

**FACTORS INFLUENCING  
CORPORATE CUSTOMERS' ACCEPTANCE OF  
INTERNET BANKING:  
CASE OF SCANDINAVIAN TRADE FINANCE  
CUSTOMERS**

Hanna-Maija Vainio

**M.Sc. Thesis in Accounting  
The Swedish School of Economics and Business Administration  
2006**

## TABLE OF CONTENTS

1. INTRODUCTION .....	1
1.1. Background of the study .....	1
1.1.1. Use of the Internet in Scandinavia .....	4
1.1.2. Internet banking in Scandinavia.....	5
1.1.3. Trade Finance.....	6
1.1.3.1. Collection .....	7
1.1.3.2. Documentary Credit.....	8
1.1.3.3. International Bank Guarantee .....	10
1.1.4. Internet banking and Trade Finance.....	12
1.2. Objective of the study .....	13
1.3. Delimitations of the study .....	13
1.4. Structure of the study .....	14
1.5. Summary .....	15
2. PREVIOUS RESEARCH .....	16
2.1. Objective and structure of the chapter .....	16
2.2. Overview of the field .....	16
2.3. Technology Acceptance Model .....	17
2.4. Technology Acceptance Model and Internet banking .....	20
2.5. Adoption of Internet banking.....	22
2.6. Research on Technology Acceptance Model in other context than Internet banking .....	23
2.7. Analyses of the state of the art .....	24
2.8. Summary .....	25
3. RESEARCH MODEL, HYPOTHESES, METHOD AND DATA .....	27
3.1. Objective and structure of the chapter .....	27
3.2. Development of the hypotheses and model .....	27
3.2.1. Perceived Usefulness .....	29
3.2.2. Perceived Ease of Use.....	29
3.2.3. Self-efficacy .....	30
3.2.4. Previous Experience.....	30
3.2.5. Organizational Support .....	30
3.2.6. Bank Support.....	31
3.2.7. Awareness .....	31
3.3. Method .....	33
3.4. Description of data .....	35
3.5. Respondent background.....	36
3.5.1. Use of the system .....	36
3.5.2. Gender.....	37

3.5.3.	Age.....	38
3.5.4.	Education .....	38
3.6.	Validity, reliability, generalizability .....	39
3.7.	Summary .....	40
4.	EMPIRICAL RESULTS.....	42
4.1.	Objective and structure of the chapter .....	42
4.2.	Analysing method .....	42
4.3.	Regression and Pearson product-moment correlation analysis.....	44
4.3.1.	Test of hypothesis 1 .....	46
4.3.2.	Test of hypothesis 2 .....	46
4.3.3.	Test of hypothesis 3 .....	47
4.3.4.	Test of hypothesis 4 .....	48
4.3.5.	Test of hypothesis 5 .....	49
4.3.6.	Test of hypothesis 6 .....	49
4.3.7.	Test of hypothesis 7 .....	50
4.4.	Adjusted research model.....	51
4.5.	T-tests.....	54
4.5.1.	Differences between users and non-users .....	54
4.5.2.	Differences between females and males .....	55
4.5.3.	Differences between age groups .....	56
4.5.4.	Differences between education levels.....	56
4.5.5.	Differences between nationalities .....	57
4.6.	Validity, reliability, generalizability .....	59
4.7.	Summary .....	60
5.	CONCLUSION.....	64
5.1.	Objective and structure of the chapter .....	64
5.2.	Analysis of the contribution.....	64
5.3.	Discussions, Suggestions, and Managerial Implications .....	65
5.4.	Suggestions for further research .....	68
REFERENCES	.....	69
APPENDIXES	.....	73
Appendix 1: Questionnaire in English.....		73

## TABLE OF FIGURES AND TABLES

Figure 1.	Collection .....	8
Figure 2.	Documentary Credit .....	9
Figure 3.	Bank Guarantee .....	11
Figure 4.	Original Technology Acceptance Model .....	18
Figure 5.	Revised Technology Acceptance Model .....	19
Table 1.	Model variables and previous studies supporting use of the variables in the model. ....	28
Figure 6.	The Research Model .....	32
Table 2.	Questionnaire questions for hypothesis testing .....	34
Table 3.	Response statistics per country .....	35
Table 4.	Valid responses for the demographics .....	36
Figure 7.	User statistics .....	37
Figure 8.	Gender Statistics per country .....	37
Figure 9.	Age statistics per country .....	38
Figure 10.	Education statistics per country .....	39
Table 5.	Strength of relationship based on Pearson correlation .....	43
Table 6.	Regression analysis summary of for the Research Model .....	44
Table 7.	ANOVA for the Research model .....	44
Table 8.	Standardized Coefficients of the research model .....	44
Table 9.	Pearson product-moment correlations item by item .....	45
Table 10.	USE - PU Correlations, Mean and Standard Deviation .....	46
Table 11.	USE – PEOU Correlations, Mean and Standard Deviation .....	47
Table 12.	USE – SEF Correlations, Mean and Standard Deviation .....	48
Table 13.	USE – EXP Correlations, Mean and Standard Deviation .....	48
Table 14.	USE - OSU Correlations, Mean and Standard Deviation .....	49
Table 15.	USE - BSU Correlations, Mean and Standard Deviation .....	50
Table 16.	USE - AWE Correlations, Mean and Standard Deviation .....	50
Table 17.	Regression analysis summary of the Adjusted model .....	52
Table 18.	ANOVA for the Adjusted model .....	52
Table 19.	Standardized Coefficients of the Adjusted model .....	52
Figure 11.	The Adjusted Research Model .....	53
Table 20.	T-tests between users and non-users .....	54
Table 21.	T-tests between males and females .....	55
Table 22.	T-tests between Age Scales .....	56
Table 23.	T-tests between Low and High educated .....	57
Table 24.	Mean values for Denmark, Finland, Norway and Sweden .....	58
Table 25.	T-tests between Denmark, Finland, Norway and Sweden .....	58
Table 26.	Hypothesis summary .....	61

<b>Department: Accounting</b>	<b>Type of Work: Master of Science Thesis</b>
<b>Author: Hanna-Maija Vainio</b>	<b>Date: 2<sup>nd</sup> of February, 2006</b>
<b>Title of Thesis: FACTORS INFLUENCING CORPORATE CUSTOMERS ACCEPTANCE OF INTERNET BANKING: CASE OF SCANDINAVIAN TRADE FINANCE CUSTOMERS.</b>	
<b>Abstract:</b> <p>It is increasingly more interesting to the bank managers to understand what is important to customers when it comes to Internet banking, and especially banking conducted by the customers themselves. Corporate customers and Internet banking has been studied very modestly in the past, and especially the decision-making factors driving customers to go online.</p> <p>The purpose of this research is to identify the factors that influence corporate customers adoption of Internet banking services in Denmark, Finland, Norway and Sweden. The hypotheses are empirically evaluated by using Trade Finance customers of a Scandinavian bank as the target sample.</p> <p>Technology Acceptance Model (TAM) is the primary basis for the study. The information gathered from former studies that are mainly concentrating on private customer acts as a foundation for building an extension of TAM suitable for corporate customers.</p> <p>Due to the quantitative nature of the study, the results are analysed with statistical measures. The analysis reveals that corporate users are not motivated by the same factors as private users. In order to become Internet banking customers, it is extremely important for corporate users to have a system that is easy to use and operate with full support from the bank.</p>	
<b>Keywords:</b> Information Technology, Technology Acceptance Model, Internet Banking, Trade Finance, Case Study, Corporate Banking.	

# 1. INTRODUCTION

Introduction to the thesis explains the background and objectives of the study. Also description of the delimitations and structure are included in the first chapter.

## 1.1. Background of the study

In 11.7.2005 14.5% of the total world population (6 420 102 722) was using the Internet. This means that approximately 928 043 280 people all over the world were connected to each other. Today the situation is very different from that of a couple of years ago. In five years the amount of Internet users has been increasing by 157% (www.internetworldstats.com). These massive figures very well reflect the scope and size of this the network. There is no other channel in the whole world bringing people so close to people, people so close to business or business so close to business than the Internet.

As expected, various industries and business areas are utilizing the Internet. Apart from connectivity, there is a great amount of other prospects coming along with it. The Internet is used to augment, or even supplant, product and service delivery processes considered as more traditional. Banking is not any different from other business areas, as banking in general is extremely information-intensive. Therefore Information technology (IT) has an increasingly important role in modern banking of any kind, especially when directly accessible by the bank's customers.

Originally information technology was utilized in back offices for batch data processing, which was something not that obvious to the customers. Consumer-oriented innovations became more important during 1980-1995. This time period is called the "diffusion period of the information revolution in commercial banking" (Bátiz-Lazo and Wood, 2002). Mainly this was possible due to Personal Computers (PC's), which enabled new contacts between banks and customers. But as expected, it didn't end there. After PC's invaded homes and workplaces, customers themselves could start communicating with the bank electronically from their own PC's. The information between customers' PC's and bank's systems did not transfer on-line at

that time. Only after emerge of the Internet, banks have been able to provide real-time banking services electronically to a larger audience without a need to install anything on the customer's PC. (Bátiz-Lazo and Wood, 2002)

Not only has the Internet demanded customers to change their habits and even to learn new skills, it has also become a major challenge to banks themselves. The amount and scale of products and services offered online has grown continuously, basically providing something to everyone. Internet has also changed the nature of competition among companies providing banking and investment services. Those having more traditional look on the business are forced to change their view towards the markets. This means taking more proactive approach to providing Internet and mobile services.

Historically branches and physical distribution channels have been the very cornerstones to most banks' market success. However, the emerging electronic channels have forced banks to change their entire management approach. Much of this is thanks to the fact that geographical and time restrictions do not limit the use of banking services anymore (Karjaluo et al. 2002). As long as customers are connected to the Internet, they should be able to use the services when and where ever. The whole banking strategy has changed as a result of this; people are not dependent on the bank having branch closest to them physically, as it used to be. They can choose whichever bank offering its services online - or even several banks to serve different banking needs. This kind of development has shifted banks' attention more from marketing and selling of services and products towards building and managing customer relations.

According to the research done by Bradley et al. (2003), nearly every bank will have online services available by the year 2011. Surprisingly, they found out that small banks have benefited from the emergence of the Internet: Online services help small banks also to strengthen their competitive position. Internet is contributing to making the competition even fiercer in the future, regardless of the size of the organisation (Lüneborg and Nielsen 2003). Internet banking has also played a major role in changing the structure and amount of investments made to develop banking systems. Front-end and back-office systems are now designed to support the online service offerings. Online systems and development of the necessary infrastructure and system architecture receive majority of attention and information technology investments

today. Providing real time data, and having the customers to key in the data instead of more experienced bank officers, requires also more from the system design. Although, the investments that have been done also seem to pay off. Lüneborg et al. (2003) discovered that banks providing online services experience a significant positive impact on different performance measures: sales, market share, and amount of new established customer relationships. These are all expected to be profitable at some stage of the lifecycle.

In addition to tangible and measurable benefits brought by online banking, the more intangible ones are no less important, namely competitive advantage, customer retention and attraction. And very promising also for the banks is also that all of the abovementioned benefits eventually result in both increased revenues and reduced costs (Simpson 2002, ref. Esser 1999). On average Internet bank customers are more profitable, maintain larger balances, use more bank products, and are faster in adopting new products and services, especially when compared to customers using more traditional channels (Hitt and Frei, 2002). This may, however, have much to do with the demographics and the background of this type of customers.

Image and reputation of the bank should not be forgotten either: Internet bank offerings have a big influence on the image of the bank, as to the loyalty and satisfaction of the customer (Flavián et al. 2004, Shankar et al. 2002).

It is fairly obvious that bank managers are interested in what can be done to increase the usage of Internet banking services. Understanding customers is important in any service industry. Identifying the elements that influence customers' propensity to start using Internet banking is crucial in the process of acquiring new customers to go online, also it helps with understanding how the customers can be retained. Scandinavian banks are not any different in this respect. Nor is the small, traditional area of corporate banking used in this research, called Trade Finance, from other banking areas.

Several studies have been conducted to investigate the issue from private retail customers' point of view in several countries, from several aspects (Sudarraaj and Wu 2005, Lassar et al. 2005, Lu et al. 2005, Shih and Fang 2004, Eriksson and Kerem 2004, Akinci et al. 2004, Pikkarainen et al. 2004, Sohail and Shanmugham 2004, Devlin and

Yeung 2004, Gerrard and Cunningham 2003, Chau and Lai 2003, Liao and Cheung 2002, Karjaluoto et al. 2002, Suh and Han 2002, Liao et al. 1999, Sathye 1999). However, what are missing in this stream of research, are those studies looking at the issue from corporate customer's perspective. The only one found was a qualitative study concentrating on the barriers to Internet banking adoption in Taiwan (Rotchanakitumnuai and Speece, 2002). Trade Finance is a part of corporate banking, and this research aims to find out the factors behind the decisions of corporate customers to start using the Internet services provided by banks

In the following sections I discuss the use of Internet and Internet banking in Scandinavia. In addition I introduce Trade Finance business and products in general level, after which follows an examination of the business area and its role in Internet banking.

### **1.1.1. Use of the Internet in Scandinavia**

Use of the Internet in technologically advanced countries like Denmark, Sweden, Norway and Finland is nothing new. The support received from the officials and educational system enhances the use of Internet and leads to high penetration figures of Internet connections in households. People in Scandinavia have well accepted Internet as a part of their daily life: in Sweden only there were almost 3.2 million Internet subscribers in the country at the end of year 2002, 2.9 million of them being private individuals (Swedish Industry, 2003). Eurostat's statistics show that households in Denmark have the most connections in the European Union (56%) while the same figures for UK, Finland and Germany are 50%, 44% and 43% respectively (Tietoaika 23.01.2004). These figures suggest that in comparison, Scandinavian countries are doing well when it comes to network connections and using the Internet.

Not only individual households have been active in going online: According to Statistics Finland, in the first quarter of 2004 94% of all companies in Finland had Internet connection. This percentage has not grown much since the year 2003. However, increasing amount of companies is moving to use wideband connection to enhance their capabilities to operate online ([www.tilastokeskus.fi](http://www.tilastokeskus.fi)). The same kind of development can be seen in Sweden: By the end of year 2000, 88% of all Swedish

companies had an Internet connection (Swedish Industry, 2003). As Scandinavian countries are fairly alike, the figures suggest that the proportional amount of Internet connections in Scandinavian companies is in general very high. They also indicate that there is increasing potential in several areas where online services are or can be offered by banks.

### **1.1.2. Internet banking in Scandinavia**

Internet and banking is not a new combination to Scandinavian consumers; they are very aware of the online services available. In general the understanding is that people are very familiar with making banking transactions online, and are more than well used to the idea of conducting their banking errands through the Internet. Use of online banking has steadily been growing worldwide for the past decade, and seems to continue to do so (Sudarraj et al. 2005, ref. Wang et al. 1999).

By the mid 1990's most banks in Scandinavia introduced their services in the Internet; resulting in Scandinavian countries to be very experienced in online banking. In year 2000, 85% of 275 Nordic retail banks offered Internet banking solutions to their customers, and the amount has grown steadily ever since. According to OECD research in 2001, Scandinavia was in the lead of Internet banking usage worldwide, and the increase in the use of Internet banking has grown the fastest compared to any other countries (Kauppalehti 25.6.2001).

The Scandinavians do not only have high proportion of bank customers registered online, they also use the system. Eurostat's statistics claim that in year 2002 within the European Union (EU) banking services were most used via the Internet in the Scandinavian countries: in Finland 64%, Sweden 56%, and Denmark 51%\* of retail banking transactions were processed through the Internet (Tietoaika 23.01.2004). According to a survey made in 2005 by Instant-Answer analysis company; in Denmark 90% of bank customers are using the online services regularly. Majority of them use Internet banking at least once a week, and 75% of them carry out three out of four of their banking errands through the Internet (Berlingske Tidende, 27.06.2005).

---

\* Norway is not part of the European Union.

In Finland the percentage of electronic payments of all payments sent to the bank is currently approximately 95% (Finnish Banker's Association, 2005). Norway is not in a situation quite as good as the neighbouring countries: A survey made by TNS Gallup reveals that in Norway 55% of all bank customers are Internet bank users (Stavanger Aftenblad 15.03.2004). Furthermore, over 50% of the Swedes use Internet banking as the banking channel (Swedish Banker's Association, Dagens Industri, 24.03.2005). Swedes are also the world's most frequent users of online banking; 2.7 million (30%) of the Swedish population visited Internet bank in August 2004. (Svenska Dagbladet, 24.9.2004).

Judging from the discussion above, it seems that extra effort in favour of development of online banking services can be recommended, and by this I mean all the service areas of a bank beneficial to both the customer and the bank, and can be accessible by the customers themselves.

