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ADAPTING E-INVOICING: BENEFITS,
CHALLENGES AND FUTURE STRATE-
GIES TO OVERCOME CHALLENGES

A comparative case study of Finnish
Companies

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ABSTRACT

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Electronic invoicing (i.e., e-invoicing), which involves electronic transfer of invoice documents among business partners, is becoming very popular among European companies. It allows companies to benefit from fast payments, large volumes of invoices, no manual work, fewer errors, no printing and postage costs, as well as enhanced security and improved relationships with partners. However prior research has largely ignored the challenges of adopting e-invoicing and how firms plan to overcome these challenges. Therefore, the purpose of this thesis is to explore the benefits and challenges of adapting e-invoicing in companies, and how companies overcome these challenges.

A framework of the benefits, challenges and strategies to overcome these challenges in adopting e-invoicing is proposed and empirically tested by collecting primary data through interviews from three Finnish companies. The overall findings of the study suggest that e-invoicing is beneficial, however companies face several types of external challenges in fully adapting e-invoicing. In addition, companies face several internal challenges, which includes human and invoice handling errors, employees' lack of motivation in adapting e-invoicing and selection of an operator. Furthermore, companies are convincing their vendors to use more e-invoicing, pushing operator to operate internationally and improve service, and training employees to adapt e-invoicing.

Keywords: Electronic invoicing, benefits, challenges, future strategies, operator, Finnish case companies

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LIST OF ABBREVIATIONS

XML	Extensible Markup Language
VAT	Value-added tax
AP	Accounts Payable
JPEG	Joint Photographic Experts Group
PDF	Portable Document Format
TIFF	Tagged Image File Format
HTML	Hypertext Markup Language
EDIFACT	Electronic Data Interchange For Administration, Commerce and Transport
CSV	Comma separated values
EDI	Electronic data interchange
IT	Information Technology
ERP	Enterprise Resource Planning

LIST OF APPENDICES**APPENDIX 1. Interview Questions**

1 INTRODUCTION

Electronic invoicing, which involves sending, receiving and processing invoices without manual intervention, has become an important source of productivity increases in Europe (EEI 2007). There are many benefits of moving from paper invoices to electronic invoicing. A study by Penttinen, Hallikainen and Salomäki (2009) reports that the Finnish State Treasury and some Finnish companies have estimated that an incoming paper invoice incurs costs amounting to 30-50 Euros to the receiver company. By moving to electronic invoicing, these costs can be lowered considerably. In addition, Spanic, Ristic and Vrdoljak (2011) argue that e-invoicing allows companies to benefit from shorter payment delays, fewer errors, as well as reduced printing and postage costs. Besides these economically motivated advantages, Kreuzer, Eckhardt, Bernius and Krönung (2013) suggest that e-invoicing also has environmental benefits, such as the saving of natural resources and reducing carbon emissions. Due to these proposed benefits of e-invoicing, many European companies are adapting e-invoicing, with Danish and Finnish companies leading the trend (Joung, Tseng, Cha, Lo, Chung and Liu 2014).

Despite these proposed benefits of adopting e-invoicing, some researchers (e.g. Spanic, Ristic and Vrdoljak 2011) suggest that introducing e-invoicing is often complex and costly for many companies. However, there is no understanding about the challenges of adopting e-invoicing and how firms plan to overcome these challenges. Therefore, this thesis tries to fully understand the challenges that companies face and benefits they reap while adapting e-invoicing, and strategies they take to overcome these challenges. Furthermore, this study applies multiple case study method to investigate the benefits, challenges and strategies to overcome challenges while adapting to e-invoicing in companies. Therefore, primary data through semi structured interview questionnaire with open-ended questions from the three Finnish case companies was collected to fully understand the chal-

lenges that these companies face and benefits they reap while adapting e-invoicing, and strategies they take to overcome these challenges.

Considering that prior research has mainly focused on the benefits of adapting e-invoicing, investigating the challenges that companies face and strategies they take to overcome these challenges along with the benefits of adapting e-invoicing is very exciting and overall extends the prior literature on e-invoicing.

2 BACKGROUND, RESEARCH PROBLEM (S) AND PURPOSE OF THE RESEARCH

2.1 Background of the research

In today's modern and globalized world, more and more companies are moving away from paper invoicing. They are adapting e-invoicing. The goals of e-invoicing are: (1) to reduce payment delays, (2) to exchange information speedily, (3) to cut unnecessary delivery handling costs for instance printing and postage, (4) to reduce errors, and (5) to increase growth and benefits of business (e.g. Spanic, Ristic & Vrdoljak 2011). Kreuzer, Eckhardt, Bernius and Krönung (2013) also suggests that e-invoicing eliminates manual invoice processing methods, and therefore results in cost saving benefits to buyers, sellers and other managers along with environmental benefits of saving natural resources and reducing carbon emissions. Knowing these benefits, many countries have started adapting e-invoicing. European countries are also continuously progressing in adopting electronic invoices to automate their payments of various businesses. Among the European countries, Nordic countries (Finland, Sweden, Denmark and Norway) are leading for the implementation of electronic invoices in their businesses (Joung, Tseng, Cha, Lo, Chung and Liu 2014). Many Finnish companies have also adapted e-invoicing (Koch 2012).

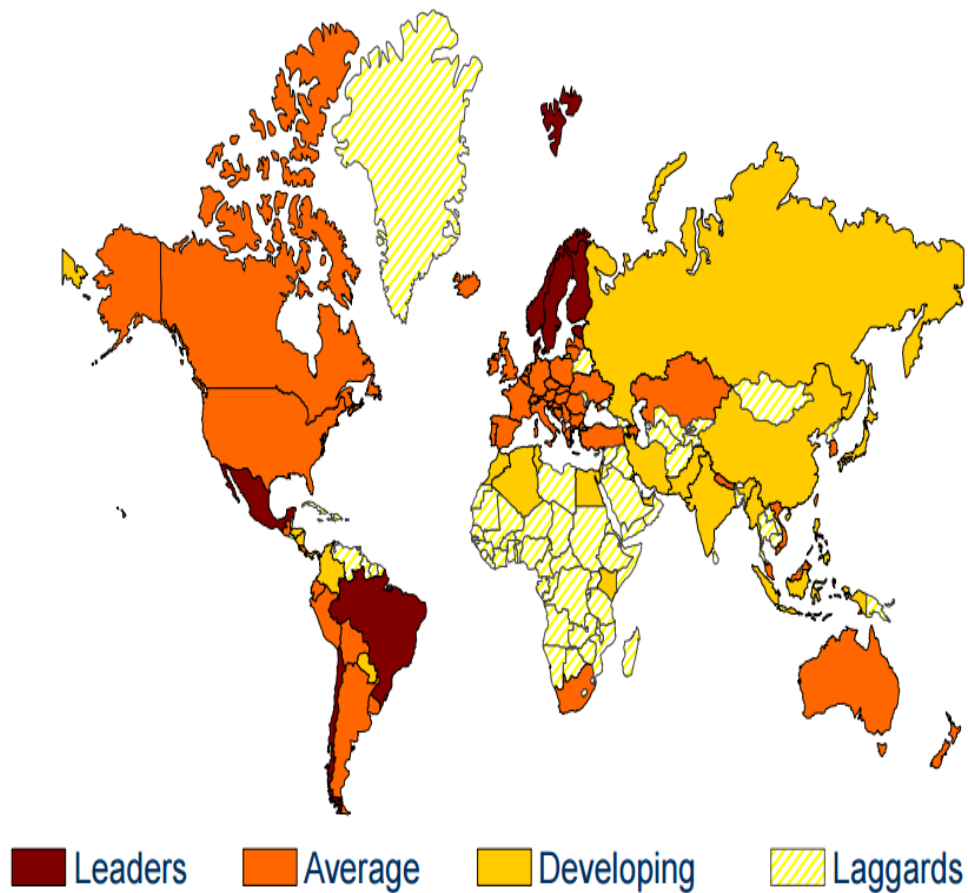


Figure 1. E-invoicing global market (Koch 2011).

