-centric systems will build links, so that their systems can exchange documents without requiring individual mapping.[129]

Tables with comparison between these models are presented in the Appendix B.

Schaeffer & Prescott[130] and The Clearing House[131] illuminate the problem that there are no standards and that many businesses use different models. This, Schaeffer & Prescott continues, could lead to, theoretically, a scenario where a business uses a different model for each customer.

Seller Direct

This model comprises a one-to-many relationship, linking one Seller, which controls the EIPP application, to its multiple Buyers for invoice presentment. The system may provide additional functions such as workflow protocols, payment initiation, dispute management and so on.[132] The model uses the direct debit model as the form of payment. The direct debit model is easier for EIPP vendors to implement since they only have to connect to a single gateway bank to process the payments.[133]

The Seller Direct model is typically used when a trade relationship already exists between a Seller and its Buyers and the Seller issues a high volume of invoices or has invoices of high value. The model requires that the Buyers are willing to use an invoicing process designed and controlled by the Seller. One way to persuade Buyers to adopt the model is to offer incentives; another is to simply require it.[134]

The process flow in the Seller Direct model is illustrated below in Figure 5.

[129] in Gamble, 2004
[130] Schaeffer & Prescott, 2004
[131] The Clearing House, 2002
[132] Council for Electronic Billing and Payment, 2001
[133] Reyes-Stolker, 2004
[134] Council for Electronic Billing and Payment, 2001

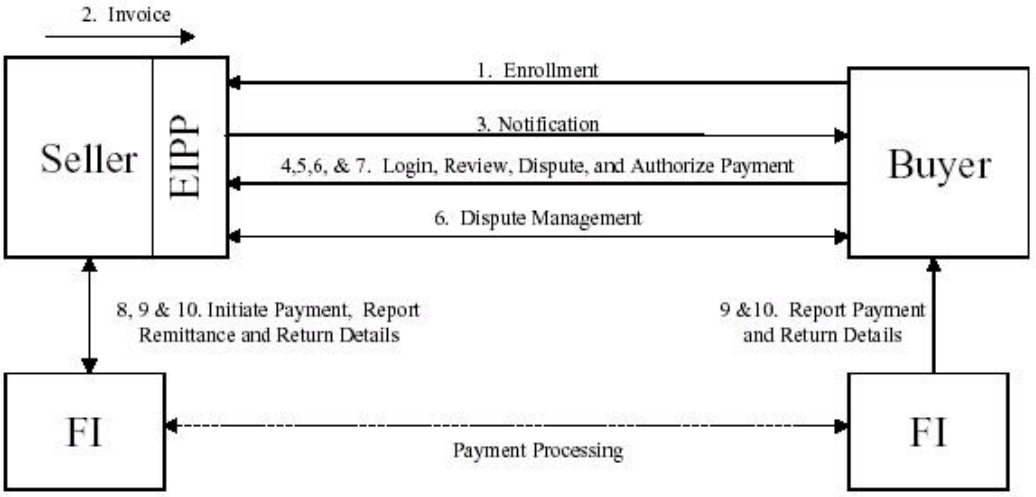

Figure 5 Process Flow in the Seller Direct Model (CEBP, 2001)

Enrolment:

1 – The Buyer navigates to the Seller's website and enrolls in the Seller's EIPP program. This is done using a standard web browser.

Presentment:

2 – Invoice information is transferred to the EIPP system by the Seller in the form of a file transfer or by more direct application integration.

3 – The Buyer organization is notified by the Seller's EIPP system that the Buyer's invoice is ready for viewing.

4 – The Buyer logs on to the Sellers web site and gets access to invoice information pertinent to that Buyer only.

5 – The invoice information is analyzed and reviewed in the Buyer's organization. The Seller's system may include protocols to route invoices within the Buyer's organization.

Disputes:

6 – Any disputes can be communicated to the Seller via the EIPP system. Depending on a set of predetermined business rules, disputes may be automatically accepted, rejected or reviewed by the Seller.

Payment:

7 – The Buyer may authorize invoice payment. The payment can be either the full amount or a partial payment.

8 – The Seller's Financial Institution processes the payment transaction.

9 – A remittance file is transmitted by the EIPP system to the Seller. The remittance file may be used to update the A/R system. The Seller may offer the Buyer A/P integration services.

10 – The Financial Institutions confirm the payment execution via reporting services.

11 – Both the Buyer and the Seller may get payment return or rejection information by their respective Financial Institution.[135]

The Seller Direct model brings benefits not only to the Seller but also to the Buyer. The Seller controls the systems, which includes data requirements and options for transaction processes and has the ability to integrate the EIPP system with other applications. The Seller

[135] Council for Electronic Billing and Payment, 2001

can also choose the information that is presented on the website and at the same time reduce the number of trading partner sites it must interact with for invoicing and payment. These benefits also bring challenges to the Seller business. The Seller is responsible for the costs and must ensure adequate security and scalability in the EIPP system. And the Seller may have to provide multiple data output formats to integrate the system with Buyers' A/P process. The Buyer in a Seller Direct model has low implementation costs since they only need a web browser to view the invoices. On the other hand, a Buyer who purchases from many Sellers must access multiple sites for invoicing and payment and may have to integrate its A/P system with these. The Buyers also have to deal with enrollment, presentment, and access requirements.[136]

The Seller can choose between three different implementation options:

- In-house EIPP Software Solution – the Seller is responsible for development and operational resources and hosts all invoice data.
- Use of Third-Party EIPP Software Vendor for an In-House Solution – the Seller uses a third-party software vendor to implement an in-house EIPP application. The fulfillment of the Sellers needs is dependent on the flexibility of the vendor to interface with legacy systems.
- Use of Third-Party EIPP Services/ASP – the Seller outsources an EIPP solution to a third party. The fulfillment of the Sellers needs is dependent on the features offered by the ASP's service and the flexibility of the ASP to interface with the Seller's legacy systems.[137]

Buyer Direct

This model is used when the case business is a Buyer. It will therefore not be presented since this thesis illuminates the business value an electronic invoice system can contribute to from a seller's perspective only.

Consolidator

This model comprises a many-to-many relationship, linking multiple Sellers and multiple Buyers. The consolidator controls the EIPP application and acts as an intermediary, collecting and aggregating invoices, eliminating the need for point-to-point connections. By serving multiple Sellers and Buyers, the consolidator may attract more Buyers to each Seller and vice versa, without the necessity of having an established relationship. Both Sellers and Buyers may use this model – Sellers can request that its Buyers view and pay their invoices through the consolidator, and Buyers can request that its Sellers present invoices through the consolidator. The consolidators' system may provide additional functions such as workflow protocols, payment initiation, dispute management and so on.[138]

The process flow in the Consolidator model is illustrated below in Figure 6.

[136] Council for Electronic Billing and Payment, 2001
[137] Council for Electronic Billing and Payment, 2001
[138] Council for Electronic Billing and Payment, 2001

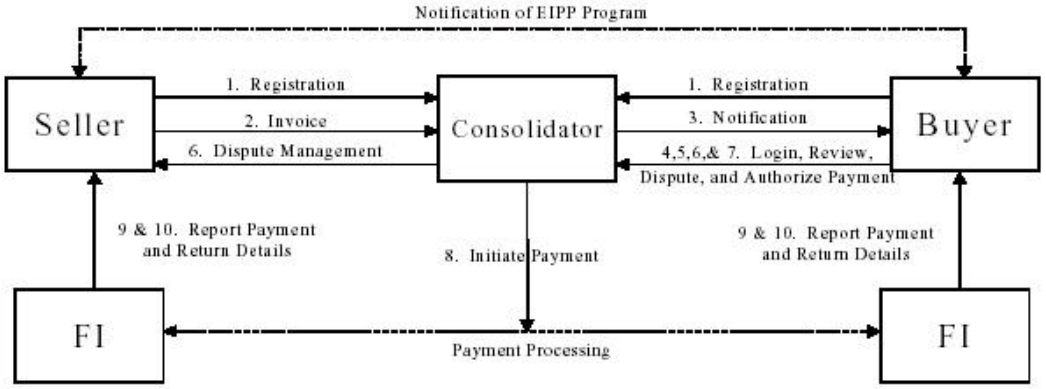

Figure 6 Process Flow in the Consolidator Model (CEBP, 2001)

Enrolment:

1 – The Buyer and/or Seller navigates to the Consolidator's website and registers in the Consolidator's EIPP service. This is done using a standard web browser. Once a business is registered, trading partners are notified of the EIPP program.

Presentment:

2 – Invoice information is generated and transferred to the Consolidator's EIPP system by the Seller in form of a format that the Consolidator requires.