### **1.1.3. Trade Finance**

Trade Finance as a phrase is somewhat misleading. To those unfamiliar with this business area, it might sound to be more describing to talk about international trade. Trade Finance involves parties, usually in different countries, importing and exporting goods by using documents as the payment instrument, or using international guarantees to secure that the beneficiary party gets the payment as agreed. When trading partners make a trade agreement, they also have to agree on the payment method used. Trade Finance products are suitable for most of the occasions. These products involve documentary payments, Documentary Credits (D/C) and Collections, and International Bank Guarantees. International Chamber of Commerce (ICC) establishes all rules for Collections, D/Cs and International Bank Guarantees. Those rules are made to be followed by all the parties involved to ensure smooth and reliable trade between all the countries.

In the following section these products are presented, and the use of them described in more detail.

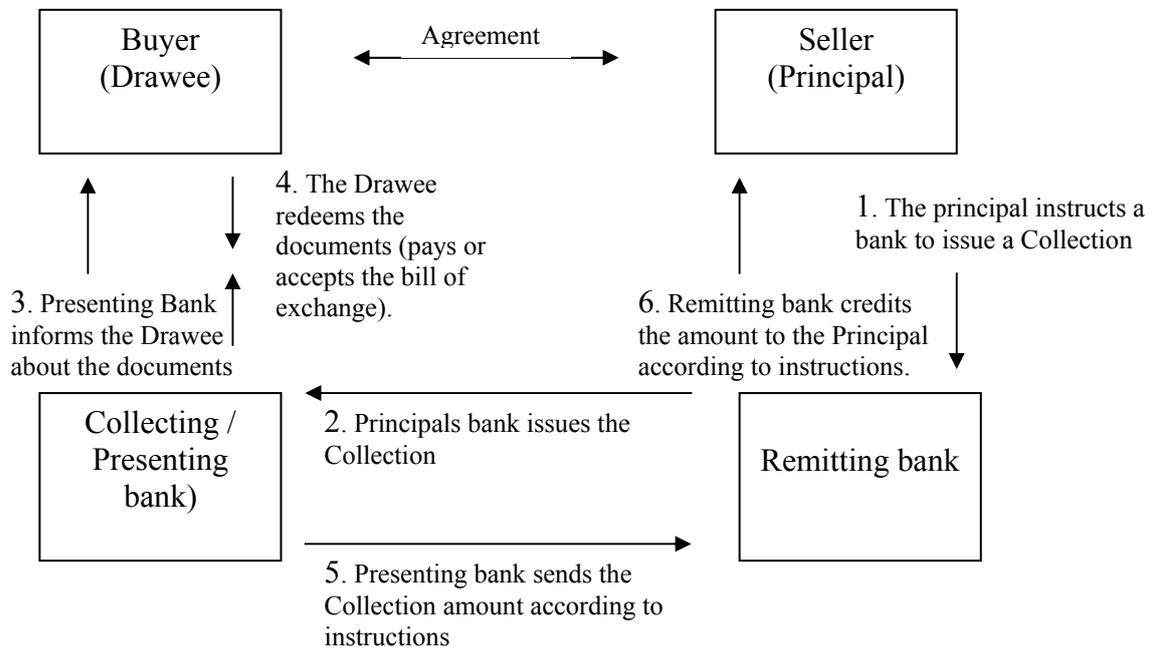
#### 1.1.3.1. Collection

Collection, also sometimes called Cash against Documents (CAD), can be used by a seller of the goods to obtain payment of a claim against a foreign buyer (in another country). This is arranged through the banks of the seller and buyer according to the instructions received. According to ICC, Collections can be divided into two categories, dependent on the documents involved: 1) Clean Collections, which involve only financial like promissory notes, bills of exchange or checks and 2) Documentary Collections, which involve also commercial documents as invoices and shipping documents.

According to the instructions received, the banks handle the documents to get a payment or acceptance or both payment and acceptance of the documents, or release the documents against payment or acceptance or both, or release the documents against some other condition. The bank is not responsible for the content of the documents in any way, and any changes made to the Collection are to be negotiated between the buyer and seller. It is in the responsibility of the parties to inform their banks accordingly. There is no financial risk for the bank involved with collections. The bank only acts as a trusted third party in handling the documents and payments.

## Figure 1. Collection

The figure below explains the process of a Documentary Collection



*For the Buyer/Collecting Bank the Collection is Import Collection and for the Seller/Remitting Bank it is Export Collection.*

(Merita 1999).

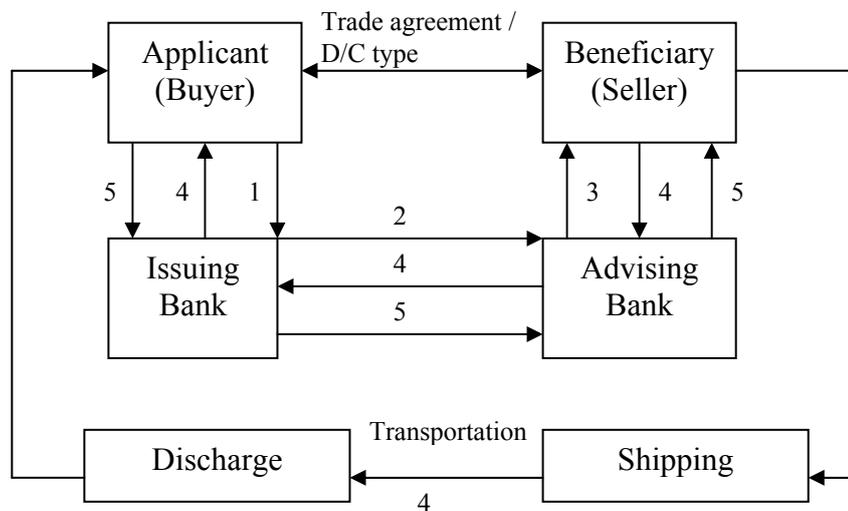
### 1.1.3.2. Documentary Credit

Documentary Credit – also called a Letter of Credit – is fairly more complicated product than a Collection. As mentioned earlier, D/Cs are mostly chosen when the trade partners do not know each other very well, or when there are big risks involved for the seller in general, e.g. unstable political situation of the buyers country, the distance between the countries is long, the amount involved is very high, unawareness of a country's trade regulations, or simply uncertainty around the buyers ability to pay. In some countries authorities require of using D/C's for some type of goods imported to the country. After establishing a permanent relationship, long time trading partners occasionally move from using D/C's to Collections, due to established working trade partnership, and to save costs. Although using a D/C is more expensive, it is safer for the seller when the buyer's bank has committed to pay when D/C terms are fulfilled.

This way the bank takes the risk if the buyer cannot pay for some reason. It also secures the timing of the delivery for the buyer. Any actions done under D/C's have to do with the documents, not with the goods or services involved. So a D/C is not an agreement between the buyer and seller, but merely a payment instrument.

**Figure 2. Documentary Credit**

The following figure is a description of a Documentary Credit process with all the involved parties.



(Merita 1999)

1. The Buyer gives the instructions to the bank to issue a D/C after making a trade agreement with the Seller
2. The Issuing Bank issues the D/C usually directly to the Seller's bank. Depending on the D/C terms, the Advising Bank can also be e.g. Confirming Bank or Negotiating Bank.
3. The Advising Bank informs the issuance of a D/C to the Seller.
4. The Seller ships the goods and presents the required documents to the bank defined in the D/C (usually the same than Advising Bank), which inspects the documents and sends them to the Issuing Bank, which also inspects the documents.
5. The D/C is paid as defined in the D/C terms, on condition that the documents are not discrepant.

There are three angles to look at the Documentary Credits: 1) *Issuing Bank's risk*. It is determined by the Irrevocability or Revocability. The Issuing bank can revoke

revocable D/C, so it is not good for the Seller, as the Issuing bank does not carry the risk of the buyer not paying. They are quite rare nowadays. 2) *Time of payment*. Sight Credit means that the D/C is paid against presentation of the documents. Time or Usance Credit stands for a D/C type in which the bank accepts a bill of exchange drawn by the Seller, or commits to a Deferred Payment. Payment to the Seller is done according to the D/C terms. 3) *Advising Bank's risk*. D/C can be Confirmed or Unconfirmed. Unconfirmed refers to a situation where the Advising Bank is not committed to the payment of the D/C.

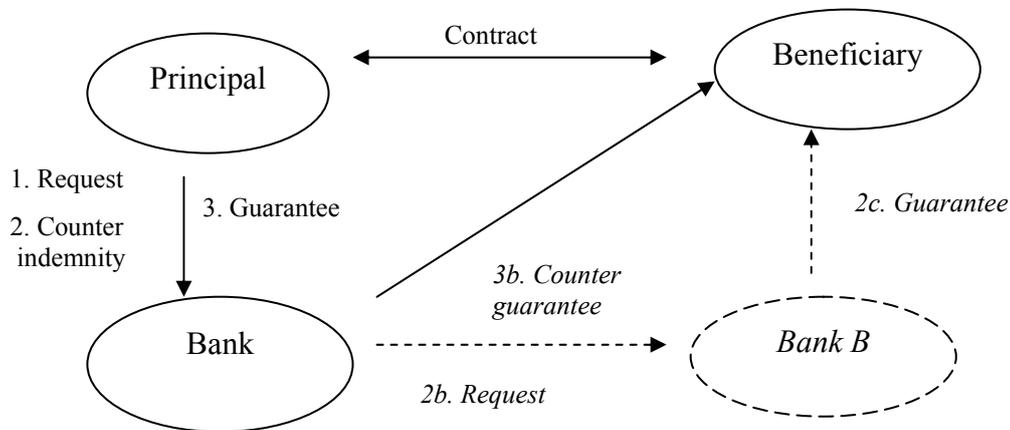
Confirmed again refers to an opposite situation. There are also D/C's for special purposes: *Transferable Credit*, which can be transferred to a second beneficiary by the request of the first beneficiary (often a subcontractor). *Back-to-back Credit* is a Transferable Credit where the Seller does not want to reveal the origin of the goods and the Buyer to each other. *Revolving Credit* is used for repeated shipments to avoid opening new D/C's every time. *Standby D/C* resembles a bank guarantee, and is often used in the United States. (Längerich 2001, Merita 1999). Despite the different types and natures of the D/C's, the basic process is the same.

#### 1.1.3.3. International Bank Guarantee

An International Bank Guarantee (guarantee in the remaining of the document) only called can be defined as a Banks commitment to pay on behalf of its customer. A guarantee is always related to a main agreement, in this context normally a Trade Agreement between trade partners in different countries. It works as a guarantee to the Seller that he/she will receive the money although the Buyer would be unable to pay.

### Figure 3. Bank Guarantee

The following figure is a description of a Bank Guarantee process with all the involved parties.



(Nordea 2001)

#### Direct Bank Guarantee

1. Principal **requests** the Bank for a bank guarantee according to written instructions
2. The Bank acting as an *issuing bank* requires the Principal to sign a **counter indemnity** before...
3. ...issuing a **guarantee** to the Beneficiary

#### Indirect Bank Guarantee

2. Principal **requests** a Bank for a bank guarantee according to written instructions
- 2b. The Bank acting as an *instructing bank* requests a corresponding Bank B to issue the guarantee (usually Beneficiary's requirement)
- 2c. The Bank B issues the **guarantee** acting as an *issuing bank*
- 3b. The Bank makes a **counter guarantee** for the issuing bank being liable for any consequences that might arise. Also in this case a **counter indemnity** from the Principal is needed.

Probably the most common guarantee type used in both domestic trade in the Nordic countries and also in international trade is *Accessory* (often translated "as of our own debt"), also called conditional guarantee, and the English terms commonly used is suretyship. Another type of a guarantee is *Independent*, which refers to a situation where the banks obligations are independent from the obligations of the principal defined in the contract. It is also called a demand guarantee because of the nature of it:

the bank is obliged to pay right away when the beneficiary of the guarantee demands the payment in accordance with the terms of the guarantee. (Nordea 2001)

#### **1.1.4. Internet banking and Trade Finance**

Trade Finance online services can work either two ways, or one way (stand-alone) depending on if the service is connected to the banks systems. Some banks provide online services for all the products, some only documentary payments or different combinations of Trade Finance services.

When talking about online Trade Finance services, two way online services mean that the communication is done interactively: providing the customer a way of taking care of their Trade Finance business electronically via the Internet, sending and receiving transactions to and from the bank. Customers can make applications electronically, meaning they can issue deals (Import D/C's, Export Collections and Outgoing Bank Guarantees) to the bank, and receive issuances of deals (Export D/C's, Import Collections and Incoming Bank Guarantees) electronically from the bank. In addition to that, they can make amendments to the deals registered in the system, receive notifications and correspondence with the bank electronically, accept documents and payments and follow the status of their deals.

Stand-alone service refers to a service that is not connected to the banks systems in any way. It merely offers the customer an electronic way of filling in applications and saving historical data on the deals.

Online services usually provide the customer also a way of collecting historical data, making reports of them and using the deal information in various ways. For example the data saved is used to support accounting and bookkeeping for controlling and following up the company cash flow, liabilities and transactions.

The aim of this study is to distinguish the factors influencing corporate customers' when they make a decision to start using Internet banking services or not. The empirical evaluation is based on Trade Finance customers and their view on a specific Internet banking service provided.

## **1.2. Objective of the study**

As well said by Davis et al. (1989) “*Computer systems cannot improve organizational performance if they aren't used.*” Although that sentence refers more to a system used within an organization to improve its internal performance, it can also be well applied to a system that customers use. Based on the assumption that the more customers use banks Internet services, the more they contribute in improving banks performance. Hence, the managers in banks are – as they should be – interested to single out what is essential to be taken into consideration when selling Internet services to the customers.

The purpose of this quantitative study is to identify the factors that influence Scandinavian corporate customers’ adoption of online banking services. The first step is to investigate the background of previous research done on the area, especially Technology Acceptance Model, as it is used as the basis for the theoretical framework of this study. The conclusion of the theory was done based on discussions with Trade Finance specialists of the case bank (referred to as the case bank in the remainder of the study). The theoretical model and hypotheses constructed to test it, is an extension to the Technology Acceptance Model.

The hypotheses are empirically tested with survey results collected from the case banks customers in Denmark, Finland, Norway and Sweden. The Internet services utilized in the research is Trade Finance Internet Services, also called TFIS in the reminder of the study.

## **1.3. Delimitations of the study**

As a background of the study I have used mainly Technology Acceptance Model related research that in general examine user acceptance of online banking solutions. Although these studies cover wide variety of countries and aspects to the topic, most of them are related to retail banking. This research is about Trade Finance services offered to corporate customers in the Internet by one bank, within Scandinavia. Despite the case study nature of the research, I believe the results of this research can be generalized to other Internet services designed for corporate customers, and especially

for Trade Finance. Despite the fact that geographical limitations of this research narrowed down the amount of countries involved to four, generalization of the results can be done also in other so called Western countries with society similar to the Scandinavian.

#### **1.4. Structure of the study**

The study begins with an introduction of the research area and background of the study. Chapter 1 introduces use of the Internet in Scandinavian Internet banking in Scandinavia, Trade Finance as a banking and business area, and finally Internet banking and it's role in Trade Finance. Furthermore, the first chapter describes the objective of the study, hence what is the purpose of the research and what are the limitations that need to be taken into account.

Chapter 2 is all about presenting previous research done on the stream of studies related to user acceptance and adoption of technology. The chapter explains the history and development of Technology Acceptance Model, and how it is used in various contexts. In more detail it deals with the user acceptance and adoption of technology related to Internet Banking, and presents the state of art of the research at the moment. The findings introduced in this chapter work as a basis for the research and development of the model and construction of the hypothesis. All of those are discussed in chapter 3.

Chapter 3 is about building the research model and constructing the hypothesis based on the previous research presented in chapter 2. This chapter concentrates on explaining each variable in the model, and reasons for choosing them be included in the research model. After presenting the model, the chapter explains the empirical part of the study. This part discusses the method for collecting data used to test the hypothesis, and it analyses the data received; its validity, reliability and generalizability.

Chapter 4 represents the empirical results of the survey, hypothesis testing, and overall analysis of the research. The results of statistical analysis, which contains regression analysis, correlation analysis, and t-tests, can also be found from chapter 4.

The last chapter, number 5 concludes the study. In this chapter I evaluate the contribution of the research findings, and the managerial implications of them. Finally I make suggestions for further research on the topic area.

References and appendixes are included in the end of the paper.

## **1.5. Summary**

I began the introduction of the study by discussing the increasing use and importance of Internet in business and banking worldwide. Then the geographical limitations of this study compelled to take a closed look at use of Internet in Scandinavia. In order to narrow down the topic area, I examined the Internet banking in Scandinavia. Finally I discussed Trade Finance business and its role in Internet banking.

The most important thing to remember is that Internet and similar technologies provide vast amount of opportunities to corporations. This is a fact acknowledged all over the world, and not the least in Scandinavia where internet usage and online banking in general are very popular.