However prior studies have mainly focused on identifying the benefits of e-invoicing and have not studied the challenges of adopting e-invoicing and their solutions. Therefore, this study adopts a comparative case study to investigate the benefits, challenges and strategies to solve these challenges in three Finnish case companies. Findings will provide a deeper understanding of benefits and challenges of adopting e-invoicing in Finnish companies and how these companies are planning to overcome these faced challenges. Based on my work experience of handling e-invoicing in one of the leading Finnish companies and discussion with many executives in Finnish companies, I have noted that many Finnish companies are still not able to implement higher quantity of Electronic invoicing because of some internal and external challenges. Therefore, it is very interesting to explore

what are these challenges and how firms overcome these challenges along with exploring the benefits of e-invoicing.

2.2 The aims and objectives of the research

As discussed above, prior research has mainly focused on the benefits of e-invoicing and has completely ignored the challenges that firms face while adapting e-invoicing and solutions they sought to overcome these challenges. Hence, the overall objective of this study is:

To explore the benefits and challenges of adapting e-invoicing in companies, and strategies to overcome these challenges

This is exploratory research. To achieve the main research objective, current study has several sub-objectives:

- *To study the benefits that companies reap while adapting e-invoicing*
- *To find the internal and external challenges that companies face while adapting e-invoicing*
- *To study the future strategies of the companies to overcome these challenges*

The overall empirical research objective of the study is:

To explore the benefits and challenges of adapting e-invoicing, and strategies to overcome these challenges in Finnish case companies

2.3 Research problems and research questions

The overall above discussion depicts the course of present study. Thus the main research of present study is:

What are the benefits that companies reap and challenges they face while adapting e-invoicing, and what are their future strategies to overcome these challenges?

To answer this research question, specific sub-questions of this study are given below:

- 1) *What are the benefits that companies reap while adapting e-invoicing?*
- 2) *What are the internal and external challenges that companies face while adapting e-invoicing?*
- 3) *What are future strategies of the companies to overcome these challenges?*

The overall empirical research question of present study is:

What are the benefits and challenges of adapting e-invoicing and what are strategies to overcome these challenges in Finnish case companies?

The purpose of first research sub-question is to find out the benefits that companies achieve when they adapt e-invoicing.

The purpose of second research sub-question is to explore the internal and external challenges that firms face while implementing e-invoicing. There is no prior literature that what kind of challenges firms face while implementing e-invoicing. Therefore, it is totally an exploratory sub-question and will be answered by analysing the interview data from respondents.

The purpose of third research sub-question is to explore the strategies that firms take to overcome the faced challenges. Here again, there is no prior literature on what strategies firms take to overcome challenges faced while implementing e-invoicing. Therefore, it is also an exploratory sub-question and will be answered by analysing the interview data from respondents.

2.4 Structure of the thesis

This research thesis is divided into 6 chapters. Chapter 1 introduces the topic and justifies the need of the study. Chapter 2 discusses the background of research; aims, objectives and research problem of the study, and the structure of the thesis.

Chapter 3 presents the theoretical framework of the study. Firstly, invoice and contents of invoices, importance of shared centers, and account payable are discussed in detail. Then two methods of invoicing, benefits of e-invoicing, challenges and future strategies to overcome these challenges of adapting e-invoicing are discussed. Finally, the theoretical framework of the thesis is presented. Chapter 4 explains the research methodology. Firstly, research methods, benefits and challenges of case study research, data collection instrument, and data interpretation are discussed. Then the validity and reliability of the study is discussed in detail. Chapter 5 introduces the case companies and discusses the results based on each case company. Chapter 6 discusses the overall results of the study by comparing the three cases. Further, ethical questions and future research suggestions are discussed.

3 THEORETICAL FRAMEWORK

This chapter describes the existing literature on e-invoicing and its related technologies. Both the paper invoices and electronic invoices are discussed and compared in detail. In addition, benefits, types and formats of e-invoicing are reviewed in this chapter.

3.1 Invoice and contents of invoice

An invoice is a bill of a products or services which is issued by a seller to a buyer. It is payment needs to be done by the buyer according to the payment terms agreed and mentioned at the issued invoice (Penttinen, Hallikainen & Salomäki 2009).

Meigs and Meigs (1970) and Woodford, Wilson, Freeman and Freeman (2008) suggest that a typical invoice contains following contents:

- The word “Invoice”
- A reference number of the invoice
- Date of the invoice.
- Credit terms.
- Tax payments if relevant (e.g. The European Union requires a VAT (value added tax) identification number.)
- Name and contact details of the seller
- Tax or company registration details of seller
- Name and contact details of the buyer
- Date that the goods or service was sent or delivered
- Purchase order number (or similar tracking numbers requested by the buyer to be mentioned on the invoice)
- Description of the products
- Unit price of the products
- Total amount charged

- Payment terms including payment method, payment date, and details about charges for late payment

Invoice contains much information which helps accounts payable department to book invoices at fast speed. Invoicing is an important step in of trade process (E-invoicing 2010). The below figure depicts the position of invoicing in whole trade process.

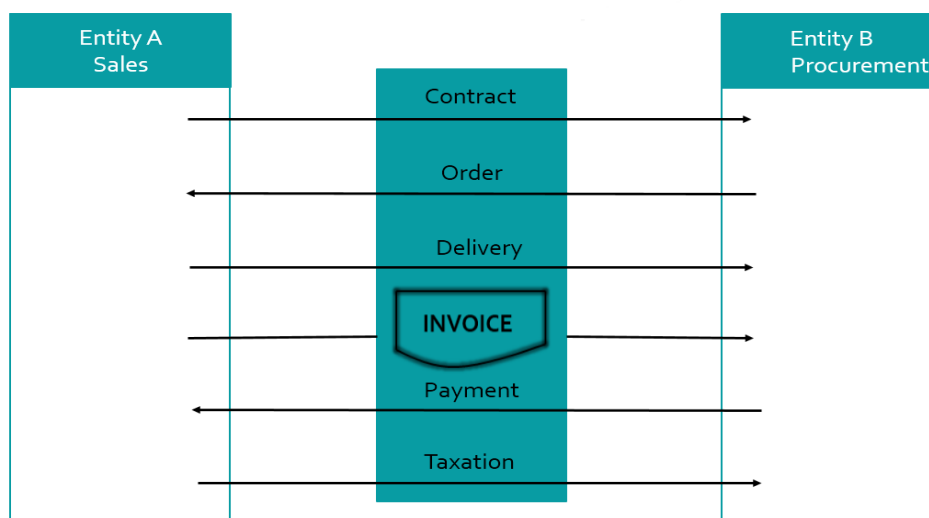


Figure 2. Invoice in a typical trade process (E-invoicing 2010).

3.2 Shared Service Centers

Shared service center means that many services are handled by one section of an organization. These services were managed by many units of an organization earlier, but shared service center has combined all those services together. Organizations' shared service centers are responsible of handling some operational tasks, such as payroll, accounts, purchasing, security, human resources and many more. In general, we can say that an organization builds it shared service center when it makes plans to consolidates organization's human resources, finance support pro-

cess, purchasing and general ledger operations into one unit which is developed as organization's shared service centers (Strikwerda 2010; Ohio University).

Many organizations are developing their shared service centers to get many benefits and to provide different services at one place in competitions of different organization's shared service centers. The idea is to develop one place within an organization to provide many services at low cost by one unit of an organization. Janssen and Joha (2006) suggest that there are many advantages of shared centers, and these include:

- To increase the quality of supporting processes for business
- To reduce the cost of decentralization.
- To reduce cost for supporting services for organizations.
- To build higher strategic flexibility.