3 – The Buyer organization is notified by the Consolidator's EIPP system that the Buyer's invoice is ready for viewing.

4 – The Buyer logs on to the Consolidator's web site and gets access to invoice information pertinent to that Buyer only.

5 – The invoice information is analyzed and reviewed by the Buyer. The Consolidator's system may include protocols to route invoices within the Buyer's organization.

Disputes:

6 – Disputes are typically communicated to the Seller through the Consolidator EIPP. The dispute resolution process may be automated if the Seller business provides the Consolidator with pre-determined rules.

Payment:

7 – The Buyer may authorize invoice payment. The payment can be either the full amount or a partial payment. Then the Consolidator initiates the payment.

8 – The payment transaction is processed either by the Seller's or the Buyer's Financial Institution. The consolidator may assume the role of a Financial Institution in some cases.

9 – The Consolidator sends a remittance file to the Seller to update the A/R system. The Buyer may also receive A/P integration services by the Consolidator.

10 – The Financial Institutions confirm the payment execution via reporting services.

11 – Both the Buyer and the Seller may get payment return or rejection information by their respective Financial Institution.[139]

The Consolidator model brings benefits to both the Seller and the Buyer. Both Sellers and Buyers reduce the number of trading partner sites it must interact with for invoicing and payment. Both Sellers and Buyers also leverage shared technology infrastructure to standardize interaction with Buyers respectively Sellers. And both Sellers and Buyers may

[139] Council for Electronic Billing and Payment, 2001

leverage Consolidator services and features that they may not have internally. The challenges that come with the Consolidator model are that the Seller (or the Buyer) must convince or require the opponent to use Consolidator EIPP. The Seller and the Buyer must comply with Consolidator enrollment requirements and payment options and may not be able to integrate Consolidator functions with existing systems such as A/R or A/P, customer care or purchasing/receiving. It is also important to consider that Seller messaging (i.e. regulatory, marketing) to Buyers may be limited.[140]

3.6 Direct Debit

Direct debits are looked upon favorably as a method of collecting funds, although few companies have asked their trading partners to change to such payment method. Businesses rarely use e-payment for several reasons[141]:

- For the fear of unauthorized debits.
- Because of mistakes in the amount debited.
- Large costs expected with implementation.
- The loss of float.

A survey shows that there is an interest in debiting others but not being debited. One reason why many businesses and customers are against direct debit as a payment method is because of the loss of control. As e-payment becomes more popular and known, there is a fear of criminals becoming more familiar with the system and fraud can be expected to go up. This is a greater problem for the smaller business than for the larger. The larger companies often have great money invested in blocks on their bank accounts preventing fraud, the smaller businesses may not have the resources for implementing this high security level. Therefore they do not easily give out their bank account number. Hence not being able to receive e-payment.[142]

In B2B transactions the debit model exists for trusted trading relationships or with businesses that have gradually forced their way of doing business. These progressive companies are often larger businesses that are already using EDI, and have leverage enough to force smaller customers to pay electronically. The large businesses may already use SAP or ORACLE, which are systems that have e-payment capabilities, often with customized integration. Smaller businesses may not have e-payment functionality, and if the banking service is not provided then it is probably very expensive to implement this service.[143]

The perceived loss of float has been another reason why businesses have been slow with migrating to e-payments. An attempt to change this is by essentially splitting the benefits of the flow by giving a small discount of 1-2% for paying on time. In many cases for companies to make their payments electronically there is a need for incentives, either more business or better terms.[144]

---

[140] Council for Electronic Billing and Payment, 2001
[141] Clearing House, 2002
[142] Clearing House, 2002
[143] Clearing House, 2002
[144] Clearing House, 2002

3.7 Laws and Directives

Electronic invoicing has been used between businesses within EU for a long time. But the Member States' different laws and regulations in the Value Added Tax (VAT) area have made it difficult to effectively develop and simplify electronic invoicing. Some Member States had bureaucracy barriers for electronic invoicing; other Member States did not allow electronic invoicing in border crossing trade.[145] The Council of the European Union has therefore adopted the Directive 2001/115/EC amending Directive 77/388/EEC. The Directive is addressed to the Member States, who shall bring into force the laws, regulations and administrative requirements necessary to comply with the Directive with effect from 1 January 2004. The Directive has a view to simplify, modernize and harmonize the conditions laid down for invoicing in respect of VAT.[146] The Council Directive affects other legal invoicing areas and has erased a major part of the limitations and obstacles for using electronic invoicing.[147]

3.7.1 Invoices Sent by Electronic Means

Invoices may be sent either on paper or by electronic means, if the customer accepts it. Member States shall accept invoices sent by electronic means, provided that the authenticity of the origin and integrity of the content are guaranteed:

"*… - by means of an advanced electronic signature within the meaning of Article 2(2) of Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures (9); Member States may however ask for the advanced electronic signature to be based on a qualified certificate and created by a secure-signature-creation device, within the meaning of Article 2(6) and (10) of the aforementioned Directive;*
- or by means of electronic data interchange (EDI) as defined in Article 2 of Commission Recommendation 1994/820/EC of 19 October 1994 relating to the legal aspects of electronic data interchange(10) when the agreement relating to the exchange provides for the use of procedures guaranteeing the authenticity of the origin and integrity of the data; however Member States may, subject to conditions which they lay down, require that an additional summary document on paper is necessary."[148]

If the Members State(s) concerned accepts it, invoices may however be sent by other electronic means. To take account of possible future technological development in this field, the Commission will present a report together with a proposal, if appropriate, amending the conditions on electronic invoicing. This will at the latest be on 31 December 2008. Member States may not require any other obligations or formalities relating to the transmission of invoices by electronic means from taxable persons supplying goods or services in their territory. But they may provide that usage of such a system is to be subject to prior notification until 31 December 2005. Specific conditions for invoices issued by electronically

[145] Dykert & Fredholm, 2004
[146] Council Directive 2001/115/EC, 2002
[147] Dykert & Fredholm, 2004
[148] Council Directive 2001/115/EC, 2002, p 26

means may be laid down by Member States, if the invoices concern goods or services supplied in their territory from a country with which no legal instrument exists relating to mutual assistance to the extent of Directives 76/308/EEC and 77/799/EEC and by Regulation (EEC) No 218/92. If batches that contain several invoices are sent to the same recipient by electronic means, the details that are common to the individual invoices may be mentioned only once if all the information is accessible for each invoice.[149]

Storage of Invoices Sent by Electronic Means

Every taxable person shall store copies of invoices issued by the taxable person, by his customer or, in his name and on his behalf by a third party and all the invoices that he has received. Provided the invoices or information stored are available without undue delay to the competent authorities whenever they so request, the taxable person may decide the place of storage. If the place of storage is outside their territory, Member States may require taxable persons established in their territory to notify them of it. When the place of storage is in a Member State other than where the taxable person is established, the competent authorities in the Member State in which he is established shall have the right to access by electronic means, download and use these invoices. If the storage is not by electronic means guaranteeing full on-line access to the data concerned, the Member States may require taxable persons established in their territory to store these invoices within the country. During the storage period the authenticity of the origin and integrity of the content of the invoices as well as their readability must be guaranteed. The Member States shall determine this period, and they may require that invoices be stored in the original form in which they were sent, whether paper or electronic. The Member States can also require, when invoices are stored by electronic means, the data guaranteeing the authenticity of the origin and integrity of the content to be stored. Storage of invoices in a country with which no legal instrument exists relating to mutual assistance similar in scope to that laid down by Directives 76/308/EEC, 77/799/EEC and by Regulation (EEC) No 218/92 and to the right of access by electronic means, download and use referred to in Article 22a, may be limited by the Member States.[150]

Value Added Tax

VAT is levied at all stages in the production and distribution chain on the value added at each stage. VAT can also be multi-stage as it covers several stages. Thus, it is the difference between VAT on sales, output VAT, and VAT on purchases made, input VAT, that is reported to the state. Member States of EU are obliged to follow the EC sixth VAT directive in the respective countries' VAT legalization.[151]

Swedish law "Lag (1968:430) om mervärdeskatt " regulates VAT when trading inside Sweden. The fundamental rule is that the seller, for the buyer to get deduction for incoming VAT, shall issue the invoice. The invoice can also be issued by the buyer on the seller's behalf, so called self-billing, but this must be regulated by a contractual agreement between the seller and the buyer. It also requires that the seller have a procedure for admitting the self-invoices. The seller may assign a third party to issue the invoices.[152]

[149] Council Directive 2001/115/EC, 2002
[150] Council Directive 2001/115/EC, 2002
[151] Odelberg, 2003b
[152] Dykert & Fredholm, 2004