It may seem that there is nothing to study in Scandinavian countries related to user acceptance of Internet banking services, due to the fact that almost everyone already does it. All the more reason it is interesting and important to distinguish what are the factors that would make even the rest of them to use Internet banking services. That is what this research aims to do in the context of banks Internet services for Trade Finance customers.

## **2. PREVIOUS RESEARCH**

### **2.1. Objective and structure of the chapter**

In this chapter I present the research that has been done in the area of user acceptance of technology in the context of Internet banking, as well as adoption of Internet banking. First there is a brief overview of the field in general. After that I discuss about the relevant empirical studies done about Technology Acceptance Model and Internet banking, as well as other research about adoption of Internet banking. To complete the theoretical background, studies using Technology Acceptance Model with other information systems are included. As a summary of the reviewed literature, state of the art of the research this far is analysed. Finally I discuss the major findings relevant to this study, and research limitations necessary to take into consideration.

### **2.2. Overview of the field**

User acceptance of technology has been studied repeatedly over the decades from various perspectives. The more important technology becomes as a part of our daily lives, the more companies expect their customers, suppliers and employees to be willing and able to utilize technology in various ways. It is understandable that at the same time research done in and around this subject has become more and more important. Several models describing and predicting the reasons for users accepting or rejecting a piece of technology have been created and evolved during the years. However, most of them are very much alike, and based on same pioneering findings made decades ago.

Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM) are probably the most used theories for modelling user adoption of new technology. TRA and TPB are mostly used in the studies of social psychology to study the behaviour of people. Researchers of system usage and information technology adoption have also extensively adopted them. TRA is in fact the ancestor of both TPB and TAM.

Technology Acceptance Model is an information systems theory, which is adapted from TRA. It is widely used for the purpose of predicting, explaining and enhancing common understanding of user acceptance of information technology in various areas. This research uses the findings based on TAM as the basis for the theoretical model: Also because TAM has been used in many similar studies earlier. Several extensions of TAM have been proposed and empirically validated also in studies conducted in the area of Internet banking – especially on the retail side of it. Overall, Internet banking, e-commerce and other information technology and information system adoption have been increasingly popular topics among researchers. This has been the trend over the last decade. In addition to Technology Acceptance Model, other theoretical approaches have been used to increase general understanding. As mentioned before, the theories remind very much each other. Regardless of the theory used, the researches support each other in terms of factors and determinants identified.

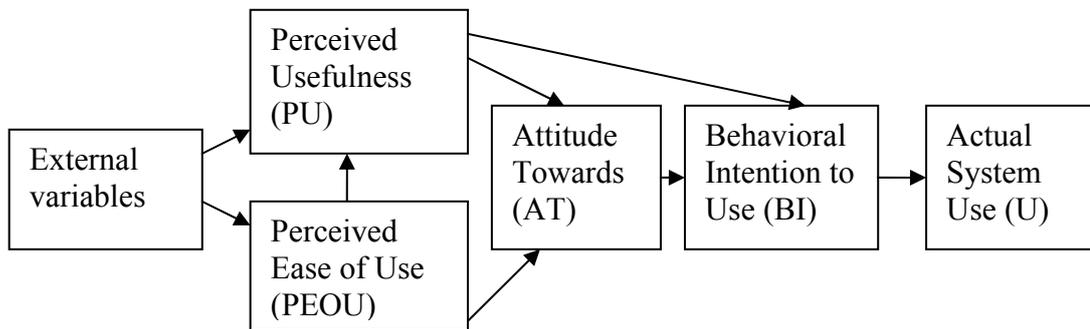
Technology Acceptance model is introduced in more detail in the following sections in order to explain the foundation for this research.

### **2.3. Technology Acceptance Model**

Technology Acceptance Model (TAM) was initially suggested by Fred Davis 1989. It is one of the most studied and used models in the investigations of user acceptance of information technology. The model is adapted from Theory of Reasoned Action (TRA), which was originally proposed by Fishbein and Ajzen in 1975. Technology Acceptance Model is an information system theory, which purpose is simply to predict and explain the user acceptance of information technology. The model addresses the reasons why users either accept or reject particular piece of information technology. The revised model by Davis et al. (1989) is constructed from external variables (external stimulus), perceived usefulness and perceived ease of use (cognitive response), behavioural intention, and actual usage (behaviour). (Davis et al. 1996)

**Figure 4. Original Technology Acceptance Model**

This figure is a description of the original TAM by Davis.



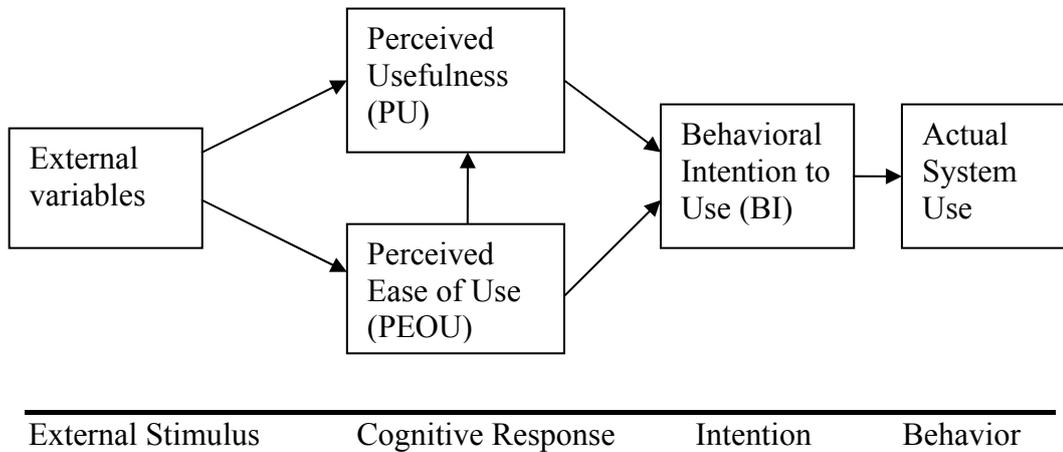
(Davis, 1989)

The fundamental idea of the theory is that perceived usefulness and perceived ease of use influence the users' intention to use information technology either directly or mediating via attitude towards the behaviour, leading to actual usage of the system. Attitude Towards (AT) and Behavioural Intention (BI) are common with the Theory of Reasoned Action. Perceived ease of use (PEOU) has a strong influence on AT through perceived usefulness, but also directly. Perceived Usefulness (PU) has a strong direct influence via both AT and BI.

PU was defined as "the degree to which a person believes that using a particular system would enhance his or hers job performance". "A system high in perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship". PEOU was described as "the degree to which a person believes that using a particular system would be free from effort". (Davis, 1989). The original TAM was revised by leaving attitude from the model, as empirical validation proved that intention to use is only partly mediated by attitude (Davis and Venkatesh. 1996<sub>1</sub>).

**Figure 5. Revised Technology Acceptance Model**

This figure is a description of the revised TAM by Davis and Venkatesh.



(Davis and Venkatesh, 1996<sub>1</sub>)

Although TAM has been found to be very good in explaining user acceptance of technology, it has been further developed. In 2000, Davis and Venkatesh extended the theory and created TAM2. “TAM2 incorporates additional theoretical constructs spanning social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use).” (Davis et al., 2000). Furthermore Venkatesh et al. (2003) created a unified model called Unified Theory of Acceptance and Use of Technology (UTAUT). They compared eight models, developed and empirically validated UTAUT, which proved to outperform all the existing models from the past.

Szajna (1996) empirically tested TAM by measuring both self-reported and actual usage in pre- and post-implementation. She found the model to be successful in predicting both. Legris et al. (2003) critically reviewed TAM by using 22 articles from 1980 to 2001. The articles were empirical studies using TAM respecting its integrity. Only few studies used all of the original variables, mainly they left out AT, which is in coherence with the revised TAM.

The limitations of the reviewed researches were related to frequent use of students as the empirical sample, examining office automation software or systems development

applications, and self-reported usage. The conclusion of the critical review was that TAM is a useful theoretical model, but it should be integrated to a model including variables from human and social change processes, as well as innovation adoption model. TAM explains normally about 40 percent of the variance in intention to use and usage behaviour, which further supports the perception of TAM's suitability in this type of research (Legris et al 2003, Pikkarainen et al. 2004).

## **2.4. Technology Acceptance Model and Internet banking**

Quite a few researchers have applied TAM when studying acceptance of Internet banking. Lai et al. (2001) even made an invariance analysis concluding that TAM is a well suitable instrument for evaluating Internet banking acceptance, but also that the suitability is independent of the respondent characteristics such as gender, age and information technology competence. The current research done about Internet banking and Technology Acceptance Model are reviewed next, presenting the major findings of them and the empirical environment.

Sudarraaj et al. (2003) used deconstructed TAM to measure the importance of usefulness and ease of use in online and telephone banking. They successfully validated the model with Canadian university students. Karjaluoto et al. (2002) built a model based on TRA and TAM, which was empirically tested with private Finnish retail bank customers. Their conclusion is, that "prior computer experience, prior technology experience, personal banking experience, reference group, and computer attitudes strongly affect attitude and behaviour towards online banking." (Karjaluoto et al. 2002)

Supporting findings were those of Lassar et al. (2005) who studied online banking adoption in the United States in the light of TAM. They concluded that the intensity of Internet usage is significantly influencing individuals' adoption of Internet banking. These findings suggest that the more experienced the consumers are in using the computers and the Internet, the more likely it is that they will start using Internet banking.

Another Finnish study investigated consumers' acceptance of online banking: Pikkarainen et al. (2004) added perceived enjoyment, information on online banking, security and privacy and quality of Internet connection to the model. Surprisingly, they found only PU and information of online banking significantly affecting use of Internet banking services in Finland. Hong Kong students were used to empirically test another modification of TAM; in this study Chau and Lai (2004) also discovered that PU could be the only major factor directly influencing the attitude towards online banking. PEOU influenced also directly, but mainly via PU. Other measured factors like alliance services, personalization and task familiarity influenced through PU, and accessibility through PEOU.

Suh and Han (2002) added trust to the original TAM model. They studied their model by empirically evaluating responses from personal customers of five major banks in South Korea and discovered trust to be a very significant determinant of user acceptance of Internet banking. Eriksson et al. (2004) made the same conclusion while studying the meaning of trust with Estonian private customers. Trust had a significant positive effect on both PEOU and PU, out of which PU appeared to be stronger in predicting the intention to use Internet banking.

Trust was handled also by Wang et al. (2003). Their research aimed on recognizing the determinants of user acceptance of Internet banking. In this research they introduced perceived credibility as a new factor to TAM, in addition to self-efficacy, perceived usefulness and perceived ease of use. The model was empirically tested by phone-interviews with Taiwanese consumers. Surprising results were found: perceived ease of use and perceived credibility were more significant than perceived usefulness in predicting the behavioural intention to use Internet banking. The surprising factor in this was, that majority of TAM related research has concluded that PU is the ruling factor over PEOU. Self-efficacy again was found to have significant effect through the three abovementioned factors.

## **2.5. Adoption of Internet banking**

Factors familiar from TAM have been used in studies based on other theories and theoretical frameworks. The research methods and results resemble each other very much. Liao and Cheung (2002) empirically measured perceived usefulness and its attributes with retail customers in Singapore. They found out that “individual expectations regarding accuracy, security, transactions speed, user friendliness, user involvement, and convenience were the most important quality attributes in the perceived usefulness of Internet based e-retail banking”.

Supporting some of the findings in Singapore, ease of use, Internet accessibility, awareness, trust and security concerns, convenience and attitude towards change were identified as main factors that affect the adoption of Internet bank services in Malaysia (Sohail and Shanmugham, 2003). Rotchanakitumnuai and Speece (2003) made a qualitative research among Thai corporate customers, which revealed that for corporations trust and security concerns were major barriers together with lack of organizational support (lack of IT resources, knowledge, management support, and training).

Akinci et al. 2004 compared users and non-users in the process of trying to identify the factors influencing adoption among sophisticated consumer segments in Turkey. They stated that non-users were not aware of all the benefits of Internet banking and did not believe in receiving adequate help for problem solving when using Internet services. The non-users preferred traditional channels because of lacking in confidence in using Internet banking and worrying about making incorrect transactions, where as the users believed quite the opposite. These problems were identified already by Sathye (1996) in Australia almost 10 years ago: difficulty in use, resistance to change, lack of awareness, and benefits of Internet banking were standing out as the obstacles for beginning to use the online services. The research results suggest that the problem of difficulty to use could be addresses by banks giving better education to the customer. According to Sathye, Customers also expect the banks to give comprehensive information on the benefits before adopting the service.

## **2.6. Research on Technology Acceptance Model in other context than Internet banking**

Igbaria and Iivari (1995) extended Technology Acceptance Model in research about the effect of self-efficacy on computer usage in Finnish companies. Their TAM incorporates self-efficacy and the determinants of it (experience and organizational support) as the factors having an impact on computer anxiety, perceived ease of use and perceived usefulness and finally the actual use of computer technology. Self-efficacy, computer experience and organizational support were proven to have significant direct effect on perceived ease of use. The results imply that “perceived ease of use plays very important role in mediating the relationships between experience, anxiety and self-efficacy and perceived usefulness.” Furthermore, “self efficacy, computer anxiety, perceived ease of use and usefulness partially mediate the effect of experience and organizational support on self-reported usage behaviour” (Igbaria and Iivari, 1995).

In line with the findings of the studies in Internet banking, Igbaria and Iivari, also stated that perceived usefulness had the biggest direct effect on actual system usage. Davis and Venkatesh (1996<sub>2</sub>) then again modelled the antecedents of perceived ease of use, concluding that one of the most important variables influencing perceived ease of use was self-efficacy.

Deriving from Iivari and others, McFarland and Hamilton (2004) studied computer anxiety, system quality, prior experience, others’ use, organizational support and task structure and their influence on computer-efficacy, perceived usefulness, and perceived ease of use and system usage. They discovered that system usage is significantly influenced by all of the abovementioned factors. They empirically tested the model with answers from users in US companies.

Yi and Hwang (2003) again studied self-efficacy, enjoyment, and learning goal orientation also in the context of TAM with university students. They used web-based class management system as the piece of technology examined. Self-efficacy appeared to directly influence the use, whereas enjoyment and learning goal orientation mediated

through self-efficacy, usefulness and ease of use. Usefulness and ease of use in turn influenced the decision to use through behavioural intention.

There are many similarities between adopting other e-commerce activities and Internet banking. In many ways the reasons for adoption or rejection are alike. Eastin (2002) examined four different e-commerce activities (shopping, banking, investing and online services) and their diffusion in the United States. The outcome was that self-efficacy, amount of internet use, perceived convenience, perceived economic advantage, and overall adoption of similar innovation positively have positive influence to the overall adoption of e-commerce. According to them, perceived risk has a negative impact, and therefore it works as a barrier to adoption of any kind of e-commerce.

Jiang et al. (2000) utilized TAM in their empirical study about user behaviour and e-commerce. Their model had five constructs: utilization of the Internet, near term consequences, facilitating conditions and experience with the Internet. They found out that the most important driving factor influencing the utilization of the Internet is prior experience. Another significant positive relationship was found between facilitating conditions and utilization of the Internet. This implies that the more familiar the users are with the Internet, and the better they feel they can get information from the sites, the more likely they are to use the Internet service in question.

## **2.7. Analyses of the state of the art**

As already mentioned before, Technology Acceptance Model is widely and successfully used in the research about adoption of Internet banking. The model has been criticized for being almost too easy to generalize to any piece of information technology. However, it can also be the strength of it, as it is fairly easy to extend the model with other theories and models. This can be seen from the amount of research in the Internet banking area. The resemblance of studies not utilizing TAM and those that are, can be easily seen. Same factors, variables and determinants are empirically tested with slightly different sample and method.

The validity and reliability of the studies is good, although many of the studies are using university students as the sample. The use of such homogenized data can lead to results that are not applicable to the entire population of the respective country, for example. On the other hand the variety of countries and continents studied is satisfying for generalizing the research outcomes, also keeping in mind that the results are similar also in those studies that are using data with more invariance. Europe, North America, Asia, Australia, and Baltic countries, developing and developed countries have been covered with results supporting each other. Thus, the research items can be used to support the building of the model for Trade Finance banking in Scandinavian countries.

## **2.8. Summary**

Technology Acceptance Model was chosen as a basis for this study. The reason for choosing it is, that the model has been successfully used in several previous researches related to retail bank customers. Additionally, similar determinants can be acknowledged to influence the user acceptance and adoption of Internet banking, whether or not these studies have been using Technology Acceptance Model as the framework.