In the same vein, Bergeron (2003) suggest that a shared service is a collaborative strategy in which a subset of existing business functions are concentrated into a new, semi-autonomous business unit that has a management structure designed to promote efficiency, value generation, cost savings, and improved service for internal customers of the parent organization, like a business competing in the open market'.

Many Finnish Organizations have adapted shared service centers and most of them have achieved their main objectives. But targets are now to make shared service centers more cost efficient. It is very difficult to keep employees satisfied when target is to maintain overall shared service center costs down. Finnish shared service centers are still focusing to gain more volumes, to make their processes more reliable and efficient, to increase their services and to obtain more customers for their Shared service centers (Säisä 2011).

There are lot of business which can be implemented in one share service center such finance, accounting, human resources, and others. Financial services include

accounts payable, accounts receivable, purchasing, travel, payroll, bank reconciliation and other support services.

3.3 Accounts Payable

Accounts payable are amounts that an organization owes when it purchased services or different products on credit from a supplier (Boundless 2015).

Accounts payable department in shared service centers is generally responsible for processing invoices and issuing payments. The specific responsibilities of account payable departments include: (1) to enter and upload invoices into system, (2) to review and verify invoices, (3) to prepare and perform check runs, (4) to prepare analysis of accounts, (5) prepare and process electronic transfers and payments, (6) to produce monthly reports, (7) to utilize accounts payable transactions, (8) to produce monthly reports, and (9) to assists with month end closing and other accounts payable related tasks (Accounts Payable Job Description)

A typical invoicing process starts when invoice arrives at the door of an organization. Invoice can arrive via email, post email or via other sources. Once invoice arrives, accounts payable responsible person checks the validity of the invoice, enters invoice into the system, books the invoice and sends for approval. Once the invoice is approved, the invoice gets posted into organization's accounting system. Many companies are still working to improve their invoicing process which reduces extra cost and is faster. Generally, many factors reduce invoicing processing efficiency. But mainly, the bad quality of arrived invoices creates payment delays for their customers (Business Process; Invoice Processing Procedure).

3.4 Methods of invoicing

There are two methods of invoicing.

3.4.1 Paper invoicing

Previously, more traditional methods have been used to send the invoice to the buyer. In traditional delivery methods, invoices are distributed with the delivery of products, or by mail, or by personal handover. The below figure illustrates traditional delivery methods (E-invoicing 2010)

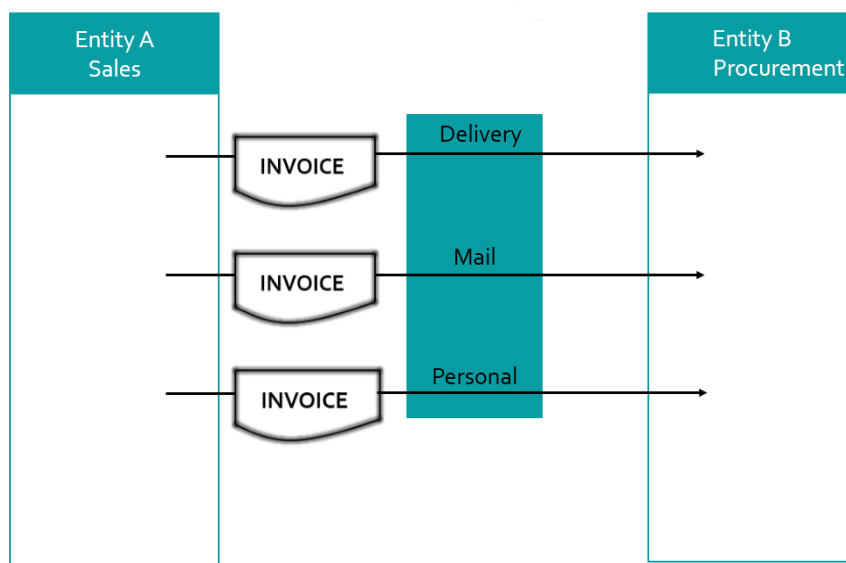


Figure 3. Traditional methods of invoice exchange (E-invoicing 2010).

However, there were many drawbacks of these traditional methods. The main drawbacks of these traditional methods include: time consuming, expensive (i.e. delivery cost), and human errors (e.g., missing information on invoice) in handling these invoices (Myllynen 2011). Below figure illustrates in detail the traditional invoicing process which is very complex, lengthy and expensive as well.

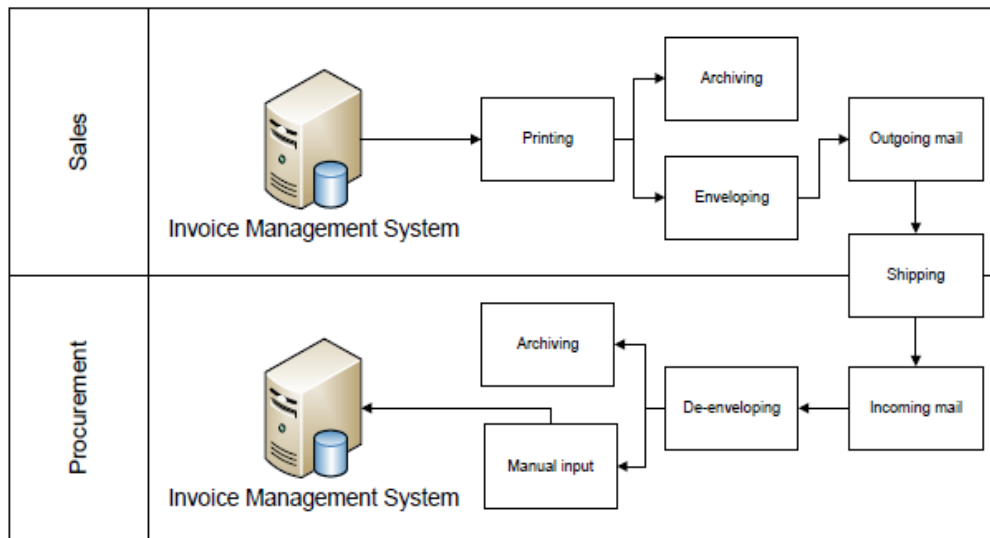


Figure 4. Traditional Invoicing Process (Myllynen 2011).

Why paper invoices should be stopped:

Paper invoicing includes many costs: paper cost, envelopes cost, printing cost, physical distribution costs, and many other hidden costs. Therefore many companies want to replace paper invoicing with e-invoicing. However, switching from paper invoicing to e-invoicing also requires investments, and therefore many companies are slow in adapting e-invoicing (e-InvoicingBasics).

Overall, paper invoicing is costly for buyers as well as for suppliers. It is time consuming, error-prone, and requires manual processing for both buyers and suppliers. At buyers' side, paper invoicing is proceeded generally in five phases, which include: invoice capturing, quality assurance, circulating and routing the invoices, reporting and filling of invoices, and payments for the invoices. On the other hand, suppliers also go through different phases while handling paper invoicing and these include: invoice creations and distribution, checking the status and resolving problems of processes, payment and reconciliations of invoices, reporting and filling lately for tax audit purposes. In general, we can say that paper

invoicing is more demanding and needs more manual work for both suppliers and buyers.