When a foreign business without a VAT registration in another country is entitled to a refund of VAT paid in that country the situation is named Refund of VAT. The rules regarding refund of VAT are similar in countries within EU, Norway, Switzerland and Estonia. A business is, in most of the EU countries, entitled to a refund of VAT provided that the VAT relates to procurement or importation that refers to the applicant's business activities carried out in his own country. If a business supplies goods or services in another country than it is established in, the business could be required to register for VAT in that country. Foreign businesses that have a VAT registration are entitled to make deduction for input VAT in their VAT return, and if the input VAT exceed output VAT a refund will be done.[153]

3.7.2 Swedish Law and Regulations

The Swedish laws that regulate invoicing in Sweden are "Bokföringslag (1976:125)", "Aktiebolagslag (1975:1385)", "Lag (1968:430) om mervärdeskatt", and "Skattebetalningslag (1997:483)". Electronic invoicing has been accepted in Sweden under certain circumstances both in accounts and tax practice for a long time. One circumstance is that electronically stored invoices should be printable in a readable format during the ten-year period when the invoices must be stored. If a business changes its computer system during the storage period, the invoice information must be converted to a format that is readable in the new system or printed before the system change. The Swedish law "Bokföringslagen" regulates Swedish businesses' storage of reckoning information. Swedish businesses may, according to the law, not store reckoning information abroad. An exception encloses daughter companies of foreign businesses or Swedish business in an international group. These businesses may store reckoning information in a machine-readable medium abroad under certain circumstances. Since 1 January 2001, there is another exception that makes it possible for Swedish businesses to store reckoning information in a machine-readable medium abroad – if the place of storage is reported to the Swedish "Skatteverket". Furthermore, the reckoning information shall be electronically available to competent authorities, and the information shall be immediately printable at the business in Sweden.[154]

Laws concerning account is presented in "Bokföringslag (1999:1078)" and will not be mentioned in this thesis.

3.7.3 Mandatory Information for Invoices

The Member States are not allowed to impose additional obligations regarding the details required for VAT purposes on invoices.[155]

According to Directive 2001/115/EC the mandatory information for invoices in Sweden are listed below[156]:

- Invoice date.
- Invoice number that uniquely identifies the invoice.

[153] Odelberg, 2003b
[154] Dykert & Fredholm, 2004
[155] Council Directive 2001/115/EC, 2002
[156] Dykert & Fredholm, 2004

- The supplier's VAT number.
- The customer's VAT number if the customer is charged for VAT.
- Complete name and address of the customer.
- Complete name and address of the supplier.
- The quantity and nature of the goods supplied or the extent and nature of the services rendered.
- Delivery date for the goods or services or date for a conto-payment.
- The Taxable amount per rate or exemption, the unit price exclusive of tax and any discount or rebates if they are not included in the unit price.
- VAT-rate applied.
- Total amount of VAT.
- If VAT is not charged, reference to national regulation or other regulation.

The Directive 2001/115/EC further states that Member States can demand invoices to be translated into their national languages. This has, as its object, invoices of goods supplied or services rendered in their country and invoices received by taxable persons in their territory. The amounts on the invoices may be expressed in any currency provided that the amount of tax to be paid is expressed in the national currency of the member state where the supply of goods or service takes place. The Member States cannot demand invoices to be signed.[157]

[157] Council Directive 2001/115/EC, 2002

4 The Volvo Penta Case

This chapter presents the empirical findings of the thesis. A presentation of the Volvo Group and the general and legal structure at AB Volvo is made. This is followed by a detailed presentation of Volvo Penta; its customers, the technical solution used at Volvo Penta and finally the invoice process that is used today. The information presented in this chapter is both secondary data, collected from the official website, internal documents and the intranet, and primary data collected in interviews with employees at Volvo Penta.

4.1 The Volvo Group

In 1915, Volvo was incorporated as a subsidiary of AB SKF, the Swedish ball bearing manufacturer. The two founders, Assar Gabrielsson and Gustaf Larsson, decided in 1924 to start construction of a Swedish car and in 1927 the first series-manufactured Volvo car rolled of the production line in Göteborg, Sweden. Volvo has since then developed from a small local industry to the Volvo Group – one of the world's largest manufacturers of trucks, buses and construction equipment, drive systems for marine and industrial applications, and aerospace components and services. The Volvo Group also provides complete solutions for financing and service. Today, the Volvo Group operates on more than 130 markets. The Group has production in 25 countries and more than 76,000 employees. In 2003 the net sales amounted to € 19,151 M. The sale per market area in 2003 is presented below in Figure 7.

Figure 7 Sale by Market Area Year 2003 (Volvo Intranet, 2004)

4.2 General and Legal Structure at AB Volvo

AB Volvo has established an operational structure to support commercial activities. This means all operations at AB Volvo are run in Business Areas and in Business Units. Each Business Area is fully responsible for its operating income, operating assets and liabilities within its operating structure. [158] Figure 8 below illustrates the Volvo Group Organization.

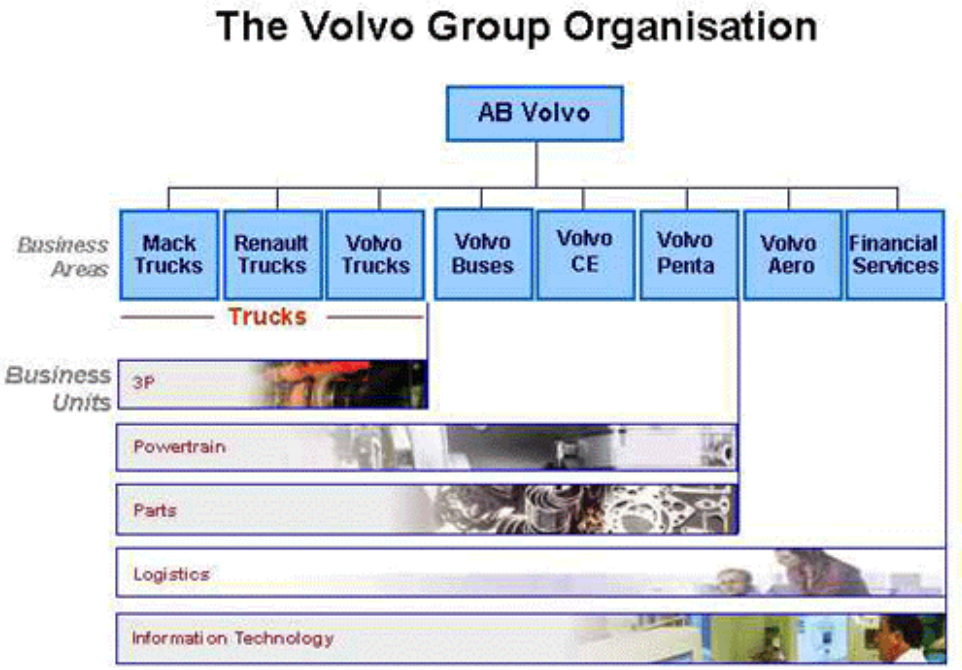

Figure 8 The Volvo Group Organization (www.volvo.com)

The legal structure at AB Volvo differs from the operating structure. The legal structure is optimized from tax, treasury and administrative perspectives. The Legal Structure and Financing Board decide the legal entity set-up at AB Volvo. AB Volvo uses a structure with joint companies to get a more efficient handling of administration, treasury and tax consolidation and AB Volvo or one of AB Volvo's holding companies owns the joint company. In a joint company each Business Area has its own division with full responsibility for operations, operating income and capital. Functions like Human Resources, IT, Legal, Tax, Finance, Security, etc. are organized as shared services.[159]

Today, the Volvo Group is not only one of the world's leading suppliers of transport solutions for commercial use; the group also provides complete financing and service solutions. The Volvo Group consists of[160]:

- Volvo Aero

[158] Persson & Johnsson, 2001
[159] Persson & Johnsson, 2001
[160] www.volvo.com, 2004

- Volvo Buses
- Volvo Construction Equipment
- Volvo Financial Services
- Volvo Penta
- Trucks

4.3 Volvo Penta

In the first decade of the 20th century, the engine production started when Sköfde Gjuteri received an order for a paraffin engine for test operations. The engine was called Penta (the Greek word for five) because of the five men who attended the meeting at which the first drawing were presented. In 1919 the company was renamed Pentaverken. In 1925 the business received the first order from AB Volvo and ten years later AB Volvo bought the business and renamed it to Volvo Pentaverken. In 1965 the final change of the name was made to Volvo Penta and in 1982 Volvo Penta became an independent subsidiary of the Volvo group. Today, Volvo Penta is a global and world-leading manufacturer of engines and complete power systems for both marine and industrial applications.[161]

Volvo Penta works with three main business segments: Marine Leisure, Marine Commercial and Industrial. Marine engines dominate sales, while the segment with industrial engines is growing rapidly. With more than 5'000 dealers in more than 130 countries, Volvo Penta has a strong global presence. The organization is divided into four regions: Europe, North America, Asia and International. Volvo Penta business area has about 1,500 employees globally. Net sales in 2003 totaled SEK 7596 M and operating income amounted to SEK 695 M. [162]

4.3.1 Volvo Penta's Customers

Volvo Penta has a great variation of customers, from modern multibillion companies to single-owned dealers. The customer is often divided into one of two groups depending on if they order engines or parts, but can belong to both segments. There are engines for leisure, commercial and industry and within those product areas you have different customers. In the engine segment there are about 1000 customers and the customer who purchases engines is often a very large company. The parts customers make orders for between SEK 100,000 to SEK 15,000,000. Volvo Penta tries to make the smaller customers buy from the larger dealers instead of directly from Volvo Penta. So parts are often delivered to a dealer, which is part of a very large network. A list over Volvo Penta's key customers is presented in Appendix C-E.