The following seven items have been identified as common determinants of predicting the adoption of Internet banking and other type of e-commerce or information systems, and therefore selected for closer investigation in this research:

<b>Perceived Usefulness</b>	“The degree to which a person believes that using a particular system would enhance his or hers job performance” (Davis, 1989)
<b>Perceived Ease of Use</b>	"The degree to which a person believes that using a particular system would be free from effort". (Davis, 1989)
<b>Self Efficacy</b>	A person’s estimate of his/her ability to cope with using a particular system.
<b>Previous Experience</b>	Prior experience with similar technology.
<b>Organizational Support</b>	The importance of support the customer receives from his own organisation.

**Bank Support**     The importance of support the customer receives from the vendor, in this case a bank.

**Awareness**        The level of awareness about the particular system and using it.

The reviewed literature works as a good basis in developing a model to measure the factors that influence Scandinavian corporate customers and their decision on whether or not to use the bank's Internet services.

The following chapter introduces the model, which includes presenting the chosen factors and their occurrence in the previous literature, as well as construction of the hypotheses to be tested in order to validate the model.

### **3. RESEARCH MODEL, HYPOTHESES, METHOD AND DATA**

#### **3.1. Objective and structure of the chapter**

This chapter is about building the research model and hypotheses construction. It also describes the method and data used in the empirical validation of the model. The model is built upon the foundation derived from previous studies and research literature reviewed in the chapter 2.

#### **3.2. Development of the hypotheses and model**

As mentioned before, the foundation of the theoretical framework used in this research is Technology Acceptance Model – extended with findings from other researches. The following section introduces the model and variables chosen to be included. Furthermore, the hypotheses required to test the model are set as assumptions of the model.

The variables picked from the previous research are perceived usefulness, perceived ease of use, self-efficacy, organizational support, bank support and awareness. The reason why these were chosen is based on the fact that they were mentioned in most of the studies several times. They have been measured and successfully examined in different contexts than Internet banking. In addition the discussions with Trade Finance specialists implied that these factors are most likely to have an impact on the customers.

The variables, their descriptions and supporting studies are presented in the following table 1.

**Table 1. Model variables and previous studies supporting use of the variables in the model.**

<b>VARIABLES</b>	<b>DESCRIPTION</b>	<b>PREVIOUS STUDIES</b>
Perceived Usefulness	The level of usefulness attached to using Trade Finance Internet Services, and how much does it contribute to ones job performance. The impact of perceived usefulness on using the system.	Davis (1989), Davis and Venkatesh (1996 <sub>1</sub> )
Perceived Ease of Use	Easiness of using Trade Finance Internet Services in making banking transactions, and what is the effect of it in actual usage of the system.	Davis (1989), Davis and Venkatesh (1996 <sub>1</sub> )
Self Efficacy	Level of confidence when starting to use/using Trade Finance Internet Services, and how big impact does it have on the actual usage of the system	Igbaria and Iivari (1995), Davis and Venkatesh (1996 <sub>2</sub> ), Eastin (2002), Yi and Hwang (2003), McFarland and Hamilton (2004)
Previous Experience	Prior experience in Internet banking and other internet services, and how much do they influence actual usage of the system	Igbaria and Iivari (1995), Davis and Venkatesh (1996), Eastin (2002), Jiang et al. (2002), Karjaluo et al. (2002), Chau and Lai (2003), McFarland and Hamilton (2004), Lassar et al. (2005),
Organizational Support	The importance of support the customer receives from his own organisation. Technical and non-technical considered separately.	Igbaria and Iivari (1995), Rotchanakitumnuai and Speece (2002), McFarland and Hamilton (2004), Akinci et al. (2004)
Bank Support	The importance of support the customer receives from the bank. Technical and non-technical considered separately.	Sathye (1996), Akinci et al. (2004)
Awareness	The level of awareness about the system, and how much does it influence actual usage of the system.	Sathye (1996), Sohail and Shanmughan (2003), Pikkarainen et al. (2004)

### **3.2.1. Perceived Usefulness**

If a user holds a belief that an application can enhance ones job performance, then that application is perceived to be useful. This idea was initially introduced in the Technology Acceptance Model by Davis (1989), and is derived directly from the model. As already stated in chapter two, this factor has been tested and validated by various researchers in different contexts.

For a corporate user this means how useful does the user find the overall idea of using the application, and how much it is found to contribute to ones overall job performance and efficiency. Based on formerly conducted researches and their results, the more useful the system is seen, the more likely it is be that the system is also being used. In accordance with that statement, the first hypothesis is:

***H1: Perceived Usefulness positively influences use of Trade Finance Internet Services***

### **3.2.2. Perceived Ease of Use**

Perceived Ease of Use is also derived from the Davis's model (1989). It is the very essential piece in Technology Acceptance Model "Perceived ease of use (EOU) refers to the degree to which the prospective user expects the target system to be free of effort." (Davis et al 1989) Perceived ease of use means the users perception of the level of easiness to use the system. The more difficult the system is to use or learn to use, the less likely it is the system is used as extensively as would be desirable, or that it will be started to use in general.

If an online service is found to be very difficult and cumbersome to use, the customer is very likely to do the transactions in more traditional way – in Trade Finance business it means sending the application, payment instruction or what have you, to the bank by paper. Thus, the second hypothesis is:

*H2: Perceived Ease of Use positively influences use of Trade Finance Internet Services*

### **3.2.3. Self-efficacy**

Self-efficacy refers to the level of confidence a person has on oneself. Some people may be very confident about themselves just because that is their nature, where as others who are competent in something and should feel confident about doing it, actually don't. Previous experience, ability to learn and adopt new information, willingness to just try out new things probably influence individuals self-efficacy in many situations.

The fourth hypothesis is based on the assumption that the more the user trusts on his ability to use the system, the more likely it is that the person starts using it in his work. This assumption can be done also for Trade Finance Internet Services.

*H3: Self-efficacy positively influences use of Trade Finance Internet Services*

### **3.2.4. Previous Experience**

The more a user has experience with similar things, the more confident one should feel about starting or doing something alike. This applies to computers, Internet services, and systems in general as well. The more a person has experience in Internet services or other banking systems in the Internet, the more likely he/she is to start using a system also at work in favour of the company. Hence, the fourth hypothesis is:

*H4: Previous experience positively influences use of Trade Finance Internet Services*

### **3.2.5. Organizational Support**

It is more or less common sense that the environment where we are influences us. Just as well everyone knows how much work environment can enhance or worsen ones job performance. Organizational regulations, guides, policies, organizational environment and availability of different kind of support by managers and colleagues together make

the work environment as it is. The more support the organization provides to an employee to perform his or her job, the more likely that person is to succeed in the job even better. Using a computer or information system is not different from other tasks; perhaps in that case support from others in the organisation is even more desirable.

The fifth hypothesis to be tested in this study follows this line of thought also with corporate online banking services, as Trade Finance Internet Services:

***H5: Organizational support positively influences use of Trade Finance Internet Services***

### **3.2.6. Bank Support**

Support by the bank can be thought as support from the software vendor, as it is software used to conduct banking transactions. Guidance, training, and providing help desk or contact persons for problematic situations, or just for helping out the users are part of the role of any software or application provider. Although bank as an institution is different from a real traditional IT company, in this case customers expect to receive the first line help from the bank - very much in the same form as from a system or application vendor.

The more the bank is able to support and give guidance in using their Internet services, the more likely it is that the system is used. Based on the above reasoning, hypothesis six is as follows:

***H6: Bank support positively influences use of Trade Finance Internet Services***

### **3.2.7. Awareness**

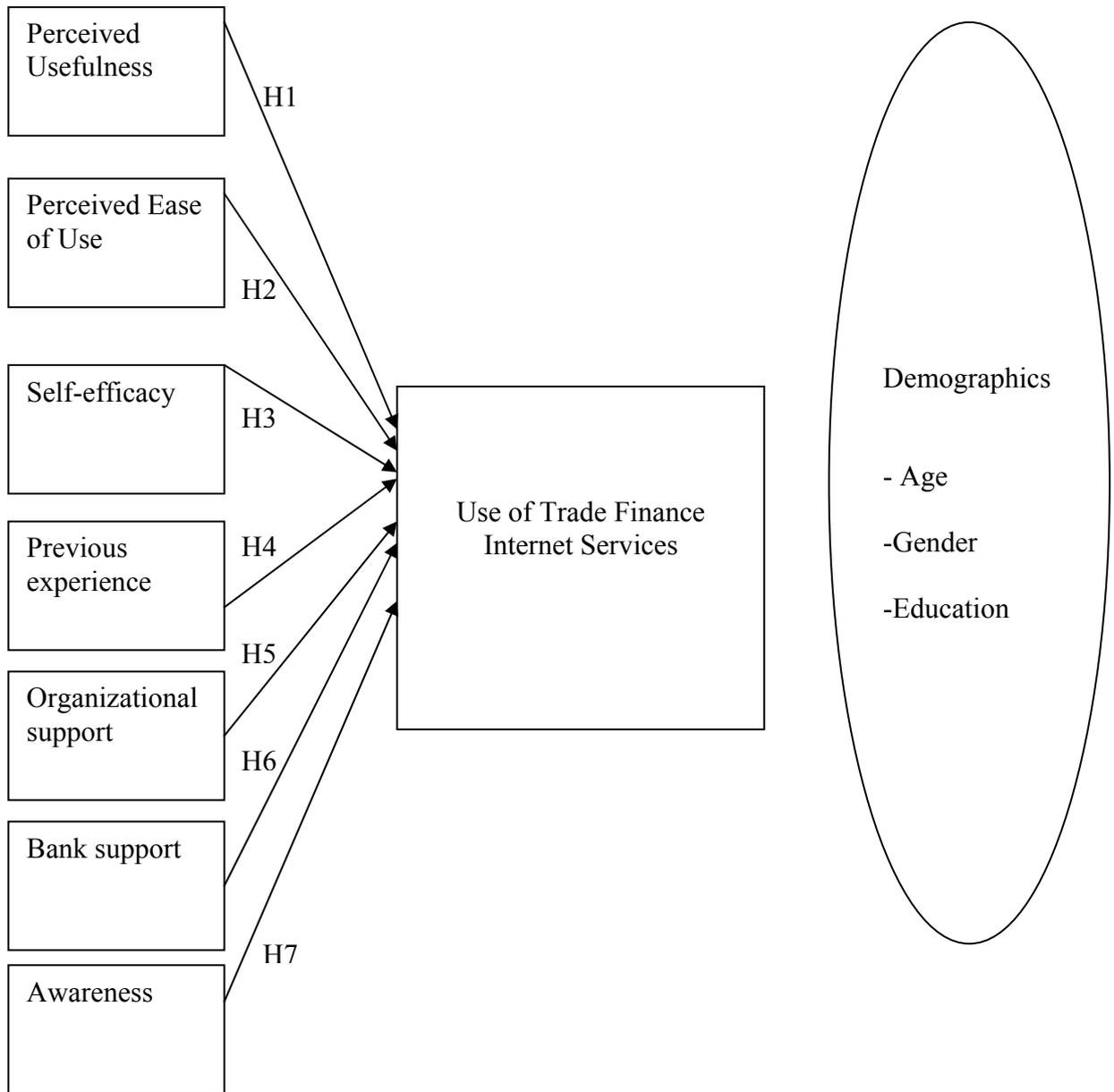
Presumably we all know how it is to start doing things that we are not familiar with, or we do not know too much about. In my mind, the more information and knowledge we have about what we are doing or about to do with a specific piece of technology, the more likely it is that we are willing to use it. This is also among the repeated findings of previous

researchers that have studied this area. Based on the previous statements, the last hypothesis is:

***H7: Awareness positively influences use of Trade Finance Internet Services***

The following figure (figure 6) is the research model, supported by the abovementioned seven hypotheses.

**Figure 6. The Research Model**



### **3.3. Method**

Quantitative analysis was chosen to test the research model, as it is good for measuring how many and in what proportion. In addition, with statistically reliable quantitative research it is possible to generalize the results: if the same questions are asked from different people with the same characteristics, the answers should support the outcome of the study.

The method for collecting empirical data for the statistical analysis was customer survey. Questionnaires were sent out to randomly selected Trade Finance customers of the case bank in Denmark, Finland, Norway and Sweden. The questionnaires were developed together with this banks best Trade Finance specialists. With the help of the expertise of these specialists, the questionnaire content and validity of the questions were confirmed to facilitate achieving the goal of the study in the best possible way. In addition the questionnaires contained questions outside of this research, mainly related to customer service and open-ended comments. The responses to those questions are used for further analysis only for the case bank's purposes.

The questionnaire is divided into 3 parts: Part 1 handles demographics and data related to user background and usage of the system in general. In part 2 the Likert 5 scale closed end questions were included for testing the hypothesis. Part 3 contains open questions for the customers to express their thoughts with free text.

The Likert 5 scaling selected for this research is a one-dimensional scaling method. This scale was chosen because it has been widely used in previous researches, and is often used for testing hypothesis, or scoring records. Both of those methods are used in analysing the results. Therefore I decided to use Likert scale from 1 to 5 for the questions in part 2 designed for hypothesis testing. The following scale was applied in the survey:

1. = totally disagree
2. = disagree
3. = undecided
4. = agree
5. = totally agree
0. = no opinion

Those questions with answer 0 were excluded from the statistical analysis. This decision is based on the notion that 0 refers to no opinion at all, and therefore cannot be taken into consideration when scaling the results.

The questionnaire was translated from English (appendix 1) to local languages (Danish, Finnish, Norwegian and Swedish). Informative cover letters also in local language were included in the mails with pre-paid return envelopes. The questionnaires were sent to all customers by mail in the beginning of November in 2005. The responses were received by mail during the following 3-4 weeks in late November and beginning of December 2005.

The survey questions and their relation to the hypotheses are presented in the table below.

**Table 2. Questionnaire questions for hypothesis testing**

<b>FACTOR</b>	<b>VARIABLE</b>	<b>HYPOTHESIS</b>	<b>SURVEY QUESTION</b>
<i>Perceived usefulness</i>	PU	H1	I find / I think I would find TFIS useful in conducting Trade Finance banking transactions
<i>Perceived ease of use</i>	PEOU_1	H2	a) I find / I think I would find it easy to do what I want to in TFIS
	PEOU_2	H2	b) I find / I think I would find TFIS easy to use
<i>Self efficacy</i>	SEF	H3	I feel confident about using / starting to use TFIS
<i>Awareness</i>	AWE	H7	I think I am well aware of issues related to using TFIS
<i>Previous experience</i>	EXP_1	H4	a) I am experienced in using other Internet bank services
	EXP_2	H4	b) I am experienced in using other Internet services, e.g. booking tickets, ordering goods or buying with credit card
<i>Organizational support</i>	OSU_1	H5	a) It is / would be important for me to have someone else in my organization to help out in case of non-technical* problems with TFIS
	OSU_2	H5	b) It is / would be important for me to have someone else in my organization to help out in case of technical** problems with TFIS
<i>Bank support</i>	BSU_1	H6	a) It is / would be important for me to have someone to help out in the bank in case of non-technical* problems with TFIS
	BSU_2	H6	b) It is / would be important for me to have someone to help out in the bank in case of technical** problems with TFIS

\* Non-Technical problem could be for example creating a template, finding a deal via Inquiry, etc)

\*\*Technical problem could be for example getting an error message or being logged out in the middle of a transaction

### 3.4. Description of data

In total 472 customers were included in the survey, of which 137 (29 %) replied. 19 responses were disqualified due to missing answers. In total the response rate for the survey was 25%. Proportionally Danes were most active in answering, resulting in 47 % response rate. All of the returned answers were qualified in the research. The second best result was achieved in Finland (35 %) with the most answers qualified (55, response rate 33%). The answers received in Sweden and Norway reached only somewhat over 20% response rate, resulting in less than 20 % of qualified answers (14 % and 17 %). However, the amount of individual answers included in Denmark and Sweden was almost the same, 24 and 25 respectively. In Norway only 14 answers were qualified to be included in the survey.

The final sample size of the analysis is 118 out of which Norway covers 11,86%, Finland 46 %, Sweden 21 %, and Denmark 20%. 107 of the sample are users of the system, while only 11 represent non-users. From Denmark only users of the system responded to the survey, which makes the result analysing somewhat difficult for Danish respondents, as non-users are missing from the sample. Table 3 contains the response statistics per country.

**Table 3. Response statistics per country**

<b>NATION</b>	<b>Sent</b>	<b>Received</b>	<b>%</b>	<b>Valid</b>	<b>%</b>
<b>Norway</b>	81	17	20.99	14	17.28
<b>Finland</b>	166	58	34.94	55	33.13
<b>Sweden</b>	174	38	21.84	25	14.37
<b>Denmark</b>	51	24	47.06	24	47.06
<b>Total</b>	472	137	29.03	118	25

### 3.5. Respondent background

The demographics taken into account in this research are gender, age and level of education. The effect of these demographics to the model and different variables are individually analysed in the results. The analysis of the respondents and their demographics are discussed in more detailed in the following sections.