Overall, there are many costs which can be avoided if company moves away from paper invoicing (e-Invoicing Basics). These costs are:

- Invoice paper costs
- Printing costs
- Envelopes costs
- Postage costs
- Loss of invoices costs
- Bill storage costs
- Extra or hidden payment transaction fees

3.4.2 Electronic invoice (E-invoicing)

The European Commission defines the electronic invoice as “[an] electronic transfer of invoicing information (billing and payment) between businesses partners (supplier and buyer). It is an essential part of an efficient financial supply chain and it links the internal processes of enterprises to the payment systems”. E-invoicing has been recognized as an important development in Europe. E-invoicing is not totally new concept, sending invoices in electronic format has been implemented very well in many countries. The need is to further develop the process to increase the volumes of electronic invoices out of total invoices (Penttinen, Hallikainen and Salomäki 2009).

The benefit of E-invoicing is that it eliminates many steps of paper invoicing. The below figure shows that e-invoicing makes invoicing process simple for both buyers and suppliers as it eliminates the invoice handling steps of printing, posting, sorting and registration (Cloudtrade).



Figure 5. E-invoicing eliminating many invoice handling steps (Cloudtrade)

In the following, I will explain about types of invoices and benefits of adapting the e-invoicing.

3.5 E-invoicing Process

E-invoicing is fully automated and it is cost efficient. Both sender and receiver are free to choose their operators to exchange digital invoices. It is not compulsory for both parties to choose same e-invoice operators for exchanging their digital invoices.

There are many steps involved in e-invoicing process. Firstly, the sender sends the invoices as a data bundle. Then the operator opens up the bundle, and splits every invoice. The operator tries to find corresponding receiver by looking up the database for both the sender and receiver supported formats. Operator looks into the invoice content to find out the appropriate receiver if sender is having multiple receivers. On the other hand, operator also checks if receiver is having multiple senders and finds the correct one.

Once operator has identified sender and receiver, it performs validations to check the minimum requirements for processing. An invoice is sent back to sender if it does not fulfil the agreed requirement. Senders then update the invoice and sends back to operator. Then, invoices are converted into an invoice image based on the

layout provided by receiver. An invoice image is also attached for the ease of receiver so that it is readable. Finally, the operators transfer the original invoice with its image to the receiver for further processing (Hanif 2013).

Below figure presents exchanges of invoice between sender and receiver through operators.

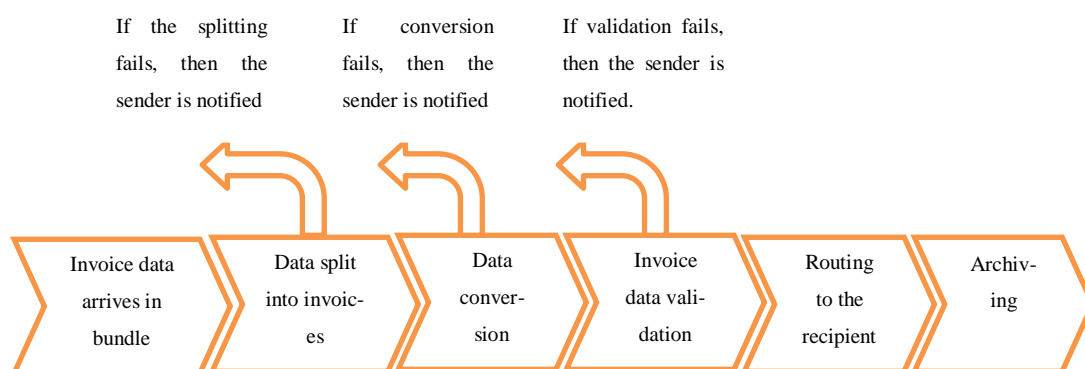


Figure 6. Exchanges of invoice between sender and receiver through operators.

3.6 Type of e-invoicing

E-invoicing has become an essential part of the business between suppliers and buyers and it makes the business process much easier between suppliers and buyers. There are two types of e-invoicing. These are unstructured invoice documents and structured invoice documents.

3.6.1 Unstructured invoice document

Unstructured invoice is created automatically or manually from a system by a seller. Further, invoice is sent to buyer through either email or other internet transferring methods. Therefore, there is no need to present the invoice and send it by regular post. Text, JPEG, PDF, TIFF, HTML or emails are some examples of unstructured documents. On the other hand, buyer (i.e., receiver of the invoice) still

needs to manually enter the invoice into their system for further processing. Therefore, overall this type of invoice reduces costs of printing and delivery (EBA and Innopay 2010).

3.6.2 Structured invoice document

Structured electronic invoices are fully processed electronically. In this type, receiver is aware of structured invoice. Both parties agree in advance about the format and content of invoice, such either XML or EDIFACT. This method eliminates all manual steps which are needed in unstructured invoice documents. It makes the process more efficient, as invoices goes directly into the receiver's system (EBA and Innopay 2010). In the next section, benefits of e-invoicing are discussed in detail.

3.7 Benefits of e-invoices

Many researchers have investigated the benefits of e-invoicing. According to GXS, main benefits which organizations can expect to gain while switching from paper invoices to e-invoicing are as following:

- Digital invoice capturing (i.e. less manual work): Paper invoices need to be handled manually at the receiver and buyer side. However, e-invoicing fully automates the invoice capturing process where invoice is entered automatically into the buyer's AP system from the supplier.
- Automated invoice validation (i.e. fewer errors): Paper invoicing requires clerks to ensure data and calculation accuracy, and therefore there are chances of errors. However, e-invoicing reduces errors as it identifies the possible errors.
- Cost reduction (i.e. cheap): E-invoicing reduces printing and postage cost because of manual work elimination. Further, it saves the cost by avoiding late deliveries.

- Enhanced cash management (i.e. fast work): Paper invoicing is length process and therefore takes long time to reach to an organization's AP system. However, electronic invoicing is transferred automatically into accounting system, and therefore fasters the cash management. Below figure shows that how e-invoicing eliminated many steps of paper invoicing and therefore fasters the cash management.

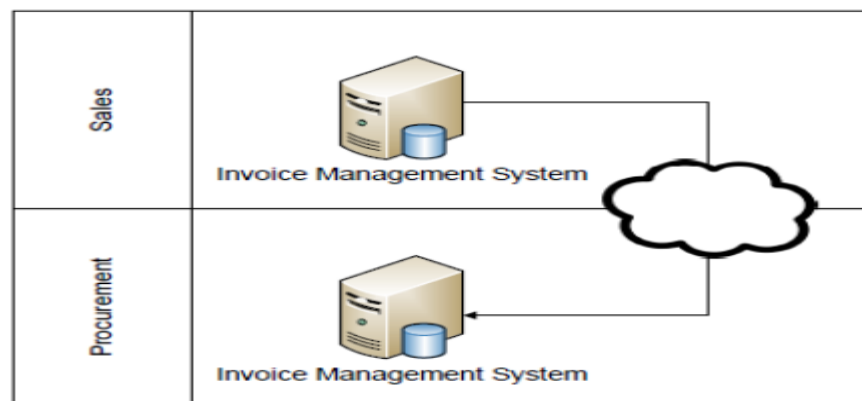


Figure 7. Electronic Invoicing Process (Myllynen 2011).

- Lower carbon footprint: E-invoicing eliminates paper costs. Further, it promotes the lower carbon footprint, as no paper is utilized in whole process.
- Improved dispute handling and avoidance: Fast and accurate processing by using e-invoicing reduces the number of calls from suppliers about the status of the invoices and amount's accuracy.
- Enhanced IT system optimisation (i.e. adaptation to new ways): IT solutions are utilized while implementing e-invoicing in the organization. It does not demand a large or complicated technology. Many organizations can adopt it by managing their current IT infrastructure or taking services from third party.

- Improved relationship with suppliers: As e-invoicing makes the invoice process easy, quick and cheap. Therefore, it results the suppliers to trust more on the buyers for more business.
- Security: E-invoicing guarantees that the invoice is not changed and damaged during the delivery process.
- Multiple formats acceptance and large quantity: E-invoicing allows us to process many invoices and which are also created in different formats including XML, CSV, EDI depending on each organization default chosen formats.