How much a customer buys varies from a few million Euros to a hundred Euros a year. Volvo Penta is trying to let the smaller customers buy from larger dealers to prevent too many dealers. As an example, France has more than 600 dealers, far too many, since some of these dealers buy only during the summer.

[161] www.volvo.com, 2004
[162] www.volvo.com, 2004

There are different invoices sent out to the customer depending on what kind of customer it is and what the customer buys. The companies that buy big engines get their invoices from the Pentas Marknadsinformation (PMI) system, while parts invoices are printed from the PeopleSoft EnterpriseOne product family (formerly JD Edwards 5). However all invoices to part customers look the same, and all engine invoices look the same for all engine customers.

Depending on the customers and market, the number of days from that the invoice is sent and until the payment is made varies. Payment days are terms that are negotiated separately with each customer. The payment terms for engines vary between seven and sixty days. Some large customers in the UK have seven days while some customers in Italy have up to sixty days, although the most common is thirty days. It is the market and culture that determine the payment terms. There can be one set of terms for the largest customers in one country and different terms for a smaller segment of customers in the same market.

Payment delay is something that occurs quite often. Factoring is used in some parts of the markets; generating a payment as soon as the delivery is made. The company gains from not having their money tied up in capital claim. Although they gain from receiving the payment without delay the negative aspect is that they have to pay interest and administration costs for factoring.

4.3.2 Technical Solution at Volvo Penta

The systems used for invoicing at Volvo Penta for the European region are called PeopleSoft World (formerly JD Edwards One World) for both engines and parts, and PMI is the system for engines. Volvo Penta parts are managed in a system called Pentas reservdelssystem (PRS). PeopleSoft World is a complete ERP system although not all of the existing modules are being used. SAP/R3 is a system handling invoices made from the financial system with miscellaneous information. For archiving, the system is called OnDemand, which is where all the invoices are stored.

PeopleSoft World is a system originally for handling distribution and the financial processes in the business. PeopleSoft World is a system that has been used for a very long time at Volvo Penta and there are no plans on changing it in the future. It is a well-known system that is widely used in USA. Some users of the system believe that perhaps a European system would be preferable, because it has modules in the system similar to the European way of working.

AMTrix is a centralized EDI application at Volvo IT. Volvo Penta uses AMTrix message broker system for EDI transactions. AMTrix offers distribution possibilities; the output from AMTrix can be in a different format than the input, depending on what the customers desire and their technical solution. This system offers a solution for electronic invoicing.

StreamServe is a Swedish company that offers solutions for business communication. StreamServe in co-operation with Posten, offers a new service for electronic invoicing for businesses. The co-operation provides the businesses with a solution that enables electronic invoicing distribution independent of ERP systems, communication or message format. Today Volvo IT co-operates with StreamServe for handling internal documents and printing usage.

4.3.3 Invoicing at Volvo Penta

There is no co-operation between AB Volvo Units concerning invoicing except for the use of Volvo Financial Services and Volvo Business Services (VBS) for common financial and administrative tasks. EU gives directives about what information shall be presented on an invoice and these directives are complemented with demands from AB Volvo. The Volvo AB-demands together with the Directive 2001/115/EC-demands are listed below[163]:

- The word INVOICE or CREDIT NOTE
- Invoice date
- Invoice number
- Supplier's PARMA - number (Sender)
- Customer's PARMA - number (Receiver)
- The supplier's VAT number
- The customer's VAT number
- Invoicing address (including the correct company name of the customer)
- Delivery address
- Customer's reference - Order number or reference, name and department
- Supplier's name, address and reference
- Terms of payment
- Payment instructions
- Invoicing currency
- Information about penalty interest for delayed payments
- The quantity and nature of the goods supplied or the extent and nature of the services rendered.
- Value added Tax Amount specified per rate - and the total amount of VAT
- VAT-rate applied
- The Taxable amount per rate or exemption, the unit price exclusive of tax and any discount or rebates if they are not included in the unit price.
- Invoiced total amount
- If VAT is not charged, reference to "VAT exempt" or "reverse charge procedure."
- If the supply is in a triangulation chain, reference is needed.
- Sufficient information to the receiver regarding details of the invoice.

Demands from respective countries must also be considered, but these are not mentioned above. If VAT is not charged, the references below should be used on outgoing invoices[164]:

- VAT Exempt - when invoicing not taxable goods and services.
- VAT Exempt/EC sale - when invoicing goods that are delivered from one EU country to another EU country, if the customer in the other EU country has a VAT number.
- VAT Exempt/Export - when invoicing goods are delivered from one EU country to a non-EU country.

[163] Odelberg, 2003a
[164] Odelberg, 2003a

- VAT Exempt/Triangulation - when invoicing from a Volvo-company who is the middleman in a triangulation i.e. a goods trade between three parties in different EU countries where the goods is delivered from the first part to the last part.
- Reverse charge procedure - when invoicing taxable services. For example consultant-, lawyer-, auditor-, translation- and information services, ADB and preparing systems and programs, advertising, goods transportation and certain repair services, to EU and non-EU countries.
- Domestic reverse charge – to be used by a foreign entity in an EU country when invoicing goods and some services to procedure a VAT registered customer in the same EU country.

When it comes to PeopleSoft World invoices, Volvo Penta follows these directives and demands except on one point – they fail to explain why they do not invoice VAT in third part deals.

At Volvo Penta the procedure for invoicing is separated for engines and parts due to the fact that they are seen as two different processes. There are no other differences between an invoice for a part customer and an invoice for an engine customer. Moreover, a part invoice contains other products and is created in either PeopleSoft World or PMI. Engine invoices always are created in PeopleSoft World.

Engine Invoice Handling

An order clerk inserts an order in PeopleSoft World. The order is automatically moved to the PMI system that generates a PMI-order number. This number is sent back to the PeopleSoft World system. When the engine is ready to be shipped a delivery note is created. This delivery note is used for both the packing of the shipment and for the PeopleSoft World system. When the shipment has begun, the transaction is moved to the financial system and it is possible to make an invoice. The invoicing is made manually; a paper copy is printed and sent by mail. The invoice flow is presented below in Figure 9. Engine invoices are handled locally at offices throughout Europe.

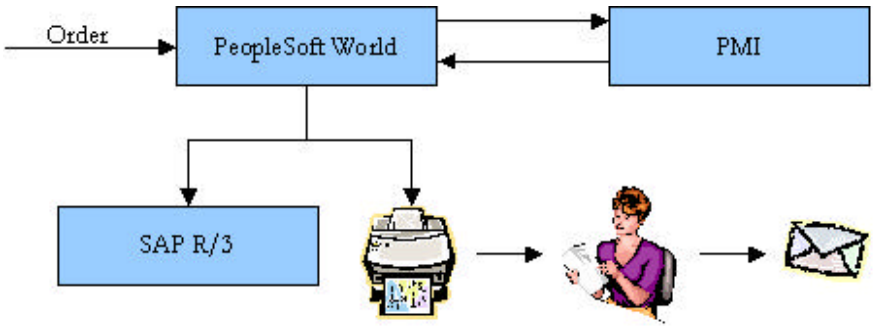

Figure 9 Engine Invoice Handling

Parts Invoice Handling

The customers themselves make their order in the Internet system Partner Network. The order is transferred to Volvo Parts, who has one system that handles the Nordic countries,

PRS and one system that handles the rest of Europe, PeopleSoft World. The order is packed and shipped directly to the customer from a central or support warehouse. When the shipping has started transactions are made to the PeopleSoft World system. For the shipping in Europe a purchase invoice for the goods is made at Volvo Parts and a customer invoice is automatically generated at Volvo Penta. The Volvo Parts invoices are created and handled manually. The invoice flow is presented below in Figure 10.