Most of the answers included all demographic and background data used in this research. Sweden two of the answers qualified to the research was missing education information, and in Denmark one respondent did not reveal either age or education. Norwegian and Finnish answers included all the data demographics data requested in the questionnaire. (Table 4)

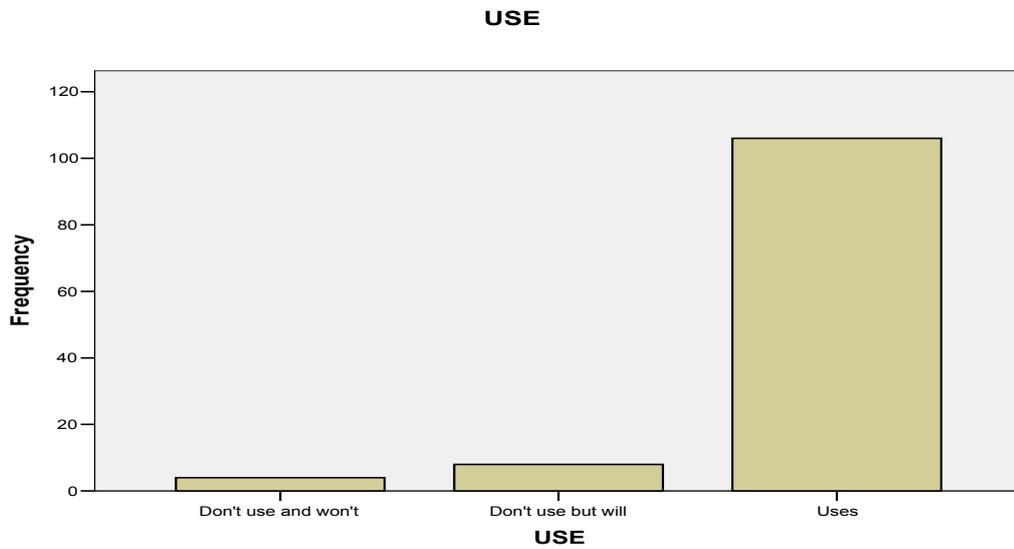
**Table 4. Valid responses for the demographics**

<b>NATION</b>			<b>GENDER</b>	<b>AGESCALE</b>	<b>EDUCAT</b>
Norway	N	Valid	14	14	14
		Missing	0	0	0
Finland	N	Valid	55	55	55
		Missing	0	0	0
Sweden	N	Valid	25	25	23
		Missing	0	0	2
Denmark	N	Valid	24	23	23
		Missing	0	1	1

#### 3.5.1. Use of the system

Most of the responses came from users of the system (90%). Customers, who do not currently use the system, but reported that they will in the future cover 7%. Only 3% of all responses came from customers who do not use the system, and do not intend to. All Danish customers were users of the system, and also in Finland only one of the responses came from a non-user. The most non-users were registered from Norway (36%). This can probably be explained by the distinct difference in TFIS between Norway and the other countries.

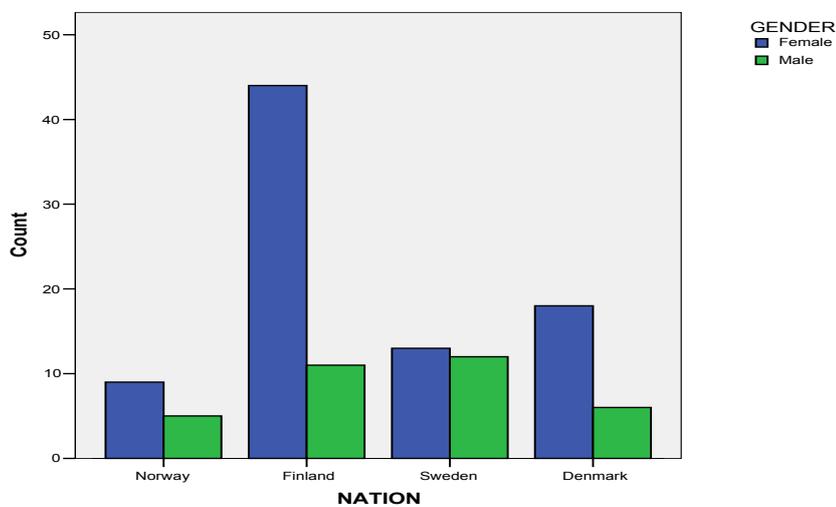
**Figure 7. User statistics**



### 3.5.2. Gender

Majority of the respondents were females 71% (84) and 29 % (34) males. In Finland (44 vs. 11) and Denmark (18 vs. 6) the division is clearest, in Norway only slightly more females (9 vs. 5). In Sweden both genders are most equally represented (13 vs. 12). This is most likely an indication of the division of gender in units taking care of Trade Finance in companies' in general. (Figure 8)

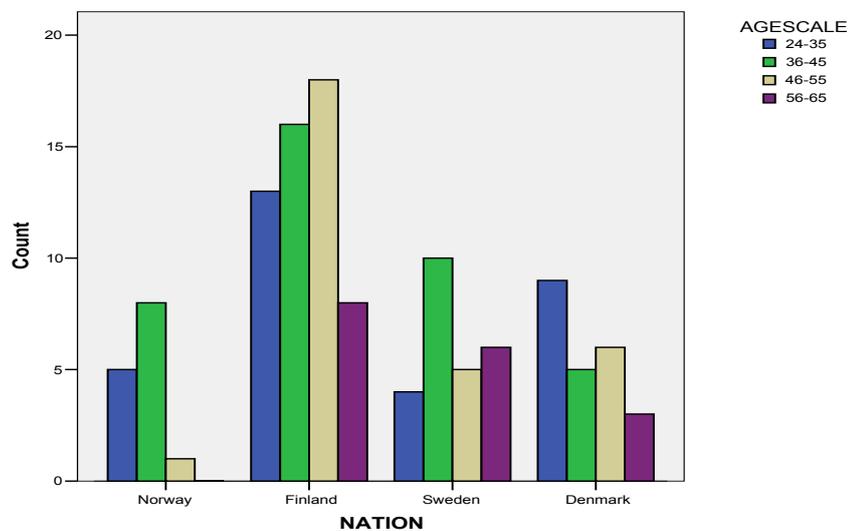
**Figure 8. Gender Statistics per country**



### 3.5.3. Age

The age division of the total sample is more or less expected. Youngest to answer were at age of 24, and the oldest 62 years. Average age of the respondents is approximately 42 years. Out of the sample 60% is covered with customers between 24 and 45 years of age. Proportionally the youngest respondents come from Norway and the oldest from Finland and Sweden (Figure 9)

**Figure 9. Age statistics per country**

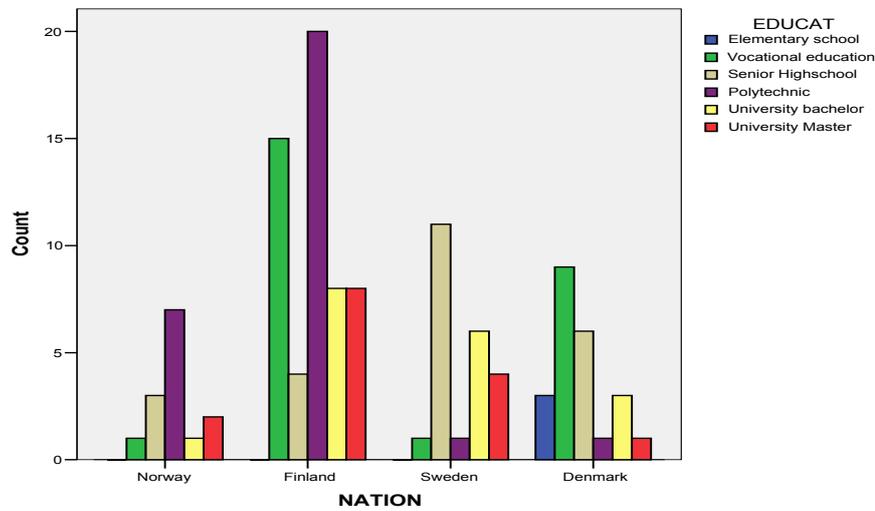


### 3.5.4. Education

Responses were received from customers with various education levels, from elementary school to University Masters. 85% of the respondents have received as the highest level of education a vocational education or graduated from senior high school or polytechnic school. Only 2,5% have an elementary school level education, where as almost 29% posses a university degree. (Figure 10)

Proportionally the respondents with highest degree of education are located in Sweden. In other countries except Denmark all the customers had educated themselves also after elementary school. Three of the respondents did not report their education level

**Figure 10. Education statistics per country**



### 3.6. Validity, reliability, generalizability

The sample companies chosen were randomly selected, and due to this randomness they represent various company sizes and industries. Therefore the results can be generalized to reflect the Scandinavian companies doing export and import. Although the customers were selected among Danish, Finnish, Swedish and Norwegian Trade finance customers of the case bank, they can and do use the services also from other banks, which was obvious from couple of the answers. It is somewhat common that the customers have some part of their business in another bank, and other set of services from another bank. One of the reasons why it is very important for the bank managers to understand how the customers think to be able to compete in the best possible way.

Although the questionnaires in each country were sent out in local language, they were all based on the English questionnaire, and therefore fundamentally the same. This applies also to the cover letters that were attached to the questionnaire, explaining to the customers the nature of the research and its purpose. Thus, all the respondents received the same questionnaire with same data content, in the same format via post mail.

Both males and females are represented, though majority of the responses were received from females. It is highly likely that this reflects the division of gender among personnel taking care of import and export in companies. Responses were received from all the four countries, although Finnish customers are in dominating position compared to the others, especially Norwegian.

Testing the questionnaires prior to sending them to the elected sample ensured internal validity of the study. The testing was done so, that the questionnaires were reviewed and tested by personnel taking care of customer relations in Trade Finance, and the marketing and communications responsible in Trade and Project Finance. This ensured that the questions asked concentrated on things essential to the survey. This also ensured that the right questions with proper ingredients were asked. This increases the reliability of answers and their consistency throughout the survey questionnaires. The questions were also checked against a set of questions used in similar researches done previously (Davis 1989, Venkatesh & Davis 1996, Davis et al, 2000)

Due to the abovementioned it is concluded that the answers can be generalized to represent corporate banking – especially Trade Finance – customers in Scandinavia, and are valid for the purpose of this study.

### **3.7. Summary**

Response rate of the survey reached a satisfactory level (29%). After disqualifying answers with missing data, the final response rate ended up to be 25. Majority of the sample represent thoughts of Finnish customers; they cover almost half of the answers. Approximately 11% of the responses came from Norway, Danes and Swedes equally dividing the remaining part. Females were more active in answering, or simply they are majority in Trade Finance compared to males. All ages and education levels were well represented.

The validity and reliability of the answers was found to be good. This is mainly due to the variety of backgrounds among respondents and good coverage of the whole Scandinavia.

The sample data provides good basis for analysing the empirical results, which are represented in the following chapter.

## **4. EMPIRICAL RESULTS**

### **4.1. Objective and structure of the chapter**

The purpose of this chapter is to present the method for analysing the empirical results, test the hypothesis set for validating the model built in chapter 3, and evaluate the validity, reliability and generalizability of the results.

Each hypothesis is tested and analysed individually, also taking into account the background and demographics of the respondents.

### **4.2. Analysing method**

The analysis was done with a system designed for statistical analyses (SPSS). Descriptive statistics and regression analysis, completed with Pearson product-moment correlation analysis, were selected as the methods for interpreting and analysing the empirical data. With the help of these statistical measures, the validity of the theoretical model and hypothesis are tested.

Regression analysis was chosen, for it fits well for hypotheses testing and analysing how independent variables can be used to predict a dependent variable. Linear regression is based on correlation between the variables, in this case Pearson product-moment correlation, but it enables more detailed and sophisticated examination of the interrelationship of the variables. As David Stockburger says: *“Regression models are powerful tools for predicting a score based on some other score. They involve a linear transformation of the predictor variable into the predicted variable. The parameters of the linear transformation are selected such that the least squares criterion is met, resulting in an “optimal” model. The model can then be used in the future to predict either exact scores, called point estimates, or intervals of scores, called interval estimates”* (Stockburger, 1998)

Fitness of the model built for this study is examined by this kind of standard regression analysis. The analysis shows how much of the total variance in the dependent variable

(use of the system) is possible to explain by the independent variables; perceived usefulness, perceived ease of use, self-efficacy, previous experience, awareness, organisational support, and banks support. (Pallant, 2001)

Analysis called ANOVA is conducted in order to determine the statistical significance of the correlations between the selected variables. The p-value of the F-test indicates the level of in the model. When the significance p-value is less than 0.05, it means there is a statistically significant association between the dependent and independent variables. P-value 0.10 refers to weakly significant association. If the p-value is more than 0.10, then the model chosen is not statistically significant.

The Pearson product-moment correlation was added to conclude the regression analysis. The idea for the use of this correlation measure is to find out how much the dependent variables selected (PU, PEOU\_1, PEOU\_2, SEF, AWE, EXP\_1, EXP\_1, OSU\_1, OSU\_2, BSU\_1 and BSU\_2) correlate with actual use of the system, and what are their relationships. Also the regression analysis correlations are based on Pearson product-moment correlation. In addition to the automatic 2-tailed significance indicator selected for the analysis, the rules for determining the strength of the relationship applied are as presented in table 5:

**Table 5. Strength of relationship based on Pearson correlation**

<b>Pearson correlation</b>	<b>Relationship</b>
0.10 to 0.29 or -0.10 to -0.29	Small
0.30 to 0.49 or -0.30 to -0.49	Medium
0.50 to 1.0 or -0.50 to -1.0	Large

*Note, that the negative sign is only referring to the direction of the relationship, not the strength of the relationship. (Pallant, 2001 ref. Cohen, 1988)*

### 4.3. Regression and Pearson product-moment correlation analysis

The linear regression analysis of the original model reveals that the R-square of the model is 0.128. This means the model explains 12.8% of the variance in the dependent variable, actual use of the system (table 6). This is not very much; meaning the fitness of the model in explaining use of the system is not high. The model is not statistically significant either, as the p-value for the model is 0.298. That is above the limit for statistical significance limit (table 7), which is 0.10 for weak significance and 0.05 for significance.

**Table 6. Regression analysis summary of for the Research Model**

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
0.358	0.128	0.021	0.287

**Table 7. ANOVA for the Research model**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	1.091	11	0.099	1.202	0.298

Table 8 contains the values for standardized coefficients of regression analysis made for the research model.

**Table 8. Standardized Coefficients of the research model**

<b>Hypothesis</b>	<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Result</b>
H1: Perceived Usefulness positively influences use of Trade Finance Internet Services	<b>PU</b>	0.029	0.811	Rejected
H2: Perceived Ease of Use positively influences use of Trade Finance Internet Services	<b>PEOU_1</b>	0.023	0.900	Rejected
H2	<b>PEOU_2</b>	0.253	0.114	Rejected
H3: Self-Efficacy positively influences use of Trade Finance Internet Services	<b>SEF</b>	-0.250	0.114	Rejected
H4: Previous Experience positively	<b>EXP_1</b>	-0.083	0.442	Rejected

influences use of Trade Finance Internet Services				
H4	<b>EXP_2</b>	0.117	0.289	Rejected
H5: Organisational Support positively influences use of Trade Finance Internet Services	<b>OSU_1</b>	0.068	0.623	Rejected
H5	<b>OSU_2</b>	-0.034	0.804	Rejected
H6: Bank Support positively influences use of Trade Finance Internet Services	<b>BSU_1</b>	0.059	0.647	Rejected
H6	<b>BSU_2</b>	0.168	0.197	Rejected
H7: Awareness positively influences use of Trade Finance Internet Services	<b>AWE</b>	0.002	0.990	Rejected

As can be concluded from the table 8 above, according to the regression analysis, each of the hypotheses is rejected. Therefore I decided to include different analysis: In addition to regression analysis, Pearson product-moment correlation analysis was conducted to each of the variables in order to examine the relationships in more detail. Each item and variable is analysed with both of the results. In addition to regression and correlation analysis, differences between ages, genders, and education levels are analysed with t-tests.

Several of the items correlated significantly with each other, suggesting that some variables influence on actual usage of the system through another variable, or in general to another independent variable. In table 9 Pearson product-moment correlations are shown for between each of the independent variables, and the dependent variable, use.