In addition, Spanic, Ristic and Vrdoljak (2011) also argue that e-invoicing allows companies to benefit from shorter payment delays, fewer errors, as well as reduced printing and postage costs. Besides these economically motivated advantages, Kreuzer, Eckhardt, Bernius and Krönung (2013) suggest that e-invoicing also has environmental benefits, such as the saving of natural resources and reducing carbon emissions. In conclusion, there are many benefits of adapting e-invoicing.

3.8 Challenges of adapting e-invoicing and strategies to overcome them

Prior research has mainly focused on identifying the main benefits of adapting e-invoicing, and completely ignored the challenges of adapting e-invoicing in companies and strategies that companies take to overcome these challenges. Considering that there is no prior literature on these important issues, therefore these issues will be explored empirically. Investigating these challenges and their future solutions, we will contribute to prior literature on e-invoicing.

3.9 Summary of theoretical framework of the study

Figure 8 presents the main framework of the study. As seen in the figure, overall framework tries to explore the benefits of adapting e-invoicing, challenges that

firms face while adapting e-invoicing, and strategies firms use to overcome these challenges. Firstly, the benefits of adapting e-invoicing include: less manual work, less errors, cheaper, fast work, secure, easy to handle a large quantity of invoices, less carbon footprint, improved relationship with suppliers, and adaptation to new ways. Secondly, the framework shows that study also tries to explore the challenges that companies face while adapting e-invoicing. This is more exploratory part, as there is no prior research published on this issue. Therefore, it will be explored based on interviewing company executives. Thirdly, the framework shows that study also tries to explore the strategies that firms develop to overcome the faced challenges while adapting e-invoicing. This is also exploratory part, as there is no prior research published on this issue. Therefore, it will also be explored based on interviewing company executives.

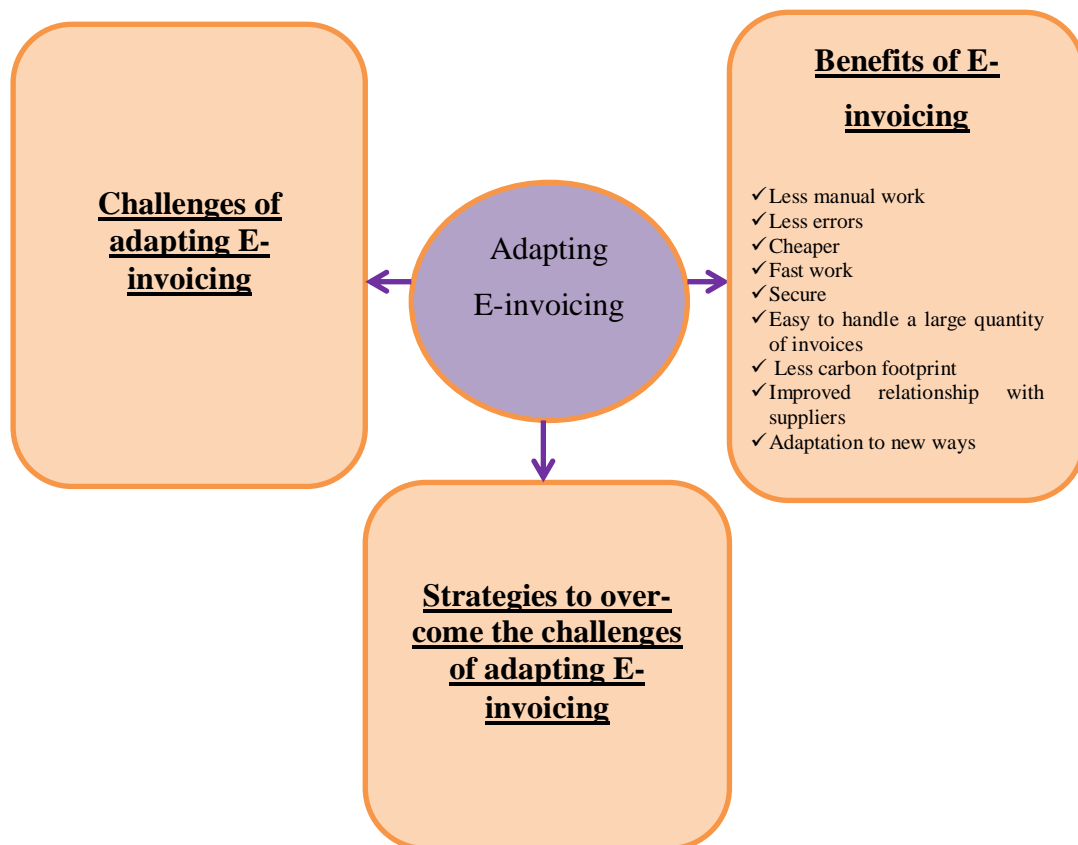


Figure 8. Framework of the study

4 RESEARCH METHODOLOGY

In this section, the methodology of this study is discussed. Firstly, the research method is discussed. Then the case study research, criticism and benefits of case study research and case study design for the present study are explained. Finally, the validity and reliability of the study is discussed.

4.1 Research method

There are two research methods, called qualitative research method and quantitative research method. Quantitative research collects quantitative data from large sample through structured questionnaire. Then data is analysed to test hypotheses. This method is commonly used when the researcher wants to answer the questions using approaches: how many, how much, and how often.

The qualitative approach, on the other hand, tries to understand the phenomena in context-specific settings and it provides answers to the questions like what, why and how (Saunders et al. 2007). It provides deep insight to the research subject. According to Ghauri, Gronhaug and Kristianslund (1995), qualitative methods are used when the nature of the study is exploratory and when researcher wants to study the phenomenon in natural setting. In this study, qualitative research is chosen based on following reasons:

(1) There is no prior research on the challenges that firms face while adapting e-invoicing and strategies they adapt to overcome these challenges. Thus, it is more reasonable to investigate the challenges and strategies to overcome these challenges by using qualitative research methods.

(2) An important purpose of research is to explore the challenges and strategies to overcome these challenges by companies adapting e-invoicing, therefore the qualitative study is suitable.

(3) The main research question of the study is: What are the benefits that companies reap and challenges they face while adapting e-invoicing, and what are their future strategies to overcome these challenges? And according to Saunders et al. (2007), research questions starting with “what” are best suitable for qualitative study. Therefore, based on the above three mentioned reasons, a qualitative research method is chosen for the present study.

4.2 Benefits and criticism of case study research

An important decision in qualitative research method is the choice of number of cases. A case study can be either single or multiple case studies. The benefit of multiple case studies is that it helps in searching the cross case patterns. According to Eisenhardt (1989) multiple cases are chosen to develop the theory.

On the other hand, the multiple case studies have also drawbacks. The following are the main criticisms on multiple case studies:

- (1) Results of the multiple case studies cannot be generalized.
- (2) It is time consuming and there is large quantity of data to analyse.
- (3) Results may be biased because of researcher's interpretations (Yin 2003).

In this thesis, the qualitative approach has been used with a multiple case method. Since there is no existing knowledge on challenges that firms face while adapting e-invoicing and strategies firms use to overcome these challenges, therefore exploratory nature of research has made this study a multiple case study. Further, I study at the University of Applied Sciences (Vaasa) and many companies in Vaasa region are using e-invoicing. Therefore, a natural choice was to select the case companies in Vaasa region. I have chosen three case companies.

4.3 Data collection instrument

According to Yin (2003) and Eisenhardt (1989), the data in multiple case studies can be collected through company websites, interviews, and observations. For present study, the basic information about the case companies is collected from their web-sites. Therefore, company websites were visited and basic information about their introduction was collected from there. Further, the primary data about the main research purpose is collected through interviews.