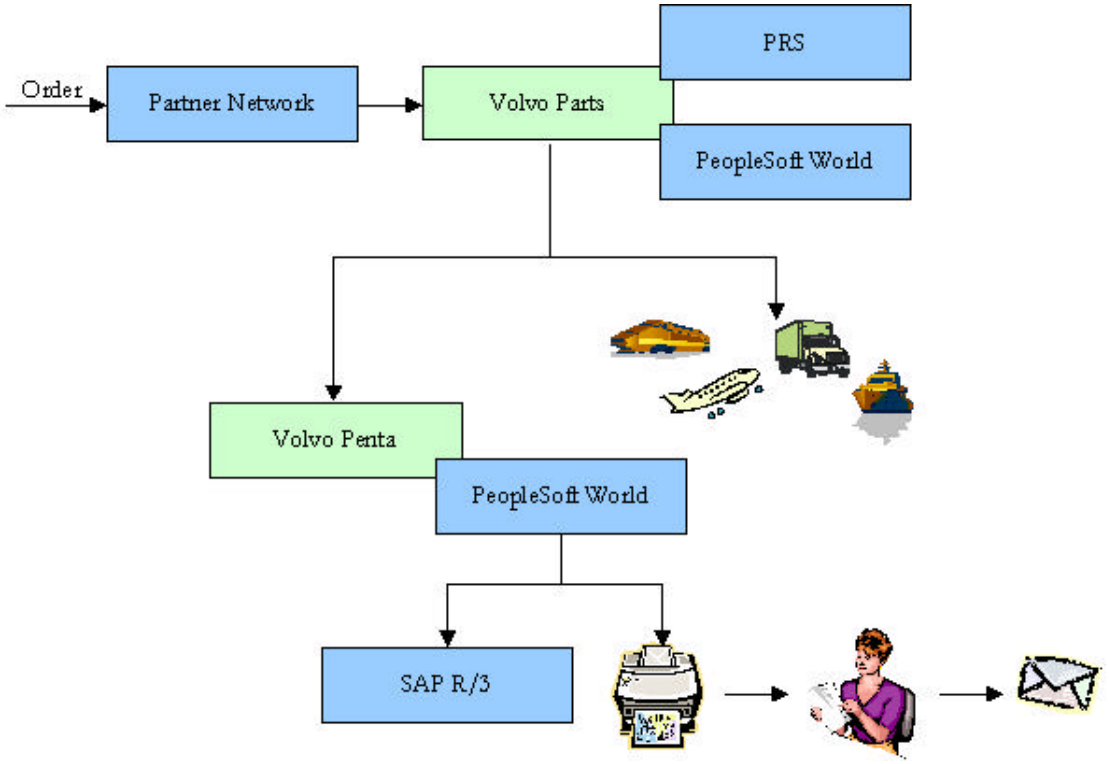

Figure 10 Parts Invoice Handling

Sending and Payment

Some markets in the part segment send invoices each week while the engine sector and big markets in the part sector send invoices each day. Contractual agreement with the customers regulates when the customers' invoices are sent but typically the invoices are sent on a daily basis. All invoices are sent to a print queue at a definite time in the evening and the printing begins. When PeopleSoft World has sent the invoice to the print queue the invoice is also sent to SAP/R3 for A/R processing.

Contractual agreements are stored in the customer register in PeopleSoft World and SAP together with the payment terms. The payment period is often shorter for parts and longer for engines. If a customer buys both parts and engines there are two agreements stored in PeopleSoft World but only one in SAP (the agreement concerning the highest amount of money).

The customer pays to either Volvo Penta or to the business that Volvo Penta has sold the invoice to. There are different payment methods; the customer either uses different Direct Debit payment methods or pays in the usual way with bank transactions. Different forms of Direct Debit are used in The Netherlands, Belgium, France, Spain and to a limited level in Germany. In the Nordic countries the traditional payment method is used. Normally, funds are transferred daily from local bank accounts to Volvo Penta's Swedish bank account.

Follow up

As mentioned above, invoice files are transferred to the SAP/R3 system for A/R management and accounting every day. The SAP R/3 system consists of two parts – A/R and General Ledger. A vouch between the invoices in PeopleSoft World and the invoices in SAP/R3 is done once a week and every month a group summation is done at the VBS. If there is an error that VBS cannot handle they contact Volvo IT for complementation.

It is possible to follow up detail information about engines, parts and the shipping of the goods in the PeopleSoft World system. This is not possible in the SAP/R3. In SAP/R3 the information is gathered in packages. The top line on an invoice, for example an engine package, is named a profit center and it is that information that is transferred into SAP/R3. Volvo Penta has decided that the profit center/product unit, what country it is sold to, what region it belongs to and what segment that has sold it is enough for follow up in SAP/R3 and if deeper information is needed the PeopleSoft World is used.

Costs

Today there are costs for paper, employees and dispute handling for each invoice. These costs are supposed to be reduced and in some cases eliminated with the use of electronic invoicing. There is for example a use of 233,600 envelops per year for invoices. One envelope costs about SEK 0,3 – 0,4 and the postage cost is about SEK 5 per envelope. This leads to a cost of about SEK 1,249,700 ≈ € 141,000 per year.

There are also costs for clearing invoices when they are transferred to SAP/R3, for sending statement of account to customers, for making final accounts of A/R ledger, and for sending reports of customers' expiry date to Credit Controllers. Further, there are system costs, maintaining costs, costs for support and employee costs.

Dispute Handling

Disputes often arise due to delivery problems. The disputes lead to a loss in cash flow for Volvo Penta. If a question arises the customer calls a local office by telephone to ask about the invoice. The Sales Manager or the Controller deals with the problem. Every market has a Credit Manager that has daily contact with customers. If the dispute cannot be handled locally VBS is involved. If a customer claims that his warranty matters are not credited or the delivery is not complete and refuses to pay the invoice Volvo Penta can sometimes lengthen the expiry date. If this happens the customer has to send a specification and explanation to VBS and the Share Center lengthens the expiry date. All disputes are filed in the OnDemand archive.

5 Analysis

This chapter presents the final analysis based on the theoretical and empirical findings in this thesis. Beginning with an analysis on several solutions and continuing with the business value of the solutions, this is followed by an illumination of benefits and obstacles from an implementation of electronic invoicing. Finally points on what a business should think about when implementing electronic invoicing are presented.

5.1 Different Solutions

Electronic invoicing is becoming more common in the B2B market. Volvo Penta has successfully connected their suppliers to electronic invoicing and the next step would be to do the same with their customers. A successful implementation of electronic invoicing to customers would make Volvo Penta a market leader.

It is important for Volvo Penta to invest in a flexible solution for electronic invoicing so that the customers can connect in a way that suits them best. It can be safe to say that the customers at least have an Internet connection. Through an Internet connection the customer can receive invoices via EDI or e-mail. Although the customers may have to change their procedures for receiving and handling invoices, in a more or less drastic way, depending on their existing systems. Following this chapter is an analysis on possible solutions for automating the invoicing process.

5.1.1 EDI

EDI is a successful technique for establishing e-commerce. With EDI a direct link between existing ERP systems, in different companies, can be established. Volvo Penta uses the PeopleSoft World software that contains support for EDI, providing infrastructure required for creating electronic invoices. Although the ERP system can create an electronic invoice, it has limits in distributing it to the customer. Volvo Penta has a vast range of customers and the customers system varies a lot. The larger companies probably have systems with EDI technique while smaller dealers probably do not. Due to multiple EDI standards a communication link between two ERP systems is not easily done.

The EDI solution can be complemented with a Web EDI and is a more attractive solution than having different routines for different customers. A Web EDI solution has an EDI solution at the sender and a web solution in the other end at the receiver. This is almost as efficient as EDI directly between two companies.

5.1.2 E-mail

Another solution is to send invoices via e-mail. The invoice is generated automatically in the sender's ERP system and either manually or automatically sent as an attachment in e-mail to the receiver. Great profits, though, are lost if the sender must send the e-mails manually. The receiver can choose to transfer the invoice automatically into its system, store the invoice electronically or print the invoice.

This is a simple form of electronic invoicing that only requires the customer to have the means to receive e-mail. The solution gives the customer numerous options on how to

handle the invoice and achieve business value. At the same time it allows the seller to automate its invoicing process. The seller should, however, evaluate other methods for electronic invoicing before dedicating resources to this system.