**Table 9. Pearson product-moment correlations item by item**

	<b>USER</b>	<b>PU</b>	<b>PEOU_1</b>	<b>PEOU_2</b>	<b>SEF</b>	<b>AWE</b>	<b>EXP_1</b>	<b>EXP_2</b>	<b>OSU_1</b>	<b>OSU_2</b>	<b>BSU_1</b>	<b>BSU_2</b>
<b>USER</b>	1,000	0.060	0.176	0.236	-0.013	0.001	-0.104	0.094	-0.065	-0.073	0.343	0.405
<b>PU</b>	0.060	1,000	0.562	0.359	0.354	0.209	0.035	0.051	-0.055	-0.04	0.084	0.123
<b>PEOU_1</b>	0.176	0.562	1,000	0.763	0.647	0.516	0.026	0.107	-0.237	-0.172	0.096	0.153
<b>PEOU_2</b>	0,236	0.359	0.763	1,000	0.581	0.46	0.034	0.055	-0.271	-0.261	0.036	0.100
<b>SEF</b>	-0.013	0.354	0.647	0.581	1,000	0.624	0.032	0.218	-0.262	-0.104	-0.014	0.026
<b>AWE</b>	0.001	0.209	0.516	0.460	0.624	1,000	0.096	0.167	-0.139	-0.058	0.033	0.106
<b>EXP_1</b>	-0.104	0.035	0.026	0.034	0.032	0.096	1,000	0.305	0.003	-0.061	-0.022	-0.065
<b>EXP_2</b>	0.094	0.051	0.107	0.055	0.218	0.167	0.305	1,000	-0.016	0,000	0.128	0.101
<b>OSU_1</b>	-0.065	-0.055	-0.237	-0.271	-0.262	-0.139	0.003	-0.016	1,000	0.687	0,000	-0.017
<b>OSU_2</b>	-0.073	-0.040	-0.172	-0.261	-0.104	-0.058	-0.061	0,000	0.687	1,000	0.085	-0.001
<b>BSU_1</b>	0.343	0.084	0.096	0.036	-0.014	0.033	-0.022	0.128	0,000	0.085	1,000	0.685
<b>BSU_2</b>	0.405	0.123	0.153	0.100	0.026	0.106	-0.065	0.101	-0.017	-0.001	0.685	1,000

As we can see from the table and figure above, 2 independent factors out of 7 prove to be significantly influencing corporate customers' use of banks Internet services. Those two are Perceived Ease of Use and Bank Support.

Each of the variables and their importance for use of the system are analysed and discussed in more detailed in the following chapters concerning hypothesis testing.

#### 4.3.1. Test of hypothesis 1

The first hypothesis *Perceived Usefulness positively influences use of Trade Finance Internet Services* was based on the assumption, that the more useful the potential user experience the system or service, the more likely it is that he starts using the system. No statistically significant relationship is discovered in either regression analysis (coefficient p-value=0.811) or Pearson correlation analysis (p-value 0.525). Following the applied scale of measuring the strength of the relationship, it is less than small in this case. Hence the hypothesis 1 is not supported by the empirical results of either. The correlation figures between Perceived Usefulness and Use of the system, mean and standard deviation are presented in table 10.

**Table 10. USE - PU Correlations, Mean and Standard Deviation**

USE	PU
Pearson Correlation	0.06
Sig. (2-tailed)	0.525
N	113
Mean	4.26
Std. Deviation	0.874

#### 4.3.2. Test of hypothesis 2

The second proposal, *Perceived Ease of Use positively influences use of Trade Finance Internet Services*, suggests that the easier the customer experiences using the system, the propensity for him to use or start using the system is positively influenced.

As we can see from the table 10. according to the Pearson product-moment correlation the empirical evidence of this study supports the second hypothesis, although regression analysis rejected it (table 8).

Perceived Ease of Use as a factor in trying to understand ones propensity to use TFIS is significant. There are two variables used to measure the Perceived Ease of Use. Both of them show that there is a positive correlation between PEOU and actual usage of the system. PEOU\_1 Pearson product-moment correlation is 0.176, which is statistically significant (p-value=0.06). The correlation figure for PEOU\_2 is 0.236, which means the relationship is statistically significant. Judging by these results, the hypothesis 2 is supported by Pearson correlation analysis. There is a statistically significant relationship between USE and PEOU.

Table 11 contains the correlation figures between Perceived Ease of Use and Use of the system, together with mean and standard deviation.

**Table 11. USE – PEOU Correlations, Mean and Standard Deviation**

USE	PEOU 1	PEOU 2
Pearson Correlation	0.176	0.236
Sig. (2-tailed)	0.06	0.011
N	115	115
Mean	3.94	3.95
Std. Deviation	0.91	0.897

#### 4.3.3. Test of hypothesis 3

Hypothesis three *Self-efficacy positively influences use of Trade Finance Internet Services* was based on the assumption that the more confident one feels about the idea of using or starting to use the system, the more positively it influences the actual usage. This proposal was not supported by the analysis. As can be seen from table 11, the Pearson product moment correlation value is negative, as well as is the beta of the regression coefficient (-0.25). This means, that the results suggest that the more self-confident a user is, the more likely it is that he does not use the system. However, this finding is not statistically significant.

Use and Self-Efficacy correlations, mean and standard deviation can be seen from the table 12 below.

**Table 12. USE – SEF Correlations, Mean and Standard Deviation**

USE	SEF
Pearson Correlation	-0.013
Sig. (2-tailed)	0.889
N	115
Mean	3.85
Std. Deviation	1.019

#### 4.3.4. Test of hypothesis 4

In hypothesis four I made an assumption about the previous experience of the user: *Previous Experience positively influences use of Trade Finance Internet Services*. This hypothesis is not supported either; experience in other Internet banking services (EXP\_1) seems to have a negative influence in use of the system, but not significantly. The other variable was used to measure the meaning of experience in using other Internet services, like ordering tickets or buying in the Internet (EXP\_2) The regression coefficient results support this notification (table 8), but as a factor previous experience does not influence corporate customer’s decision to start using Internet banking services. Table 13 contains the relevant figures for both of the variables used to measure previous experience.

**Table 13. USE – EXP Correlations, Mean and Standard Deviation**

USE	EXP_1	EXP_2
Pearson Correlation	-0.104	0.094
Sig. (2-tailed)	0.266	0.312
N	117	117
Mean	3.74	4,2
Std. Deviation	1.554	1.061

#### 4.3.5. Test of hypothesis 5

Support from the users own organization was expected to positively influence use of TFIS: *Organizational Support positively influences use of Trade Finance Internet Services*. This hypothesis is not supported by the statistics. According to the regression and correlation analysis, both measures of this variable in the model proved to be negatively influencing the use of the Internet services for corporate banking. OSU\_1 measured the importance of non-technical support and OSU\_2 technical support. The correlations are almost the same (-0.065 and -0.073 respectively). Hence, it can be concluded that organisational support does not have any influence on the usage of the investigated system.

Both variables used to measure Organisational Support, and the strength of their correlation with Use is contained in table 14 with mean and standard deviation values.

**Table 14. USE - OSU Correlations, Mean and Standard Deviation**

USE	OSU_1	OSU_2
Pearson Correlation	-0.065	-0.073
Sig. (2-tailed)	0.497	0.44
N	113	113
Mean	2.65	2.98
Std. Deviation	1.26	1.302

#### 4.3.6. Test of hypothesis 6

Vendor support has been studied before, and the availability of support is found to be important factor in influencing the use of Internet banking at least in Australia and Turkey (Sathye 1996 and Akinci et al. 2004) Based on this, the fifth hypothesis is *Bank Support positively influences use of Trade Finance Internet Services*. Although regression analysis rejected also this hypothesis, according to the Pearson correlation it is supported. The correlation is medium strong and significance is good (0.000) for both of the variables used to measure the importance of Bank Support. Hence, the sixth hypothesis is supported, and Bank Support appears to be the most important factor influencing use of corporate banking in the Internet. Pearson

correlation, mean and standard deviation for Bank Support and its relationship with Use are shown in table 15.

Again the importance of technical and non-technical support was measured separately. Technical support correlates more with the actual usage of the systems, although the difference is not very big (0.343 and 0.405). Judging also by the results of regression analysis, availability of technical support from the bank is very important for the customers.

**Table 15. USE - BSU Correlations, Mean and Standard Deviation**

USE	BSU_1	BSU_2
Pearson Correlation	0.343	0.405
Sig. (2-tailed)	0	0
N	116	116
Mean	4.48	4.44
Std. Deviation	0.74	0.84

#### 4.3.7. Test of hypothesis 7

As earlier studies have proven, the level of awareness has a positive impact on the use of Internet banking (Sathye 1996, Sohail and Shanmughan 2003, Pikkarainen et al. 2004). Based on these findings, the seventh hypothesis was *Awareness positively influences use of Trade Finance Internet Services*. The empirical evidence of this research does not support this. Pearson correlation is 0.001, which is so close to zero that it is fair to say it has no meaning what so ever. This can also be concluded from the correlation p-value, which is close to 1, as can be seen from table 16. These results were also confirmed by the coefficient beta values of the regression analysis.

**Table 16. USE - AWE Correlations, Mean and Standard Deviation**

USE	USER	AWE
Pearson Correlation	1	0.001
Sig. (2-tailed)		0.989
N	115	115
Mean	1.86	3.5
Std. Deviation	0.432	1.003

#### **4.4. Adjusted research model**

Due to the statistical non-significance of the research model, in order to find one that better explains corporate customers use of Internet banking services, I decided to remove some of the variables based on their standardised coefficient beta values. These values can be seen from table 8 above. Also the correlation analysis supports this approach (table 9).

The first variable removed is SEF, due to the fact that although the coefficient is the second largest (-0.250), it is also negative, which is against the assumption that all the variables would influence usage of the system positively. EXP\_1 and EXP\_2 are excluded due to the small values and reverse signs of the coefficients (-0.083 and 0.117). OSU\_1 and OSU\_2 are excluded for the same reason (0.068 and -0.034). AWE is removed due to the lowest coefficient value (0.002). PU was first excluded from the model, but the explanatory power of use suffered, and I decided to keep the variable in the model.

The Pearson product-moment correlation figures also support excluding these variables, especially Bank Support and Perceived Ease of Use, which were found statistically significant. According to coefficients (table 8) the biggest unique contribution to the model is made by PEOU\_2 (0.253) and second biggest by BSU\_2 (0.168). However, as stated before these variables were not statistically significant. None of these variables actually made statistically significant unique contribution to the regression equation (coefficient p-value > 0.05 or 0.10)

In the adjusted model, Perceived Usefulness, Perceived Ease of Use and Bank Support are measured. The R-square of the adjusted model is 0.147. This means these variables explain 14,7% of the variance of the dependent variable use, as can be seen from table 17. According to the ANOVA F-test the p-value= 0.005, which means the null hypothesis is rejected and this model is statistically significant (table 18). The variable making the biggest contribution to the model is BSU\_2, which is the only one making statistically significant contribution to the use of the system in the adjusted regression equation.

**Table 17. Regression analysis summary of the Adjusted model**

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
0.384	0.147	0.106	0.329

**Table 18. ANOVA for the Adjusted model**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
<b>Regression</b>	1.929	5	0.386	3.562	0.005

Table 19 contains the values for standardized coefficients of regression analysis conducted for the adjusted research model.

**Table 19. Standardized Coefficients of the Adjusted model**

<b>Hypothesis</b>	<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Result</b>
H1: Perceived Usefulness positively influences use of Trade Finance Internet Services	<b>PU</b>	-0.007	0.952	Rejected
H2: Perceived Ease of Use positively influences use of Trade Finance Internet Services	<b>PEOU_1</b>	0.042	0.791	Rejected
H2	<b>PEOU_2</b>	0.115	0.417	Rejected
H6: Bank Support positively influences use of Trade Finance Internet Services	<b>BSU_1</b>	0.074	0.540	Rejected
H6	<b>BSU_2</b>	0.287	0.019	Accepted

Regression analysis for the five variables above reveals that the only hypothesis supported by the adjusted model is H6. This means, the only variable in this regression equation statistically significantly influencing use of Internet banking by corporate customers, is

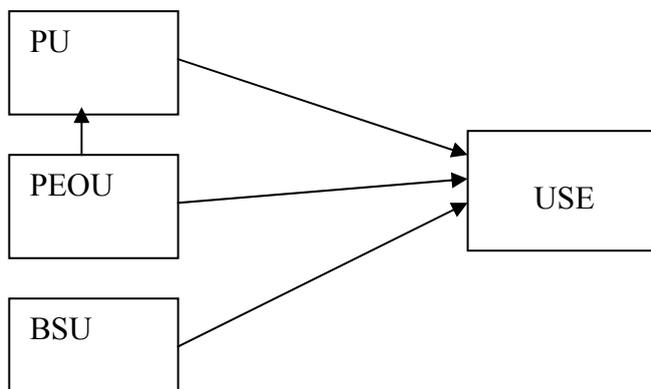
Bank Support. To be more specific, that is banks support in technical issues related to the system.

As Perceived Usefulness has a relatively strong mean value  $M=4.25$ , which indicates that it is a very important factor to both users and non-users of the system, I decided to study more the meaning of it. Further investigations was conducted with regression analysis, with intention to determine how the other variables correlate with PU. It was discovered that Perceived Ease of Use Explains 32.8% of the variance of Perceived Usefulness (R-square is 0.328). According the ANOVA f-test the statistical significance of this model is very strong ( $p\text{-value} < 0.001$ ).

Thus, Perceived Ease of Use has an impact also on Perceived Usefulness, not only usage of a system. Although the impact of Perceived Usefulness on Use is not statistically significant, PEOU\_1 has statistically significant ( $p<0.001$ ) strong influence on PU. The standardized coefficient value for PEOU in predicting PU is 0.688. As the correlation analysis revealed, PEOU is strongly significant factor influencing usage of corporate banking services in the Internet, and now obviously also to PU.

Figure 11 is a presentation of the adjusted research model. It describes statistically valid model derived from the original one (figure 6).

**Figure 11. The Adjusted Research Model**



## 4.5. T-tests

An independent T-test was conducted to compare the scores for each of the variables between users and non-users, females and males, older and younger, and between those with higher and lower education.

### 4.5.1. Differences between users and non-users

A t-test was conducted to compare the outcomes for each of the variables between users and non-users. Table 20 contains the outcome for this test.

**Table 20. T-tests between users and non-users**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	Non-user	User	F	Sig.	Sig. (2-tailed)
<b>PU</b>	4.10	4.27	1.445	0.232	0.555
<b>PEOU_1</b>	3.56	3.97	0.197	0.658	0.185
<b>PEOU_2</b>	3.22	4.01	0.074	0.786	0.011
<b>SEF</b>	3.89	3.85	0.978	0.325	0.911
<b>AWE</b>	3.55	3.50	0.472	0.493	0.887
<b>EXP_1</b>	4.25	3.69	2.686	0.104	0.235
<b>EXP_2</b>	3.91	4.23			0.392
<b>OSU_1</b>	2.80	2.63	0.080	0.777	0.688
<b>OSU_2</b>	3.20	2.96	0.171	0.680	0.582
<b>BSU_1</b>	3.83	4.56	0.987	0.323	0.001
<b>BSU_2</b>	3.55	4.54	1.143	0.287	0.000

\* *F-value for Equal variances assumed was lower than 0.05. Therefore values for equal variances not assumed are used.*

As can be seen from the table above, both users and non-users find the system useful. Non-users seem to be more aware of using the system, and have more confidence in them when it comes to using it. Non-users also have more experience on using other bank services provided in the Internet. For non-users organisational support is more important. The only variables that are statistically significant between users and non-

users are PEOU\_2 and BSU\_1 and BSU\_2 ( $p < 0.05$ ). These three are all scored higher among the users. The finding about bank support is also in line with the regression analysis results for the adjusted model.

#### 4.5.2. Differences between females and males

A t-test was conducted to compare the outcomes for each of the variables between females and males. The results of this comparison can be seen in table 21.

**Table 21. T-tests between males and females**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	Female	Male	F	Sig.	Sig. (2-tailed)
<b>PU</b>	4.29	4.18	1.036	0.311	0.561
<b>PEOU_1</b>	4.10	3.53	0.896	0.346	0.002
<b>PEOU_2</b>	4.06	3.65	0.866	0.354	0.027
<b>SEF</b>	3.88	3.77	0.092	0.763	0.620
<b>AWE</b>	3.58	3.31	0.574	0.450	0.204
<b>EXP_1</b>	3.71	3.82	0.253	0.616	0.746
<b>EXP_2</b>	4.19	4.21	1.337	0.250	0.952
<b>OSU_1</b>	2.70	2.52	2.396	0.124	0.503
<b>OSU_2</b>	2.99	2.97	0.491	0.485	0.942
<b>BSU_1</b>	4.56	4.29	2.643	0.107	0.077
<b>BSU_2</b>	4.54	4.21	3.263	0.074	0.049

Based on the T-test results, there is statistically significant difference between the scores of males and females in Perceived Ease of Use and Bank Support. Both PEOU\_1 and PEOU\_2 have received higher scores by the females. Both BSU\_1 and BSU\_2 are statistically significant: BSU\_2 somewhat more strongly ( $p$ -values  $< 0.01$  and  $P < 0.05$  respectively). Hence, females think the system is easier to use than males, but to them the importance of support received by the bank is bigger than for males – especially technical support. That is not very surprising if traditional roles and areas of interest are considered; men in general tend to be more self-assured about technical matters.