According to Saunders et al. (2007), interviews can be either structured, semi structured or unstructured. Structured interview gives the respondent a limited space to answer and data gathered lacks the richness because the number of possible responses is often limited and participants may be forced into giving responses which might not be a reflective of their true feelings about an issue. Unstructured interviews give freedom to the respondent to talk more openly. Semi-structured interview lies in between, where the interviewer use an interview guide with questions and areas that should be covered, even if the questions might vary during the process (Saunders et al. 2007).

For this study, face to face interviews were conducted with a semi structured interview questionnaire with open-ended questions. The main purpose behind semi structured interviews was to give the respondent a time to recall freely and can take up a direction in the response. The response may then be followed up with more specific questions from the interviewer (Saunders et al. 2007). Saunders et al. (2007) say that an interviewer should be open during conducting interviews, and should be open to ask new questions and should not lock interviewees by asking closed questions. Overall, I conducted three interviews from three case companies (one interview from each company). Each interview lasted for approximately 1 hour and was recorded. The interview dates and interviewees' positions in companies are described below.

Company A: Interview date (16th Oct. 2015), Interviewee (Process Developer)

Company B: Interview date (26th Nov. 2015), Interviewee (M.D and M.D of Service Company)

Company C: Interview date (11th Feb. 2016), Interviewee (Accounting centre Senior Analyst-AP)

4.4 Data interpretation

Data interpretation means to analyse the data to search for common themes among cases and report the results to others (Bogdan & Biklen 1982). According to Saunders et al. (2007), the goal of data interpretation is find out common themes that can be communicated to readers. In this study, while interpreting data, I have tried my best to identify the benefits, challenges and solutions of challenges in adapting e-invoicing in case companies. Further, I have tried to find common themes among all cases and also differences among cases.

4.5 Validity and reliability

Reliability means if another research studies the same cases by using the same procedures described by current study, the other research arrives at same findings (Yin 2003). In present study, semi structured interviews with open ended questions were conducted from knowledgeable executives. I interpreted the interviewees' statements to draw conclusions. However, results can vary if another person from the case companies answers the questions. This is common limitation in qualitative research methods.

Validity means that all parts of the study are coherent. Yin (2003) suggests that there are two important validities: construct validity, and external validity. Construct validity means that the main constructs in the study are properly defined based on prior literature and further interviewees also understand these constructs. In this study main constructs (e.g. e-invoicing, benefits) were defined from prior literature. Further, while conducting interviews, all interviewees agreed that they are well aware of constructs, therefore construct validity in my study is very high.

Secondly, external validity means whether the findings of the study can be generalized (Yin 2003). However, the results in case studies rely on analytical generalization rather than statistical generalization. In this study, data is collected from multiple cases and collected data is analysed based on existing knowledge. So, in this way analytical generalization can be made to some extent.

5 RESULTS

In this chapter, a description of three cases is presented. Each case description starts with company background, findings about e-invoicing from interview and lately discussing the findings of interview for each case.

5.1 Case 1: Company A

➤ Company Background

Company A is an international company that operates in field of production, sales, services of engines in marine and energy industries. Company A is counted among the largest companies that operate mainly in Marine, Energy and service market internationally. Company A is operating in all over the world with number of workers over 18,000. In 2015, Company's net sales totalled EUR 5.0 billion while operating in more than 200 locations.

➤ Findings about e-invoicing

The below table shows data specifications of company A

Table 1. Data specifications of company A.

Company A	
No. of Employees	18,000
E-invoices sending methods	<ul style="list-style-type: none"> ✓ Operator to operator method ✓ E-invoicing issuer web application
Data Type	XML (Extensible Markup Language)
Why this operator	<ul style="list-style-type: none"> ✓ Cheap ✓ Limited service provider ✓ Mainly local presence ✓ Operating in more than 20 countries ✓ Offers services in 12 languages
No. of e-invoices in a year	62,100 in 2015
Benefits of e-invoices	Less manual work, fast work, easy to handle a large quantity of invoices, less carbon footprint, ease for vendors

Errors	Human errors: Information is missing at invoice, Position of information is misplaced. Handling errors: No
Barriers of adapting e-invoicing fully	<ul style="list-style-type: none"> ✓ Geographical challenge: Complicated tax regulations in many countries ✓ Vendor problems: Expensive for small vendors, Lack of technical knowledge ✓ Customer problems: Lack of trust at e-invoices ✓ International braches problem: Do not want to adapt e-invoicing
Future Strategies	<ul style="list-style-type: none"> ✓ Convincing Vendors to use more e-invoices ✓ Push operator to operate internationally ✓ Training and motivating employees to adapt e-invoicing
Employees Attitude towards e-invoicing	<ul style="list-style-type: none"> ✓ Do not want changes in current way of working

➤ Discussing the findings

Company A prefers e-invoices as it is more beneficial for their business development.

Company A offers two options to be chosen to start e-invoicing with them. In option 1, supplier creates invoice by using their ERP system or other system and send to their operator. Supplier's operator converts data to a XML standard format that can communicates with Company A's operator. Company A's operator then converts the data into their in-house standard which is recognized by Company system. Finally, e-invoice is validated in Company system and forwarded for further processing. Company also offer another option to provide e-invoicing solution. In option 2, Company A's operator offer an e-invoicing Issuer web application, where suppliers logs in and manually inserts necessary invoice data. Once data is inserted completely and available in the format which Company A' system can understand. Then it is forwarded to Company A' system where it is processed further. Companies are free to choose any option to start e-invoicing according to their requirements.

The shared of electronic invoices was 23% out of total invoices in year 2015. Most of company's e-invoicing volumes are in Finland and Switzerland. E-invoice process in Company is managed by Company's own process developers, Company's operator and IT support of company. Communications with suppliers is done by strategic purchasers who work in purchasing organizations, or Company's operator handles communications. In some cases, company communicates with suppliers themselves and try to convince suppliers to move to e-invoicing solutions. Company is getting now many benefits, system is more and more automated and still trying to improve quality in addition to increase the volumes of e-invoices. Company A was first operating e-invoicing only in Finland, now it has been growing in many European countries as well.

The most common error which occurs during e-invoicing process is misplaced information of e-invoice. Sender and receiver operator might be using different XML formats which cause errors and information is misplaced at invoice. Other reason might be that lack of knowledge from supplier side about inserting of information in correct fields. They might insert information into wrong fields or forget to insert information which causes manual work in order to remapping.

Even though, company is trying it's best but still there are technical challenges and also geographical challenges which limit with company to adapt e-invoices fully. Geographical limitations might be that some countries have strict rules about tax regulations and laws and are too demanding to be implemented electronically. Another reason is lack of technical knowledge. Financial issues occur also at this stage, it might be very expensive for some countries and also for small companies to internal conflicts also. And another geographical barrier is that awareness of e-invoices like in certain countries they have no trust to e-invoices, they may have no knowledge of how e-invoicing works or it may be something new think so very expensive. Even if it is not expensive it might be that they do not want to change their way of working.

Company is satisfied with its operator because it is cheap and it is enough to be operated in Finland. But Company is planning to ask operator to start operating globally or company might change their operator when company grows faster. Company is trying it's best to increase e-invoices. It is continuously communicating with suppliers to convince them to work more with e-invoicing. Employees' attitude to e-invoicing is not so good, as people do not want to change their way of working. But employees do not have fear to lose jobs as company is growing and taking other tasks all the time.

5.2 Case 2: Company B

➤ Company Background

Company B is a public company who has experts in development of business activities. It helps enterprises in their operational preconditions and offers solutions for companies' growth. Main industry of company B is Oil & Energy but their area of specialization is in energy technology. Company size is between 11-50 employees. It helps other companies to grow in international markets.

➤ Findings about e-invoicing

The below table shows data specifications of company B

Table 2. Data specifications of company B.