5.1.3 Paper

If the customer is resistant to receiving invoices electronically, they should still be able to get their invoices through physical mail. To solve the dilemma between an automated invoice processes and paper sent invoices, the seller can use software that automatically prints invoices. The process of putting invoices into envelops can be made by a machine but the moving of the printed invoices to the envelop machine may have to be done manually. The envelopes must also be manually moved to a mailbox. This decreases the business value for the seller but to sacrifice a customer will lead to larger losses.

5.1.4 EIPP

The great profits can be achieved when connecting the electronic invoice to online presentment and payment, EIPP, and integrating the invoice data with existing ERP, A/R and A/P software.

When implementing an e-payment system a model must be chosen for how to link the system to the existing applications and data required for automated bill payment and dispute resolution. There are three models to choose from: Seller Direct, Buyer Direct and the Consolidator model. Seller Direct is the model best suited for Volvo Penta linking one Seller, which controls the EIPP application, to its multiple Buyers for invoice presentment. When, in a case like Volvo Penta, a trusted trade relationship with the customer is developed, the recommended payment model is direct debit. The advantage with the payment model direct debit is that funds can be transferred the same day.

5.1.5 Technical Solution

There are many technical solutions to choose from when implementing electronic invoicing. In the case of Volvo Penta the company already cooperates with the company StreamServe that offers applications for managing distribution services to different businesses and solutions for different ERP systems. Volvo Penta also has the system AMTrix that works in many cases the same way as StreamServe. With these services, an electronic invoice can very easily be distributed.

5.2 Benefits

Businesses that use electronic invoicing benefit from more efficient payment routing approval processes, decreased invoice handling costs and in some cases accelerated cash flow. When the invoice is sent electronically it reaches the customer sooner, which reduces the average number of DSO for receivables and payables data.

When invoices are sent electronically the printing and postage costs are erased. The usage of electronic invoicing eliminates the transfer of electronically stored information to paper and back again at different points in the billing and payment cycle. The costs for paper storage are also erased when all invoices can be stored electronically. Electronic storage also gives

benefits in the form of improved traceability which in turn reduces the number of irritated customers since it will be easier to find the invoice information the customer needs.

Even though the number of errors produced by the human factor will be gravely reduced when manual inputting vanishes, minor errors may occur, but they are easier to find due to traceability. Disputes often arise due to invoice delivery problems, which are reduced when the invoice is sent electronically. The dispute handling can be managed electronically providing a faster resolution, which in turn gives increased business value to both seller and customer.

Those to gain the most in an EDI-fiction are the customers, since they can receive more information more frequently, check invoices and get payment reminders immediately and automatically. The self-service features that can be tied to the electronic invoicing system do not only give benefits to the customer but also lead to potential financial gains for the seller.

The psychological benefit from electronic invoicing is the ease of pressure on the employees that handle invoices. They will no longer have to be afraid of making errors since the manual handling is reduced. Employees working with putting invoices into envelopes can use their time for other tasks. Looking forward, the benefit with electronic invoicing is that it can be connected to payment in the future, which increases the gain in time and cost.

The different solutions that are applicable at Volvo Penta and their existing solution (paper invoices) are compared in Figure 11 below. The comparison between the solutions is based on the benefits mentioned above.

	EIPP	EDI	Web EDI	E-mail	Paper
Reduced average number of DSO	Yes	Yes	Yes	Yes	
Decreased printing & postage costs	Yes	Yes	Yes	Yes	
Erased paper storage	Yes	Yes	Yes	Yes	
Reduced delivery problems	Yes	Yes	Yes	Yes	
Reduced human errors	Yes	Yes	Yes	MS - No AS - Yes	
Rationalization of employees	Yes	Yes	Yes	MS - Some AS - Yes	
Electronic dispute handling	Yes	Yes			
Self service features	Yes	Yes			
More efficient payment routing approval processes	Yes	Yes			
Connection to payment	Yes				

MS = Manually Sent; AS = Automatically sent

Figure 11 Benefits from different solutions

5.3 Obstacles

When implementing a new system for electronic invoicing psychological obstacles might occur. Volvo Penta might be worried about security and giving out access to their system, which might be a reason for not connecting to other systems for electronic invoicing. The fear of losing human authority over the payment process is the major reason for businesses' unwillingness to adopt EIPP as their only payment system. This fear, can on the other hand, be reduced by education and information to employees and management. To educate and inform the employees about the new system and the rationalizations that will be made is also critical to obtain the highest business value. If major rationalizations can be made the employees can become resistance to the implementation and training and unwilling to use the new system due to psychological pressure. Education and information is also important to prevent false expectations for advantages that are not realistic to obtain.

Volvo Penta has a great variation of customers that are not, according to sources, unfamiliar with changes in work procedures from Volvo Penta. The customer's willingness to change, however, depends on culture and personal skills. The part's customers have a matured average age and are probably not so easy to convince that electronic solutions are the best. But younger generations are taking over and it seems as if they are more open to new technology changes. For some users the unwillingness to use electronic invoice is a more psychological aspect rather than a physical. It is therefore important to make the change one step at a time and use both paper and electronic invoices in the beginning. Since Volvo Penta is trying to make smaller customers buy from larger dealers, in order to decrease the number of customers, the use of electronic invoicing can have a positive effect – small customers that are reluctant or unable to receive electronic invoices can be directed to larger dealers that offer paper invoicing.

The business should not give up on the customers that are unwilling to receive electronic invoices, they should continue striving for increasing the volume of electronic invoicing in the long run. If the costumer is unwilling to adopt the model an effort in informing the costumer of the increased business value they will receive should be made. In other cases incentives such as discounts or better terms can be offered to try to persuade unenthusiastic customers. But to force the customers to adapt to a certain solution is not recommended since there is a risk for eventually loosing the customer.

Laws and regulations are another obstacle. It might be difficult to take into consideration different laws when sending electronic invoices inside Europe. If the invoicing is made in or sent to a Member State of EU, the invoicing must follow the Council of the European Union's Directive 2001/115/EC meaning among other things that the origin and integrity of the content must be guaranteed and the mandatory information on invoices must be presented. The EC 6th VAT Directive must also be followed meaning that the invoice must present the VAT in specific ways. National law must also be taken into consideration and this might be both difficult and costly to examine and fulfill.

5.4 What a Business Must Think About

But what should a business think about when implementing electronic invoicing? One opinion at Volvo Penta is that the time it will take to change from paper invoices to electronic invoicing depends mostly on the customers. This is a true statement - you cannot force the customers to use electronic invoicing if they do not want to without risking your relationship. Another factor is the time it takes to implement the technical solution and getting it to work, which also includes testing and education. A transition to electronic invoicing also means a certain analysis work has to be done. It requires planning, which in turn gives a great opportunity for the business to look over the routines in the invoicing process. The business must rethink the basics about the process and how to implement and deploy the massive changes required in people, processes and systems. It is only with a well-considered strategy that the best potential benefits with electronic invoicing can be realized, benefits that are significant for the company's competitive skill.

It is important that the CEO establishes a vision and gains commitment of all participants in the value chain. An implementation of electronic invoicing will require substantial changes in the legacy system, legacy processes and legacy people. A budget must be allocated, the costs for buying software and integrate it into the buyer's and supplier's accounting systems must be taken into consideration and the ROI must be calculated. It is also important to fully analyze the business cost structure and benefits from the transactions to be able to obtain a realistic picture of expected benefits and savings. The legal aspects must also be considered. Since electronic invoices are easy to send over Internet, an analysis of what security implementations are necessary to secure integrity and protect the system from view must be made. It is important that the management stands behind these steps in order to get legitimacy to implement it at all instances and to secure resources.

When a business is considering moving their procurement systems to the Internet they should also take the invoice-to-pay process to account at the same time since they will have to link the systems later. The business also has to understand that paper is not always wrong. It is in some cases necessary to use paper. The purpose is the determining factor and it is the volume of money not invoices that is determining. There must be an intermediate stage in the implementation where both paper and electronic invoices are used. It might be a good idea to identify the key partner in transaction volume, analyze how their current invoicing process works and determine how many days elapse between invoicing receipt and payment. After this analysis, an implementation of electronic invoicing can be made as a test. Problems that may occur can be analyzed and prevented in the coming implementations. Benefits for both the seller and the customer can be analyzed and used in coming implementations to persuade doubting customers. Since it is rather difficult to demand that your customers use electronic invoicing; this information could be quite significant in creating customer buy-in.