#### 4.5.3. Differences between age groups

A t-test was conducted to compare the outcomes for each of the variables between respondents of different ages. They were divided into two categories: respondents between 24-45 years and 46-65 years. The results of this comparison can be seen in table 22.

**Table 22. T-tests between Age Scales**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	24-45 years	46-65 years	F	Sig.	Sig. (2-tailed)
<b>PU</b>	4.28	4.20	0.188	0.665	0.622
<b>PEOU 1</b>	3.97	3.91	1.417	0.236	0.721
<b>PEOU 2</b>	3.94	3.98	1.270	0.262	0.843
<b>SEF</b>	3.92	3.77	0.020	0.888	0.455
<b>AWE</b>	3.54	3.51	0.434	0.511	0.901
<b>EXP 1</b>	3.53	4.16	13.458	0.000	0.032
<b>EXP 2</b>	4.10	4.33	2.131	0.147	0.248
<b>OSU 1</b>	2.67	2.56	0.145	0.705	0.656
<b>OSU 2</b>	2.94	3.00	0.436	0.510	0.819
<b>BSU 1</b>	4.51	4.43	0.066	0.798	0.599
<b>BSU 2</b>	4.60	4.18	5.181	0.025	0.009

According to the T-test between respondents of age 24-45 and 46-65, there is statistical significant difference in variables EXP\_1 and BSU\_2. The results indicate that the older the users are, the more experience they have in other Internet bank services and the less technical support they need from the bank. This is surprising when considering the common impression that younger are more familiar with electronic banking services, which also has been supported by empirical results in few of the studies (Akinci et al. 2004, Karjaluoto et al. 2002). It is also surprising that younger see themselves slightly more confident about using Trade Finance Internet Services (SEF), but then they see technical support from the bank as something they very much need.

#### 4.5.4. Differences between education levels

A t-test was conducted also for comparison of scores for each of the variables between respondents with different education levels. They were divided into two categories:

respondents with elementary school, vocational school or high school education, and those with polytechnic or university bachelor's or master's degree. Table 23 contains the comparison results.

**Table 23. T-tests between Low and High educated**

	Mean		Levene's Test for Equality of Variances		t-test for Equality of Means
	Lower education	Higher education	F	Sig.	Sig. (2-tailed)
<b>PU</b>	4.37	4.19	1.347	0.248	0.315
<b>PEOU_1</b>	4.00	3.96	0.938	0.335	0.806
<b>PEOU_2</b>	3.95	4.00	0.586	0.446	0.782
<b>SEF</b>	3.93	3.86	2.530	0.115	0.723
<b>AWE</b>	3.61	3.51	0.124	0.725	0.619
<b>EXP_1</b>	4.23	3.57	13.520	0.000	0.028
<b>EXP_2</b>	4.46	4.06	0.543	0.463	0.044
<b>OSU_1</b>	2.65	2.62	0.393	0.532	0.897
<b>OSU_2</b>	3.10	2.91	0.667	0.416	0.469
<b>BSU_1</b>	4.61	4.41	1.068	0.304	0.186
<b>BSU_2</b>	4.54	4.390	0.083	0.774	0.390

The T-test results indicate that there is a big difference in previous experience. Similarly surprising results can be seen with the education level of the respondents, as with the age and use of Internet banking of females: Clearly the higher the level of education, the less experience the respondent has with both Internet banking and other Internet services.

Again the common understanding and empirical evidence from studies done before do not support this notion. According to these outcomes, both age and education should be taken into consideration together with the concept of self-efficacy.

#### **4.5.5. Differences between nationalities**

In order to distinguish the differences between Danish, Finnish, Swedish and Norwegian respondents, a t-test was also made to compare the scores of each of the variables. The analysis of the countries and the differences of scores were done by

pairing the countries for the analysis. This approach was chosen to see the differences in more detailed. Means per country are presented in table 24, and t-test results in table 25.

**Table 24. Mean values for Denmark, Finland, Norway and Sweden**

	Mean			
	NO	FI	SE	DK
<b>PU</b>	4.54	4.20	4.05	4.42
<b>PEOU_1</b>	4.00	3.84	3.78	4.29
<b>PEOU_2</b>	3.77	4.02	3.70	4.13
<b>SEF</b>	4.31	3.53	3.70	4.50
<b>AWE</b>	4.00	3.26	3.54	3.75
<b>EXP_1</b>	3.21	4.02	3.88	3.29
<b>EXP_2</b>	3.50	4.16	4.33	4.54
<b>OSU_1</b>	2.75	2.62	2.96	2.33
<b>OSU_2</b>	3.17	2.81	3.17	3.08
<b>BSU_1</b>	4.14	4.62	4.00	4.88
<b>BSU_2</b>	4.36	4.57	3.92	4.75

**Table 25. T-tests between Denmark, Finland, Norway and Sweden**

	Levene's Test for Equality of Variances and t-test for Equality of Means											
	NO - FI		NO - DK		NO - SE		FI - DK		FI - SE		SE - DK	
	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)	F	Sig. (2-tailed)
<b>PU</b>	1.056	0.262	0.255	0.616	0.347	0.074	3.443	0.337	3.567	0.531	0.115	0.083
<b>PEOU_1</b>	0.102	0.558	0.863	0.341	0.269	0.494	0.521	0.039	0.097	0.810	0.143	0.054
<b>PEOU_2</b>	0.874	0.354	0.011	0.247	0.091	0.831	1.289	0.609	2.329	0.154	0.259	0.123
<b>SEF</b>	1.739	0.010	0.014	0.451	2.477	0.085	3.443	0.000	0.334	0.512	4.522	0.005
<b>AWE</b>	2.722	0.007	6.232	0.482	7.963	0.185	3.074	0.045	3.466	0.235	0.000	0.525
<b>EXP_1</b>	0.606	0.054	8.317	0.895	0.393	0.206	15.084	0.057	2.931	0.692	4.164	0.245
<b>EXP_2</b>	0.565	0.051	4.192	0.003	1.994	0.022	1.672	0.137	0.625	0.516	0.200	0.427
<b>OSU_1</b>	2.462	0.749	2.998	0.387	0.014	0.587	0.663	0.381	4.394	0.267	4.696	0.100
<b>OSU_2</b>	1.345	0.376	8.810	0.875	0.004	1.000	7.151	0.431	2.051	0.240	12.841	0.837
<b>BSU_1</b>	5.312	0.018	14.732	0.001	0.823	0.624	12.620	0.068	0.197	0.000	4.657	0.000
<b>BSU_2</b>	0.204	0.342	1.438	0.123	0.611	0.167	1.735	0.306	2.674	0.002	3.924	0.002

When looking at the table 25, several small statistically significant differences can be distinguished from the T-test results: Self-efficacy among Finns is clearly below that of Denmark and Norway, but also significant is the difference in Self-efficacy scores between Sweden and Denmark.

Variable Awareness is statistically significantly lower in Finland than in Norway and Denmark. Experience in other Internet services is significantly different among Norwegians and Swedes and Norwegians and Danes.

Although all the countries value support from the bank in both non-technical (BSU\_1) and technical (BSU\_2) issues, there is clear statistical difference between Danes, Finns and the other countries. Especially Swedes give the lowest scores to both: M=4.00 and M=3.92 respectively. Especially score for the technical support is significantly lower than it is for Danes and Finns. Norwegians do not see non-technical support as important as Danes and Finns either.

Swedes and Norwegian corporate customers obviously do not value support from the bank as much as Danes and Finnish customers do. Therefore it is good to keep in mind that most of the respondents of this research were from Finland and Denmark. However, none of the nations seem to demand much of support from their own organisations. In general, Norwegians are the least experienced, and Finns have the least confident and lowest level of awareness of the system usage.

#### **4.6. Validity, reliability, generalizability**

Factors negatively impacting on the validity and reliability of the results are the following:

- The fact that there are not too many non-users included in the sample. The results reflect too much the thought of the users, especially as Danish respondents were all current users of the system. The results would perhaps be very different if more opinions of the non-users were included, and more reliable and valid for making conclusions.

- In addition that the answers are mainly from the users, almost 46% of the responses come from Finland. The other countries, especially Norway (12%) is much poorly presented. Hence, the generalisation of results to Scandinavian countries can be done, but keeping in mind that the balance of nationalities among respondents is not equal.
- Denmark, Finland and Sweden had the same system in use at the time of sending out the questionnaires. Norwegian customers were using stand-alone system. This means that the system in use was otherwise similar for all the other respondents, but for Norwegians communication went only one way.
- This study is concentrated on a specific area where corporate customers do banking. However, they do reflect the thoughts of banks corporate customers' covering many industries and sizes of companies.

Generalizability of the research is can be done for Scandinavian or North European corporate customers of all sizes and all industries. Although the system studied in this study is an offering of one vendor, the results can be generalized to apply to similar systems. For example effect of previous experience, awareness or organisational support are clearly not important determinants for use of Internet Services by corporate customers. On the other hand, customers of other banks using the services offered by them very likely value system usefulness and the support they get from the bank a great deal.

#### **4.7. Summary**

Several different methods were used to analyse the empirical results gathered from case bank's randomly selected corporate customers using Trade Finance services. In order to find out the factors that influence corporate customers' adoption of banks' Internet services, a case of Trade Finance Internet Services was utilized. Customers from four Scandinavian countries were included: Denmark, Finland, Norway and Sweden. In the following table 26 the results of all the statistical analysis are summarised.

**Table 26. Hypothesis summary**

Hypothesis	Regression analysis		T-test	Pearson Product-moment correlation analysis
	Original model	Adjusted model		
<b>H1</b>	Rejected	Rejected	Rejected	Rejected
<b>H2</b>	Rejected	Supported	<i>Supported</i>	<i>Supported</i>
<b>H3</b>	Rejected	Rejected	Rejected	Rejected
<b>H4</b>	Rejected	Rejected	Rejected	Rejected
<b>H5</b>	Rejected	Rejected	Rejected	Rejected
<b>H6</b>	Rejected	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>
<b>H7</b>	Rejected	Rejected	Rejected	Rejected

As can be seen from the table above, the original model with 7 independent variables measuring use of the system was found statistically insignificant. However, after adjusting the model based on the coefficient information from the original model and some tryouts, two hypothesis were found statistically significant: H2 – Perceived Ease of Use (PEOU) positively influences use of TFIS and H6 – Banks Support (BSU) positively influences use of TFIS. The analyses were continued with T-test analysis and Pearson product-moment correlation analysis. All of these confirmed the statistical significance of PEOU and BSU. However, no other hypothesis held for the corporate customers, which is not in line with the findings of several previous studies made.

For example the statistical insignificance of PU is against the former research findings related to TAM (Davis, 1989; Davis and Venkatesh, 1996<sub>1</sub>). There is no significance of PU for the banks corporate customers when it comes to Trade Finance services provided in the Internet. Davis and Venkatesh (1996<sub>1</sub>) concluded that PU has a major impact on user acceptance of a system. Sudarraj et al. (2003) validated that PU is very important factor for determining online banking usage in Canada. Chau and Lai (2004) also discovered PU to be the only major factor directly influencing the attitude towards online banking. Eriksson et al. (2004) also stated that PU is the most important factor in predicting acceptance of Internet banking among retail customers in Estonia. Only one research did notice that PEOU was more powerful predictor than PU (Wang et al, 2003), whereas most TAM-related studies have concluded that PU is the ruling factor

over PEOU. In this study the regression analysis for PU revealed that PEOU is the only variable strongly influencing on PU.

Pikkarainen et al. (2004) identified PU and information of online banking significantly affecting use of online banking services in Finland among retail customers. Neither of those, PU or AWE, is supported by this research. These controversial findings are suggesting that corporate users do function in a different way compared to a situation when the system is used for private purposes.

The findings about Self-Efficacy are controversial to the research results of previous studies on Self-Efficacy and Information Technology. Igarria and Iivari (1995) extended Technology Acceptance Model in research about the effect of self-efficacy on computer usage in Finnish companies. Their TAM incorporated self-efficacy and the determinants of it as the factors that have an impact on computer anxiety, perceived ease of use and perceived usefulness and finally the actual use of computer technology. Their research was extended and further studied by McFarland and Hamilton (2004) and Yi and Hwang (2003), who confirmed the findings, According to the empirical results of this research, this is not the case with Trade Finance corporate customers in Scandinavia.

The insignificance of previous experience is very interesting, and not only because it is against the results of former researchers like Igarria and Iivari (1995), Davis and Venkatesh (1996), Eastin (2002), Jiang et al. (2002), Karjaluoto et al. (2002), Chau and Lai (2003), McFarland and Hamilton (2004) and Lassar et al. (2005). For example Karjaluoto et al. (2002) concluded that “prior computer experience, prior technology experience, personal banking experience, reference group, and computer attitudes strongly affect attitude and behaviour towards online banking.” Furthermore, the findings of Lassar et al. (2005) suggest that the more experienced the consumers are in using the computers and the Internet, the more likely it is that they will start using Internet banking. These both may very well hold with individual customers examined, but obviously corporate users do not support these notifications.

Organisational support is insignificant to the respondents of this research. This finding is controversial to the ones made by Igarria and Iivari (1995), Rotchanakitumnuai and

Speece (2002), McFarland and Hamilton (2004) and Akinici et al. (2004). The results are very clear in this research, as the mean score for organisational support is close to or below 3 for all the nations.

Bank Support and Perceived Ease of Use are the factors that apparently most influence the use of banks Internet Services among corporate customers. Support from the banks as such has not been studied widely, but Sathye (1996) and Akinici et al. (2004) have earlier discovered the importance of information and support from the bank. It is interesting that this has not been more extensively studied, especially taking into consideration that it was the most important factor and strongest supported by the empirical results in this research.

All the studies related to TAM have examined PEOU in many ways earlier. Suh and Han (2002), Eriksson et al. (2004), Wang et al. (2003) for example have used extensions of TAM in their studies, also examining the importance of PEOU. According to them it is a key factor. However, often PEOU influences indirectly via PU. All in all, it is an important factor clearly also for corporate customers.

## **5. CONCLUSION**

### **5.1. Objective and structure of the chapter**

This chapter is about concluding the study. It involves analysis of the contribution, managerial implications, and suggestions for further research.

### **5.2. Analysis of the contribution**

This research was a continuum to the stream of studies related to user technology acceptance and Internet banking. The difference of this research compared to the ones made before, is the fact that the empirical part of the research was done with corporate customers. Nearly all of the studies discovered were concentrating on retail customers, which means the private customers. Only one research was found related to Internet banking and corporate customers (Rotchanakitumnuai and Speece 2003). That research was done in Thailand and related to the barriers of adoption of Internet banking. Several other issues and factors measured in this research were indeed studied among companies and organisations, but not in the context of online banking (McFarland and Hamilton 2004, Igbarian & Iivari 1995)

Not only has this research contributed to the area of Internet banking, user adoption and acceptance of technology and companies, it has taken into consideration four countries, an entire area geographically and economically the same, instead of a specific country as often has been the case with other companies. Another feature different from majority of the researches is that this research did not use university employees or students as the target sample. The target sample was randomly selected Trade Finance customers of the case bank in Denmark, Finland, Norway and Sweden. Although as mentioned before, this can also be seen as a limitation to the research.

The findings of this study were surprisingly controversial to those made previously. Clearly there is either difference in the way people answer about doing their own

banking transactions, or when doing them in favour of the employee. Insignificance of Perceived Usefulness in all the analysis was surprising. Awareness, previous experience, self-efficacy that have been widely studied from various perspectives, did not have any meaning in this context. The results were even controversial, like previous experience in using other Internet banking services was negatively correlating with actual use – although this was not significant, it gives an idea of how much different the results were from the hypotheses set.

As suspected, Perceived Ease of Use and Bank Support were significantly influencing the use of Trade Finance Internet Services. However, it is much unexpected that the rest of the hypotheses were rejected.

Most of the findings in this research are controversial to the ones from retail side. Thus, it is reasonable to conclude that Internet bank users act in a different way depending on if they are using it for private purposes, or for the company where they work at. Naturally the nature of the case used in the study must be considered, as Trade Finance business concludes several of different issues compared to making money transfers from one account to another or paying bills.