Company B	
No. of Employees	45
E-invoices sending methods	Operator to operator method
Data Type	XML (Extensible Markup Language)
Why this operator	<ul style="list-style-type: none"> ✓ Cheap ✓ Broad service provider ✓ - ✓ Operating in 4 countries ✓ Offers services in 5 languages
No. of e-invoices in a year	188 in 2015

Benefits of e-invoices	Less manual work, fast work, easy to handle a large quantity of invoices in future, less carbon footprint, ease for vendors in future, adaptation to new ways
Errors	Human errors: Information is missing at invoice. Handling errors: No
Barriers of adapting e-invoicing fully	<ul style="list-style-type: none"> ✓ Geographical challenge: Complicated tax regulations in many countries ✓ Vendor problems: Expensive for small vendors, Lack of technical knowledge ✓ Customer problems: Lack of trust at e-invoices ✓ International braches problem: Do not want to adapt e-invoicing
Future Strategies	✓ Convincing Vendors to use more e-invoices
Employees Attitude towards e-invoicing	✓ Employees are interested in modern way of working and learnings as well.

➤ Discussing the findings

Company B is small company and have started e-invoicing from beginning of year 2015.

Company B offers setup option, where supplier creates invoice by using their ERP system or other system and send to their operator. Supplier's operator converts data to a XML standard format that can communicate with Company B's operator. Company B's operator then converts the data into their in-house standard which is recognized by Company system. Finally, e-invoice is validated in Company system and forwarded for further processing.

The shared of electronic invoices was 50% out of total invoices in year 2015. Communications with suppliers is done by Company's operator who communicates with suppliers and tries to convince suppliers to move to e-invoicing solutions.

The most common error which occurs during e-invoicing process is wrong information provided by the companies. Most of the times, they are using wrong cost objects which results wrong allocation of cost.

Company is still facing some problems to adapt e-invoicing fully as there are many limitations. One of the reasons is that other companies hesitate to use modern ways of e-invoicing. They are more satisfied with paper bills at home and trust more on them. Other reason is that smaller companies do not have enough human resources and finance to invest.

Company is satisfied with its current operator. With this operator, they can send invoices to other countries as well, even if they will be using different system outside of Finland. It is cheap and available in many languages also. Company is trying it's best to increase e-invoices. It is continuously communicating with suppliers to convince them to work more with e-invoicing. Employees are interested in modern ways of working and always to want to learn new technologies.

5.3 Case 3: Company C

➤ Company Background

Company C is a leading global technology company. With their power and automation establishments throughout the world, they employ over 135,000 people internationally. It is operating mainly in robotics, power and automation technology areas that enable customers to improve their performances with less environmental impact. Company's global revenue totalled USD 35.5 billion for 2015.

➤ Findings about e-invoicing

The below table shows data specifications of company C

Table 3. Data specifications of company C.

Company C	
No. of Employees	135,000
E-invoices sending methods	- Operator to operator method - E-invoicing issuer web application
Data Type	XML (Extensible Markup Language)
Why this operator	✓ Cheap ✓ Broad service provider

	<ul style="list-style-type: none"> ✓ International presence ✓ Operating in more than 50 countries ✓ Offers services in 9 languages
No. of e-invoices in a year	325,000 in 2015
Benefits of e-invoices	Less manual work, fast work, easy to handle a large quantity of invoices, less carbon footprint, ease for vendors
Errors	Human errors: Information is missing at invoice, Position of information is misplaced. Handling errors = Invoices are missing
Barriers of adapting e-invoicing fully	<ul style="list-style-type: none"> ✓ Geographical challenge: Complicated tax regulations in many countries ✓ Vendor problems: Expensive for small vendors, Lack of technical knowledge ✓ Customer problems: Lack of trust at e-invoices ✓ International branches problem: Do not want to adapt e-invoicing
Future Strategies	<ul style="list-style-type: none"> ✓ Convincing Vendors to use more e-invoices ✓ Offering free portal tool for uploading e-invoices ✓ Exploring the complications of missing e-invoices
Employees Attitude towards e-invoicing	<ul style="list-style-type: none"> ✓ Employees are happy with automations.

➤ Discussing the findings

Company C also prefers electronic invoicing as electronic invoice has many advantages compared to paper invoices. It is faster, cost effective and more accurate.

Company C also offers two options to be chosen to start e-invoicing with them. In option 1, supplier creates invoice by using their ERP system or other system and send to their operator. Supplier's operator converts data to a XML standard format that can communicate with Company C's operator. Company C's operator then converts the data into their in-house standard which is recognized by Company system. Finally, e-invoice is validated in Company system and forwarded for further processing. Company also offer another option to provide e-invoicing solution. In option 2, Company C's operator offers an e-invoicing Portal for free,

where suppliers logs in and manually inserts necessary invoice data. Once data is inserted completely and available in the format which Company C' system can understand. Then it is forwarded to Company B' system where it is processed further. Companies are free to choose any option to start e-invoicing according to their requirements.

The shared of electronic invoices was 65% out of total invoices in year 2015. Communications with suppliers is done management department of the Company directly. But Company is starting the project sooner to improve e-invoicing, through which company's operator will be able to communicate directly to suppliers to make work more efficient and faster.

Company is getting now many benefits, system is more and more automated and still trying to improve quality in addition to increase the volumes of e-invoices.

The most common error which occurs during e-invoicing process is that many invoices are missing from the system and company cannot find the reasons for it yet. And another issue is that data goes to wrong fields. For example, supplier have different fields in their operators, so it does not do correct mapping. And data can go to wrong fields in XML file, it depends much on sender and receiver operators formats.

Company has limitations to adapt e-invoicing fully. There are some smaller companies which cannot use e-invoices yet, even it is faster. There are some technical issues; they do not have system to send the e-invoices. Many small companies also avoided because of cost. They do not have resources also as well; they have workers to do this job. In some other cases, there are some subsidiary companies whose main corporates do not use this system, so they also do not use it as well.

Company is trying it's best to increase e-invoices and company is satisfied with current operator. As operator is globally operating, so same operator is operating in different European countries. Employees are happy with more automation.

6 CONCLUSIONS AND DISCUSSIONS

6.1 Discussing the Results

The below table compares specifications of e-invoicing process in case companies-

Table 4. Comparison of e-invoicing processes in case companies.

	Company A	Company B	Company C
Company size	Large	Very small	Very large
E-invoices sending methods	M1, M2	M1	M1, M2
Data Type	XML	XML	XML
Why this operator	<ul style="list-style-type: none"> ✓ Cheap ✓ Limited service provider ✓ Mainly local presence ✓ Operating in more than 20 countries ✓ Offers services in 12 languages 	<ul style="list-style-type: none"> ✓ Cheap ✓ Broad service provider ✓ - ✓ Operating in 4 countries ✓ Offers services in 5 languages 	<ul style="list-style-type: none"> ✓ Cheap ✓ Broad service provider ✓ International presence ✓ Operating in more than 50 countries ✓ Offers services in 9 languages
E-invoices quantity	Large	Very small	Very large
Benefits	Less manual work, fast work, easy to handle a large quantity of invoices, less carbon footprint, ease for vendors	Less manual work, fast work, easy to handle a large quantity of invoices in future, less carbon footprint, ease for vendors in future, adaptation to new ways	Less manual work, fast work, easy to handle a large quantity of invoices, less carbon footprint, ease for vendors
Errors	<p>HUE: Information is missing at invoice, Position of information is misplaced</p> <p>HAE: No</p>	<p>HUE: Information is missing at invoice</p> <p>HAE: No</p>	<p>HUE: Information is missing at invoice, Position of information is misplaced</p> <p>HAE: Invoices are missing</p>
Barriers of adapting e-	GC: Complicated tax regulations in many countries	GC: Complicated tax regulations in many countries	GC: Complicated tax regulations in many countries

invoicing fully	VP: Expensive for small vendors, Lack of technical knowledge CP: Lack of trust on e-invoices IBP: Do not want to adapt e-invoicing	VP: Expensive for small vendors, Lack of technical knowledge CP: Lack of trust on e-invoices IBP: Do not want to adapt e-invoicing	VP: Expensive for small vendors, Lack of technical knowledge CP: Lack of trust on e-invoices IBP: Do not want to adapt e-invoicing
Future Strategies	<ul style="list-style-type: none"> ✓ Convincing Vendors to use more e-invoices ✓ Push operator to operate internationally ✓ Training and motivating employees to adapt e-invoicing 	✓ Convincing Vendors to use more e-invoices	<ul style="list-style-type: none"> ✓ Convincing Vendors to use more e-invoices ✓ Offering free portal tool for uploading e-invoices ✓ Exploring the complications of missing e-invoices
Employees Attitude towards e-invoicing	✓ Do not want changes in current way of working	✓ Employees are interested in modern way of working and learnings as well.	✓ Employees are happy with automations.