The business must also take into consideration that savings are elusive and might be hard to achieve. The cost savings depend on the complexity of a business' IT system and the quality of the invoicing infrastructure. If the implementation cost is high the payback time will be longer.

The business must also update the existing contracts with what is demanded both legally and practically since it is recommended that security, legal and audit questions be mentioned in the contractual agreement with the customers.

Finally, an electronic invoicing project must be followed up in order to measure if the goal was reached and to learn from mistakes and successes. Like in all IT projects, there is a tendency to overlook education and documentation. When implementing electronic invoicing, education must be seen as a natural factor since the implementation will lead to changed business operations and system routines.

6 *Conclusions*

The most obvious business value that comes from implementation of electronic invoicing is gain in time and cost. The business processes are improved through automation and elimination of EPU. More detailed information on the electronic invoices will reduce the dispute handling and the employees can use their time to more developing tasks. In the long view the electronic invoicing can be connected to electronic payment, which in turn gives the real great business value.

In order to increase the business value a business must offer different solutions for different customers. It may be difficult to convince the customers that electronic invoicing is the best solution but this obstacle can be reduced if the customers increased business value is presented for them. The customers are in the long view the businesses that gain the most. Education and information about the new system is very important both for the customers and for the employees that are affected by an implementation. Providing information about the reforms is important to erase skepticism, misunderstandings and psychological pressure.

In the case of Volvo Penta there are no technical obstacles in their system that prevents an implementation of electronic invoicing. The preferable solution is based on EDI, directly linking the ERP system at Volvo Penta with the customers ERP system. The other customers that cannot connect directly with the ERP system, a Web EDI solution should be used. Web EDI makes it possible to have one solution for distribution of electronic invoices to all customers even though they have different systems. Whether Volvo Penta should use the AMTrix system or StreamServe for the EDI solutions depends on the system costs and on other features that the systems may offer. The costs for implementation and maintaining of the systems may vary. Volvo Penta should therefore make an economic analysis of the two options and base their decision on that. With lower overall costs, the business value will be greater.

Important to have in mind is the usage of e-mail. It took some time for businesses to adjust to electronically sent mail instead of a physical letter but the usage of regular mail is now almost eliminated in modern businesses. So how long will it take until we use electronic invoices instead of paper based invoices?

7 References

7.1 Articles and Books

Anachron B.V (2002). The Need for Online Invoice Management. (Version 1.0) [Web document] URL: http://www.anachron.com (Information → Whitepapers)

Backman, J. (1998). *Rapporter och uppsatser.* Sweden, Lund: Studentlitteratur.

Council Directive 2001/115/EC (2002). *Official Journal of the European Communities, L015*, 17/01/2001, pp 24-28. [Web document] URL: http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_015/l_01520020117en00240028.pdf

Council for Electronic Billing and Payment (2001). Business-to-Business EIPP: Presentment Models and Payment Options Part One: Presentment models. [Web document] URL: http://cebp.nacha.org/documents/b2b-presentment-models.pdf

Cronk, C. M. & Fitzgerald E. P. (1999). "Understanding IS Business Value:" derivation of dimensions, *Logistics Information Management*, Vol. 12, pp 40-49.

Dalton, G. (1999). Billing's Unfulfilled Potential. *Information Week* (September 13, 1999).

DeJong, J. (2001). Manage Your Invoices Over the Internet. *PC World* (April 2001), p 144.

Dykert, L. & Fredholm, P. (2004). Elektroniska Fakturor – en rapport om elektronisk fakturahantering från GEA. [Web document] URL: http://www.nea.nu/pdfer/einvoic/Elektroniska%20Fakturor%20.pdf

Fredholm, P. (2000). *Elektroniska affärer* (4th edition). Sweden, Lund: Studentlitteratur.

Fredholm, P. (2002). *Elektroniska affärer* (5th edition). Sweden, Lund: Studentlitteratur.

Gamble, R. (2004). What's That You Say? Paying Bills Quickly Really Pays Off? *Treasury & Risk Management* (July/August 2004).

Greenemeier, L. (2001). Online billing takes the slow track. *Information Week* (June 25, 2001), p 144.

Hallikainen, P. (2003). *Evaluation of Information System Investments, (*Diss.). Helsinki School of Economics.

Hannon, D. (2004). Owens Corning plans to go 80% paperless by end-2004. *Purchasing Magazine Online,* (1/15/2004).

Haschka, J. M. (2002). Will EIPP Ever Kill the Wholesale Lockbox Business? *E-commerce & technology,* (January/February 2002), pp 27-31.

Holme, I. M. & Solvang, B. K. (1997) *Forskningsmetodik, Om kvalitativa och kvantitativa metoder (2nd edition).* Sweden, Lund: Studentlitteratur.

Irani, Z. (2002). Information Systems Evaluation: navigating through the problem domain. *Information & Management,* Vol. 40, pp 11-24.

Korper, S. & Ellis, J. (2001). *The E-Commerce Book, Building The Empire* (2nd edition). USA, San Diego CA: Academic Press.

Lawrence, E., Corbitt, B., Fisher, J., Lawrence, J. & Tidwell, A. (2000). *Internet Commerce digital models for business* (2nd edition). Singapore: John Wiley & Sons Australia Ltd.

Lawrence, E. & Wenninger, J. (1999). Paying Electronic Bills Electronically. *Current Issues in Economics and Finance,* Vol. 5, (No 1)

Lee, S. C., Pak, B. Y. & Lee, H. G. (2003). Business Value of B2B Electronic Commerce, the critical role of intern-firm collaboration. *Electronic Commerce Research and Applications.*

Lekvall, P. & Wahlbin, C. (2001). *Information för marknadsföringsbeslut* (4th edition). Sweden, Göteborg: Högsbo Grafiska AB.

Levy, M. (2001). *E-Volve-or-Die.com Thriving in the Internet Age Through E-Commerce Management.* USA, Indiana: New Riders Publishing.

Lindberg, M., Pessi, K. & Plantén, A. (red.) (2003) *IT Management.* Sweden, Göteborg: Institutionen för Informatik Handelshögskolan, Göteborgs Universitet

Low, J. (2000) The value creation index. *Journal of Intellectual Capital*, Vol. 1, (No 3), pp 252-262

Mearian, L. (2001). Research points to sharp rise in number of e-billing users. *Computerworld, Vol. 35,* (Issue 49), p 8.

Merriam, S.B. & Nilsson, B. (1994). *Fallstudien som forskningsmetod*. Sweden, Lund: Studentlitteratur.

McIvor, R. & Humphreys, P. (2004). The implications of electronic B2B intermediaries for the buyer-supplier interface. *International Journal of Operations & Production Management,* Vol. 24, (No 3) pp 241-269.

Odelberg, L. (2003a). New demands connected to EC Directive for mandatory information for invoices.
[Web document] URL: Only available internally

Odelberg, L. (2003b). Value Added Tax, VAT.
[Web document] URL: Only available internally

Patel, J. (2000). B-to-B E-Billing Heats Up. *Information Week* (October 23, 2000), p 246.

Patel, R. & Davidsson, B. (2003). *Forskningsmetodikens Grunder, Att planera, genomföra och rapportera en undersökning* (3rd edition). Sweden, Lund: Studentlitteratur.

Persson, E. & Johnsson, S. (2001). AB Volvo Policy.
[Web document] URL: Only available internally

Reyes-Stolker, J. (2004). A defining moment for EIPP.
[Web document] URL:
http://www.citibank.com/cashtradetreasury/homepage/about/newsroom/files/eippforepayments.pdf

Rombel, A. (2004). Online Business Invoicing Gathers Pace – Offerings get more sophisticated and better integrated with financing. *Global Finance* (January 2004), pp 35-36.

Rönn, L. (2001). *Fakturakarusellen Rationalisering av fakturahanteringsprocessen med hjälp av elektronisk dokumenthantering.* (Examensarbete, D-nivå). Göteborgs Universitet, Institutionen för Informatik.

Sawhney, M. (2003). Fundamentals of Value – To achieve a value mind-set, focus relentlessly on customers. *CIO Magazine,* Vol. July:1.

Schaeffer, M. S. & Prescott, J. (2004). Implementing EIPP: What Your Dept. Needs to Know to Get Started. *IOMA's Report on Managing Accounts Payable,* (Issue 03-04), pp. 10-13

Scheier, R. L. (2003). The Price Of E-Payment. *Computerworld,* Vol. 37, (Issue 21), pp 25-26.

Sifo (2004) Sifo Research & Consulting
[Web page] URL: http://www.opinion.sifo.se (Om oss → Så intervjuar vi → SIFO-skolan)

Simmons, P. (1996) Quality Outcomes: Determining Business Value. *IEEE Software,* (January), pp 25-32.