### **5.3. Discussions, Suggestions, and Managerial Implications**

As previously mentioned, the outcome of this study is surprising in many ways. The originally built model as such could not be validated by the empirical data. Several factors omitted from the previous researches, especially TAM, which was largely the basis for this study, failed with one of its variables in statistical significance. Although this variable, Perceived Usefulness, was finally concluded to the adjusted model with Perceived Ease of Use and Banks Support, the last was the only variable statistically supported in the regression analysis. Only the following two hypothesis were supported by the results of t-test and correlation analysis:

***H2: Perceived Ease of Use positively influences use of Trade Finance Internet Services***

and

***H6: Bank Support positively influences use of Trade Finance Internet Services***

Most of all it is important for the corporate customers in Scandinavia to have a system that can be easily used for the purpose of making banking transactions. And if there are problems while making the transactions, it is very important to have a person to contact in the bank to help in both non-technical and especially technical problems and questions. Support provided by users own organisation is irrelevant, as well as previous experience of similar services. Awareness of the things related to the system, and

The empirical results of this research give a good basis for making suggestions of issues that are good for bank management to take into consideration. First of all, clearly both users and non-users think that the Internet services are worthwhile and useful in handling banking transactions. However, more variance in results could be detected among the users of the case system. This might imply that there are more expectations towards the functionalities in it. Those who already are familiar with using the service perhaps know more what is missing or additional features that would be even more useful to enhance their job performance.

It would likely be vice to take a look at the current functionality and measure it against what the customers' expectations are. Interestingly enough, Norwegian users who had the least functionality in their system, appear to be thinking the system is more useful than those of other countries, especially Swedes. An option to enhance the situation is to ask Swedish customers what are the functionalities they feel are lacking at the moment and prioritise the possible changes according to that. At the same time, Danish customers seem to be the happiest with the service they get online.

According to the results, elderly females do not see the system as useful as males, and younger ones. This could be because of they are not used to the system or preferring the traditional way to online work. The latter one might be more valid argument, as older females reported being among the most experienced in using other Internet services, including Internet banking. Thus, they are likely the toughest target group to whom to sell the system. Majority of the employees taking care of Trade Finance

business especially in Finnish companies are females, and most of them between 46 and 55 years old. However, at the same time the elderly are more experienced in using Internet services alike, and are the most aware of the things related to it. These results can then be suggesting that the case system is not as useful as other similar ones, or that the Trade Finance as business is more complicated and therefore complicated transactions require handling outside the system.

One of the open answer questions was related to situations when on-line customers decide not to use the system, but do the transactions outside the banks Internet service. 57% of the customers, who reported that they do so from time-to-time, claimed it is easier to do it in the traditional way, not in the Internet. Especially this was obvious in cases when there is no frequent need for this kind of transactions; the customers seem to feel it is cumbersome to get to know the system all over again every time they would need it. However, Perceived Ease of use was another of the factors in the model that was statistically significant, with medium strong relationship to usage of the system.

In general females think Internet services are easier to use. But as mentioned before, this could be due to the nature of the work females and males do in this business area: results revealed that males have more frequently upper position in the company. The same thing with users with higher education; they also were mostly men. This implies that when educating users and selling the system, different functionalities and features should be emphasized differently depending on the gender, education and position in the company.

As stated earlier, elderly women are more experienced in using Internet bank services in general. Age and gender do not have much influence on Internet experience, as well as experience as such did not have positive impact on corporate customers adopting online banking. However, it is good to keep in mind that the results imply that in other countries than Sweden, the people with lowest level of education are the most experienced and obviously the most aware of Internet banking related things.

No matter how much experience or awareness the customers have about online banking, they all see the support provided by the bank equally important. Both items measures, non-technical and technical support from the bank was found significant. With very

small difference, the younger ones especially seem to appreciate both non-technical and technical help. For all of the customers both of these are very important. The more active bank is towards the customer, the more likely it is that they will use the system and feels confident about doing it.

A surprising outcome is, that those with lowest educated do not find bank support as important as those with university degree. The lower education is, the more confident and aware the customers are. At the same time, they do not expect much support from the bank. Hence, banks marketing, selling and support strategy for the corporate customers should be planned so, that those with university degree would be provided more help and support with the system. A question is, that do they really need that support more than the others, or do they just value more the fact that support is available.

#### **5.4. Suggestions for further research**

My suggestion is to conduct a research with corporate customers and Trade Finance Internet services with a larger and more versatile target group. More non-users should be involved in the study, and other corporate banking areas where different transactions are in question.

Interesting is also do individuals see Internet banking in a very different way, depending on if they are doing transactions for themselves, or for the employer. A comparison between ones thoughts regarding private Internet banking and Internet banking for work purposes as a corporate user could reveal something interesting.

In addition a wider comparison between the countries should be conducted. A deeper analysis related to the demographics and background of the users would be beneficial in order to discover how they influence corporate customers decision-making and use of Internet banking.

## REFERENCES

- I. Ajzen, M. Fishbein: *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, Prentice-Hall, Inc, 1980
- S. Akinci, S. Aksoy, E. Atilgan: Adoption of Internet banking among sophisticated consumer segments in an advanced developing country, *The international Journal of Bank Marketing*, Vol. 22 no 3, pp. 212-232, 2004
- B. Bbátiz-Lazo, D. Wood: An Historical Appraisal of Information Technology in Commercial Banking, *Electronic Markets*, Vol. 12, No. 3, pp.192-205, 2002
- C. Centeno: Adoption of Internet services in the Acceding and Candidate Countries, lessons from the Internet banking case, *Telematics and Informatics*, Vol. 21 pp. 293-315, 2004
- P.Y.K. Chau, V.A.K. Lai: An Empirical Investigation of the Determinants of User Acceptance of Internet Banking, *Journal of Organizational Computing and Electronic Commerce*, Vol. 13 No. 2 pp. 123-145, 2003
- F.D. Davis: Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, *MIS Quarterly*, Vol. 13, No. 3 pp. 319-340, 1989
- F. D. Davis, R. P. Bagozzi, P. R. Warshaw: User Acceptance of Computer Technology: a Comparison of Two Theoretical Models, *Management Science*, Vol. 35, No. 8, 1989
- F. D. Davis, V. Venkatesh: A critical assessment of potential measurement biases in the technology acceptance model: three experiments, *Int . J . Human – Computer Studies*, Vol. 45 pp. 19-45, 1996
- F. D. Davis, V. Venkatesh: A model of the antecedents of perceived ease of use: Development and test, *Decision Sciences*, Vol. 27, No. 3 pp. 451-481, 1996
- J. F. Devlin, M. Yeung: Insights into customer motivations for switching to Internet banking, *Int. Rev. of Retail, Distribution and Consumer Research*, Vol. 13 No. 4 pp. 375–392, 2003
- M. S. Eastin: Diffusion of e-commerce: an analysis of the adoption of four e-commerce activities, *Telematics and Informatics*, Vol 19 pp. 251–267, 2002
- K. Eriksson, K. Kerem, D. Nilsson: Customer acceptance of internet banking in Estonia, *International Journal of Bank Marketing*, Vol 23 No. 2 pp. 200-216, 2004
- C. Flavian, E. Torres, M. Guinalú: Corporate Image measurement A further problem for the tangibilization of Internet banking services, *International Journal of Bank Marketing* Vol. 22, No. 5 pp. 366-384, 2004

- P. Gerrard, J.B. Cunningham: The diffusion of internet banking among Singapore consumers, *International Journal of Bank Marketing*, Vol. 21, No. 1 pp. 16-28, 2003
- L. M. Hitt, F. X. Frei: Do Better Customers Utilize Electronic Distribution Channels? The Case of PC Banking, *Management Science*, Vol. 48, No. 6 pp. 732–748, 2002
- J.J. Jiang, M.K. Shu, G. Klein, B. Lin: E-commerce user behavior model: an empirical study, *Human Systems Management*, Vol. 19 pp. 265–276, 2000
- H. Karjaluoto, M. Mattila, T. Pentto: Factors underlying attitude formation towards online banking in Finland, *International Journal of Bank Marketing* Vol. 20, No. 6 pp. 261-272, 2002
- W. M. Lassar, C. Manolis, S. S. Lassar: The relationship between consumer innovativeness, personal characteristics, and online banking adoption, *International Journal of Bank Marketing*, Vol 23 No. 2 pp. 176-199, 2005
- P. Legris, J. Ingham, P. Collette: Why do people use information technology? A critical review of the technology acceptance model, *Information & Management* Vol. 40 pp. 191 -204, 2003
- S. Liao, Y.P. Shao, H.Wang, A. Chen: The adoption of virtual banking: an empirical study, *International Journal of Information Management*, Vol. 19 pp. 63-74, 1999
- Z. Liao, M. T. Cheung: Internet based e-banking and customer attitudes: an empirical study, *Information & Management*, Vol. 39 pp. 283-295, 2002
- H-P. Lu, C-L. Hsu, H-Y. Hsu: An empirical study of the effect of perceived risk upon intention to use online applications, *Information Management & Computer security*, Vol. 13 No. 2 pp. 106-120, 2005
- J. L. Lüneborg, J. F. Nielsen: Customer-focused technology and Performance in Small and Large Banks, *European Management Journal*, Vol. 21, No.2 pp. 258-269, 2003
- R. Längerich, *Documentary credits in practice*, 312 pages, Nordea Plc 2001
- D. J. McFarland, D. Hamilton: Adding contextual specificity to the technology acceptance model, *Computers in Human Behavior*, Article in Press 2004
- J. Pallant: *SPSS Survival Manual*, Open University Press, 2001
- A. K. Pennathur: "Clicks and Bricks": E-risk management for the bnks in the age of The Internet, *Journal of banking & finance*, Vol. 25 pp. 2103-2123, 2001
- T. Pikkarainen, K. Pikkarainen, H. Karjaluoto, S. Pahnla: Consumer acceptance of online-banking: an extension of the technology acceptance model, *Internet Research*, Vol. 14 No. 3, pp. 224–235 2004
- S. Rotchanakitumnuai, M. Speece: Barriers to Internet Banking adoption: a qualitative study among corporate customers in Thailand, *International Journal of Bank Marketing*, Vol. 21, No. 6/7 pp. 312-323, 2002

- M. Sathye: Adoption of Internet banking by Australian consumers: an empirical investigation, *International Journal of Bank marketing*, Vol. 17 No. 7 pp. 324-334, 1999
- V. Shankar, A. K. Smith, A. Rangaswamy: Customer satisfaction and loyalty in online and offline environments, *Intern. J. of Research in Marketing*, Vol. 20 pp. 153-175, 2003
- Y-Y. Shih, K. Fang: The use of a decomposed theory of planned behavior to study Internet banking in Taiwan, *Internet Research*, Vol. 14 No. 3 pp. 213–223, 2004
- J. Simpson: The impact of the Internet in banking: observations and evidence from developed and emerging markets, *Telematics and Informatics*, Vol. 19 pp. 315-330, 2002
- R.P. Sudarraj, J. Wu: Using information-systems constructs to study online and telephone-banking technologies, *Electronic Commerce research and applications*, Article in press, 17 pages, 2005
- B. Suh, I. Han: Effect of trust on customer acceptance of Internet banking, *Electronic Commerce research and applications*, Vol. 1, pp. 247-263, 2002
- A. S. Sohail, B. Shanmugham: E-banking and customer preferences in Malaysia: An empirical investigation, *Information Sciences*, Vol. 150 pp. 207-217, 2003
- B. Szajna: Empirical evaluation of the Technology Acceptance Model, *Management Science*, Vol. 2, No. 1 pp. 85-92, 1996
- D.W. Stockburger: *Introductory Statistics: Concepts, Models, and Applications*. WWW version 1.0. First Published 15.7.1996, Revised 5.8.1997, Revised 19.2.1998 (<http://www.psychstat.missouristate.edu/introbook/sbk00.htm>)
- D.W. Stockburger. *Multivariate Statistics: Concepts, Models, and Applications*. WWW version 1.0. First Published July 1997, Revised March 1998 <http://www.psychstat.missouristate.edu/multibook/mlt00.htm>
- Y-S. Wang, Y-M. Wang, H-H. Lin, T-I. Tang: Determinants of user acceptance of Internet banking: an empirical study, *International Journal of Service Industry Management*, Vol. 14 No. 5, pp. 501-519, 2003
- M. Y. Yi, Y. Hwang: Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model, *Int. J. Human-Computer Studies*, Vol. 59 pp. 431-449, 2003
- Dagens Industri, 24.03.2005: 12% growth in online banking in 2004
- Kauppalehti 25.06.2001: Verkkopankkien käyttö yleistynyt nopeimmin pohjolassa
- Merita Bank Publ. 1999: Ulkomaankaupan pankkitoimet
- Nordea Plc 2001: Documentary credits

Stavanger Aftenblad 15.03.2004: Almost two million Internet bank customers

Tietoaika, 23.01.2004: Pohjoismaalaiset käyttävät verkkopalveluita eniten

# APPENDIXES

## Appendix 1: Questionnaire in English

### QUESTIONNAIRE ABOUT TRADE FINANCE INTERNET SERVICES (TFIS)

The questionnaire has three (3) parts. Before each part You will find instructions for answering the questions of that part. Please answer all questions carefully. *Note that all responses are handled anonymously!*

---

#### **PART 1**

Please answer the following questions by either choosing a predefined answer or writing your own answer.

Gender                      Female                       Male   
Age    \_\_\_\_\_                      Years

Education                                                                                                                                      
Elementary                      Vocational                      Senior High                      Polytechnic                      University                      University  
school                      education                      School                                           Bachelor                      Master  
Other    \_\_\_\_\_

Position in the company                      \_\_\_\_\_

I handle the following Trade Finance products in general

Import collections                       Export collections                       Import D/C's                       Export D/C's.                       Guarantees

#### **TFIS Usage**

Are You a TFIS user?                       Yes                       Will be                       No, will not be                       No, using another banks system

a) If *Yes*, how long have You used the system?                      \_\_\_\_\_                      Years

b) If *No, and will not be*, please specify why? \_\_\_\_\_

---

If You are a TFIS user but do Trade Finance transactions also outside the system, please specify why or in which situations this happens:

I am unable to access the system                       It is easier outside the system                       I don't like to use the system                       It is easier to do in another system.

Other reasons: \_\_\_\_\_

---

If You are a TFIS user, have You ever used the available help and information sharing pages:

Help                       What's new                       I don't know what they are or where I could find them

---

**PART 2**

Please answer choosing a number that most describes what You think. The smaller number You choose the more You disagree, and the bigger the number is the more You agree with the statement. (1=Totally disagree, 5=Totally agree, 0=I don't know) Please see the example below:

<i>Example</i>	<i>Totally disagree</i>				<i>Totally agree</i>	<i>I do not know</i>
<i>Please circle the number closest to your answer.....</i>	1	2	3	4	5	0

**Perceived usefulness**

I find / I think I would find TFIS useful in conducting Trade Finance banking transactions.....	1	2	3	4	5	0
---	---	---	---	---	---	---

**Perceived ease of use**

a) I find / I think I would find it easy to do what I want to in TFIS...	1	2	3	4	5	0
b) I find / I think I would find TFIS easy to use.....	1	2	3	4	5	0

**Self efficacy**

I feel confident about using / starting to use TFIS.....	1	2	3	4	5	0
--	---	---	---	---	---	---

**Awareness**

I think I am well aware of issues related to using TFIS.....	1	2	3	4	5	0
--	---	---	---	---	---	---

**Previous experience**

a) I am experienced in using other Internet bank services.....	1	2	3	4	5	0
b) I am experienced in using other Internet services, e.g. booking tickets, ordering goods or buying with credit card.....	1	2	3	4	5	0

**Organizational support**

a) It is / would be important for me to have someone else in my organization to help out in case of <i>non-technical*</i> problems with TFIS.....	1	2	3	4	5	0
b) It is / would be important for me to have someone else in my organization to help out in case of <i>technical**</i> problems with TFIS...	1	2	3	4	5	0

**Bank support**

a) It is / would be important for me to have someone to help out in the bank in case of <i>non-technical*</i> problems with TFIS.....	1	2	3	4	5	0
b) It is / would be important for me to have someone to help out in the bank in case of <i>technical**</i> problems with TFIS.....	1	2	3	4	5	0

*\* Non-Technical problem could be for example creating a template, finding a deal via Inquiry, etc)*

*\*\*Technical problem could be for example getting an error message or being logged out in the middle of a transaction*

**Service**

a) I think the bank is able to help me quickly in technical issues related to TFIS.....	1	2	3	4	5	0
b) I think the bank is able to help me quickly in non-technical issues related to TFIS.....	1	2	3	4	5	0
c) I am happy with the personal service related to TFIS I get from the bank.....	1	2	3	4	5	0

**Training**

a) I think the bank provides sufficient training to use TFIS.....	1	2	3	4	5	0
b) I think there are enough guides and manuals to support the use/starting to use TFIS.....	1	2	3	4	5	0

---

**PART 3**

Please explain in Your own words.

***What I like about TFIS / the most valuable functions in TFIS***

---

---

---

---

***What I do not like about TFIS / the most useless functions in TFIS***

---

---

---

---

***What additional functionalities or features would be valuable for You in TFIS***

---

---

---

---

***Other comments:***

---

---

---

---

---