Abbreviations: **M1:** Operator to operator method, **M2:** E-invoicing issuer web application, **XML:** Extensible Markup language, **HUE:** Human error, **HAE:** Handling error, **GC:** Geographical challenge, **VP:** Vendor problem, **CP:** Customer problem, **IBR:** International branches' problem

Currently, more and more companies within Europe are replacing paper invoices with e-invoicing in order to reduce cost in their commercial activities. However, there is limited understanding about the challenges and benefits of adopting e-invoicing and how firms plan to overcome these challenges. Therefore, the overall purpose of this study is: What are the challenges that companies face and benefits they reap while adapting e-invoicing, and what are their future strategies to overcome these challenges? To answer this question, I selected three case companies.

I explored two types of challenges that companies face while implementing e-invoicing: internal and external challenges. Internal challenges include: choice of an operator, errors during e-invoicing, and employees attitudes towards e-invoicing. All three cases depict that companies select their operator based on cost, international experience, number of languages in which services are offered,

and number of methods for sending e-invoices. Especially, large companies (e.g., Company A and C) emphasis too much on the broad international experience and many different languages in which operator provides services along with cheap cost of operator. However, small companies (e.g., Company B) based on their requirements, mainly focus on cost and chose operator with limited international experience and limited languages in which operator provides services. Further, mostly large companies choose the operator who provides two different set-up options for sending e-invoicing. For example, both companies A and C are large companies and have chosen operator who provides two different set-up options for sending e-invoicing: operator to operator, and e-invoicing issuer web application. However company B, which is a small company, has chosen the operator who provides only one simple method of sending e-invoicing from operator to operator.

Further when the number of e-invoices increases in very large companies, the firms start facing internal problem of missing e-invoices from their system. For example the company C, which is a very large company, faced this problem as company receiving too many e-invoices. However, companies A and B did not face this problem because still they were receiving fewer amounts of e-invoices as compare to company C. Further, sometimes employees prefer to handle paper invoicing, and do not want to adapt to e-invoicing. For example, company A was facing this challenge. However, company A and B employees were motivated to adapt to e-invoicing.

In addition, all companies were facing similar types of external challenges in adapting e-invoicing. These external challenges are: geographical challenge, vendor problems, customer problem, and internal subsidiaries problem. Firstly, the main geographical problem is that different countries have different tax regulations and it is very difficult for a company to compel its international subsidiaries to adapt to a uniform taxation. Therefore, it is difficult to fully employ e-invoicing. Secondly, mostly vendors are small and lack resources and skills to im-

plement e-invoicing, therefore it was difficult for all case companies to fully implement e-invoicing. Thirdly, sometimes, customer companies also do not trust the e-invoicing, and feel comfortable with old method of paper invoices. All three case companies reported this problem. Fourthly, sometimes the employees of internal subsidiaries' do not want to implement e-invoicing. All three case companies reported this problem. So overall, all case companies reported similar types of geographical, vendor, customer, and internal subsidiaries' employee's problems in fully implementing e-invoicing.

In terms of benefits of adapting e-invoicing, all three case companies see it beneficial to adapt the e-invoicing. All companies reported that e-invoicing is beneficial because it: reduces manual work, saves time in handling invoices, easier to handle large quantity of invoices, requires no carbon footprint, and easier for vendors to send invoices. Company B, although still very small, sees e-invoicing very beneficial when they will have more vendors and large number of invoices in future. Overall, all three case companies see e-invoicing very beneficial.

Regarding future strategies, all three case companies want their vendors to use more e-invoicing. However, case companies vary in terms of their satisfaction with operator services. Company B is fully satisfied with the services of vendor. However, company A is pushing the operator to go international so that the company can use more e-invoicing and fully realise the benefits of e-invoicing. Interviewee mentioned that they are also thinking to change the vendor if vendor does not expand internationally. Further, company C is also satisfied with the services provided by operator, and currently company is working with operator to figure out the reasons of missing e-invoices. Further, case companies vary in terms of their employees' motivation to adapt to e-invoicing. Employees of case companies B and C are already highly motivated to adapt e-invoicing fully. However, employees of company A are not motivated to adapt to e-invoicing, and therefore company is looking forward to train and motivate their employees to adapt to e-invoicing.

6.2 Ethical Questions

It is very important to take care of ethical issues while conducting research. I have taken following steps to make sure that I have taken care of ethical issues while conducting research:

Interviewees were informed about the purpose of study.

- 1) Basic questionnaire was already sent to interviewees before the interview so that they can have time to think and answer
- 2) Interviewees were informed and their permission taken before recording their interviews.
- 3) Interviewees were promised that their identity will be kept anonymous while reporting the results of the study.
- 4) Interviewees were promised that the company name and operator's identity will be kept anonymous while reporting the results of the study.
- 5) Results of the study are reported based on properly analysing the statements of the interviewees

6.3 Future research

Followings are the important suggestions for the future research. Firstly, future research should collect data from companies as well as their operators to get more technical and rich information about the e-invoicing process. Secondly, future research should also bring in the point of view of vendors along with companies to get rich understandings about benefits and challenges of e-invoicing. Thirdly, future research should investigate the current research topic in the context of Nordic firms. Fourthly, future research should collect quantitative data from many firms to increase the generalizability of the findings.

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APPENDIX 1. Interview Questions

Electronic Invoices process:

1. Could you please explain the electronic invoice handling process; what stages are involved; which invoice operators and IT standards used in the process?
2. What are the volumes of invoices and shared of e-invoices?
3. Who owns the e-invoices process and how is it governed? Is it the purchasing organization / the accounting department / IT that maintains and improves it? Who maintains communications with the suppliers and which methods are used?
4. How company's service providers utilize IT standard to handle e-invoice handling process? What is general process flow provided by them?

Advantages of E-invoices:

1. What are current benefits which company have when handling electronic invoices? Do these current benefits match with earlier expectations about e-invoicing? In which phase of e-invoicing, company wants to get more benefits from it?
2. What types of errors are most common for e-invoices and do they tackle them to provide good services?

Reasons for paper invoices:

1. Which methods company is using to convince vendors to switch from paper invoices to e-invoicing?

Challenges to adapt electronic invoices:

1. What are the limitations of the company to adapt electronic invoicing fully? What kind of technical or geographical and regulatory challenges limits the company to adapt fully?

2. What are company's future strategies to increase volumes of electronic invoices than out of total paper invoices? What are the company's management opinions about e-invoicing?
3. Why company prefers current set-up to other options for e-invoicing?
4. Could you please explain the company's employees (for example accountants, purchasers, finance managers etc.) attitude to the e-invoicing? Have been challenges and opinions changed about e-invoicing?