Starrin, B. & Svensson, P-G. (1994). *Kvalitativ metod och vetenskapsteori.* Sweden, Lund: Studentlitteratur.

Study Finds EIPP Saves $7.15 Per Invoice, (2002). *Financial Executive's News* (July 2002), p15.

Svenning, C. (2000). *Metodboken: samhällsvetenskaplig metod & metodutveckling klassiska & nya metoder i IT-samhället.* (4th edition). Sweden, Eslöv: Lorentz.

The Clearing House, (2002). *The Remaining Barriers to ePayments and Straight-through Processing*. (Research conducted October 2001 – March 2002) The Clearing House.

Trombly, M. (2002). Cost Savings and Collaboration Drive B2B E-Payments. *Computerworld*, Vol. 36, (Issue 42), p 41.

Unger, R. (2002). The Council for Electronic Billing and Payment. *Electronic Payments Journal*, Vol. 1, (Issue 7).

Volvo Intranet (2004) Internal Documents.
[Web document] URL: Only available internally

Webster, J. (2002). Moving Beyond Just Paying the Bills. *Computerworld,* Vol. 36, (Issue 42), p 40.

www.volvo.com (2004). Volvo Official Homepage.
[Web page] URL: http://www.volvo.com

7.2 Interviews

Ahlgren, C. (personal communication, Volvo, 2004-10-25)

Axelsson, L-O. (presentation at seminar, StreamServe, 2004-11-26)

Börjesson, H. (personal communication, Volvo, 2004-10-08)

Frisinger, S. (personal communication, Volvo, 2004-10-21)

Goedkoop, H. (personal communication, Volvo, 2004-10-27)

Hansson, B. (personal communication, Volvo, 2004-10-20)

Johansson, J. (personal communication, Volvo, 2004-11-01)

Lundin, K. (personal communication, Volvo, 2004-11-02)

Pontes, N. (personal communication, Volvo, 2004-11-04)

Rodin, K. (personal communication, Volvo, 2004-11-04)

Östblom, I. (personal communication, Volvo, 2004-10-26)

Appendix A. Abbreviations

A/P	Accounts Payable
A/R	Accounts Receivable
ACH	Automated Clearing House
ASP	Application Service Provider
B2B	Business To Business
B2C	Business To Consumer
DSO	Days Outstanding
EBPP	Electronic Bill Payment and Presentment
EDI	Electronic Data Interchange
EDIFACT	Electronic Data Interchange For Administration, Commerce and Transport
EIPP	Electronic Invoice Presentment and Payment
EPS	Electronic Payment Systems
EPU	Error Prone Units
ERP	Enterprise Resource Planning
EU	European Union
IT	Information Technology
IS	Information System
PMI	Pentas Marknadsinformation
PRS	Pentas Reservdelssystem
ROI	Return on Investment
VAN	Value-added Networks
VAT	Value Added Tax
VBS	Volvo Business Services
XML	Extensible Markup Language

Appendix B. Comparison of Presentment Models

	Seller Direct	Buyer Direct	Consolidator
Entity relationships	Single seller, many buyers	Single buyer, many sellers	Many to many
Invoice location	Seller site	Buyer site	Consolidator site

Figure 12 Model Overview (CEBP, 2001)

Process	Seller Direct	Buyer Direct	Consolidator
Enrollment	Buyer enrolls with seller	Seller enrolls with buyer	Buyer and seller enroll with consolidator
Invoice data posted	Seller posts to seller EIPP	Seller posts to buyer EIPP	Seller posts to consolidator EIPP
Invoice presentment	Buyer views on seller EIPP	Buyer views on buyer EIPP	Buyer views on consolidator EIPP
Review, routing, A/P integration	Seller may offer workflow protocols for buyer	Buyer may have workflow protocols	Consolidator may offer workflow protocols
Dispute resolution	Buyer communicates to seller	Buyer communicates to seller	Buyer communicates to seller through consolidator
Invoice approval and payment authoriz.	Buyer approves and authorizes payment	Buyer approves and authorizes payment	Buyer approves and authorizes payment
Funds transfer	Seller FI initiates debit to buyer FI	Buyer FI initiates credit to seller FI	Initiated by seller FI or buyer FI
Settlement and Remittance	Buyer FI debits buyer account; seller's FI credits seller account	Buyer FI debits buyer account; seller's FI credits seller account	Consolidator provides remittance file for seller A/R and buyer A/P

Figure 13 Process Flow (CEBP, 2001)

	Seller Direct	Buyer Direct	Consolidator
Model status	Established	Emerging	Emerging
Trade relationship	Existing relationship	Existing relationship	Existing Relationship
Buyer profile	Buyers required to use seller's system	Dominant company	Varies
Seller profile	Dominant company	Sellers required to use buyer's system	Varies

Figure 14 Usage Analysis (CEBP, 2001)

EIPP System	Seller Direct	Buyer Direct	Consolidator
Enrollment	Seller controls	Buyer controls	Consolidator may control
Features and functions	Seller controls	Buyer controls	Consolidator may control
Payment options	Seller determines	Buyer determines	Consolidator, and/or seller, and/or buyer
Data access	Seller controls	Buyer controls	Consolidator controls
Integration with other company applications	Seller determines	Buyer determines	Consolidator may or may not offer integration services
Related messaging	Seller determines	Buyer determines	Consolidator may or may not provide messaging
Number of trading partner sites to access	Reduces for seller; increases for buyer	Reduces for buyer; increases for seller	Reduces for seller and buyer
Incentives offered to trading partners	Sometimes	Unknown	Unknown
Operational resource requirements	Seller responsible	Buyer responsible	Consolidator responsible
Scalability	Seller responsible	Buyer responsible	Consolidator responsible
Security features	Seller controls	Buyer controls	Consolidator controls

Figure 15 Key Model Differentiators – Summary of benefits and challenges (CEBP, 2001)

Appendix C. Key Customers Commercial Engines

Aker Aukra	Norway
Anytec Marine	Sweden
Armon Shipyard	Spain
Brimborg	Island
Cantiere Navale di Pesaro	Italy
Codecasadue Spa	Italy
Dockstavarvet	Sweden
Factorias Vulcano	Spain
Fassmer	Germany
FMV	Sweden
Furetank	Sweden
Färjerederiet	Sweden
Hatecke	Germany
H. Henriksen	Norway
Isa Produzione Srl	Italy
Juha Snell Oy	Finland
Karlskronavarvet	Sweden
Kustbevakningen (Coastguard)	Sweden
Marine Alutech OY AB	Finland
Montajes Cies	Spain
Oskarshamnsvarvet	Sweden
Rosetti Marino S.p.A	Italy
Rupert Marine	Sweden
Shipyard Damen	Netherlands
Schottel	Germany
Sjöfartsverket	Sweden
Strömma	Sweden
Styrsöbolaget	Sweden
Targa	Finland
Tjörnvarvet	Sweden
Tyovene,	Finland
Uki Workboat Ltd	Finland
Waxholmsbolaget	Sweden
Weiberg Gulliksen	Norway
Westers mekaniska	Sweden
Wärtsilä	Finland
Ö-varvet	Sweden

Appendix D. Key Customers Leisure Engines

Absolute	Italy
Airon, Italy	Italy
Astondoa	Spain
Bavaria	Germany
Bella-Veneet	Finland
Beneteau	France
Botnia Marin	Finland
Chantiers Jeanneau	France
Cranchi	Italy
Dufour Yachts	France
Elan	Slovenia
Fiart	Italy
Fairline Boats	UK
Ferretti	Italy
Galeon	Poland
Gobbimotor	Italy
Innovazioni e Progetti	Italy
Marex	Norway
Marine Projects	UK
Menorquin	Spain
Neptunus	Netherlands
Nimbus Boats	Sweden
Nord-West Yachts	Sweden
Nordstar (Linex)	Finland
Rodman Polyships	Spain
Sealine International	UK
Sessa Marine	Italy
Sunseeker International	UK
Windy Boats	Norway

Appendix E. Key Customers Industrial

Mobile:	
CVS	Italy
Fantuzzi	Italy
Kalmar Industries	Sweden
Svetruck	Sweden
Terberg	Netherlands
VTA, Tekniikka	Finland
PowerGen:	
Allam Marine	UK
Atlas Copco	Sweden
Ausonia	Italy
CTM	Italy
Electra Molins	Spain
Hitzinger	Austria
Onis Visa	Italy
Pramac	Italy
SDMO	France
Spark Energy	Italy
Tech-knol Power	UK
Westac Power	UK