

Modern banking solutions changing business and people

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<p>Purpose of the research was to map out user experiences relating to modern banking services such as electronic invoicing, internet banking, payment cards and payments. Private users and businesses were designed their own survey containing similar topics and questions.</p> <p>The theoretical part of the research explained history of various banking solutions in Finland starting from the late 1970's. Modern technology and solutions were introduced and explained to give an understanding how different services are used currently in Finland.</p> <p>Research part of the thesis concentrated on few main banking services in use today. Three main target groups were answering questions relating to user experience about different services such as electronic invoicing, internet banking, payment cards and payment types.</p> <p>Empirical research was conducted quantitatively by designing an internet survey for three different target groups: Finnish, non-Finnish and business users. For Finnish and non-Finnish users a total of 723 answers were gathered and for business users a total of 24 answers. Results for business users are therefore only directional. Survey languages were Finnish and English.</p> <p>Results of the research showed, that all three user groups are familiar with newest banking services and most of them are widely used. Users are also generally satisfied with their current banking products such as internet banking and payment cards. All major banks in Finland are able to offer their customers up-to-date services.</p> <p>Considerable differences in experiences and attitudes were found between Finnish and non-Finnish users in electronic invoicing especially among young people. In new payment types such as SEPA-payments and EMV-cards, Finnish users had most resistance against new technology, whereas non-Finnish users were more tolerant accepting it. Businesses were familiar with SEPA-payments, but large part of them hadn't used them extensively.</p>	
Key words banking, technology, user, experience	

Table of contents

1	Introduction.....	1
1.1	Research problems, scope and goals	2
1.2	Theoretical framework	2
1.3	Terminology	3
2.1	Finnish banking industry.....	8
2.2	Time before Internet banking	9
2.3	Introducing payment card systems	11
2.4	Corporate file transfer	12
3	Current trends in electronic banking	14
3.1	Internet banking.....	15
3.1.1	Private users	17
3.1.2	Corporate users.....	19
3.2	Payment terminals.....	20
3.2.1	Desktop terminals	21
3.2.2	Portable terminals.....	21
3.3	Payment cards.....	21
3.3.1	Debit and credit cards.....	22
3.4	E-Invoice.....	23
3.5	E-Payment.....	25
3.6	Corporate file transfer	25
3.6.1	Web Services	26
4	Research implementation	27
4.1	Research process	27
4.2	Research method.....	28
4.3	Survey design	28
4.4	Validity of results.....	29
4.5	Reliability of results.....	30
5	Research on modern banking usage.....	30
5.1	Background variables for target groups	31
5.2	Differences in modern banking experiences.....	34
5.2.1	Internet banking	34
5.2.2	Payment card usage.....	37

5.2.3	Electronic invoicing.....	40
5.2.4	SEPA payments.....	41
6	Conclusions	44
6.1	Main results of the research.....	44
6.2	Future research	45
	Bibliography	46
	Appendices	

1 Introduction

Finnish banking industry has been in the forefront of many technological solutions when it comes to providing customers different ways for private and corporate banking. Banks and insurance companies are amongst the first institutions in Finland to have designed and implemented large systems to support, maintain and develop their customer base. Moving into electronic payments happened in Finland started in 1979 (Tilisanomat 5/1989.)

Rapid technical development throughout recent years has put its pressure on banking businesses and they have been facing different challenges when designing, creating and implementing new systems. Currently these systems in place have become an everyday normality for both private and corporate customers, as most of transactions besides cash payments are happening inside electronic networks.

Thanks to Internet revolution, internet banking systems are nowadays available by all Finnish banks and provide a wide variety of options and opportunities for everyday banking, be it private or serving needs of a large corporation. Ways of accessing and using these systems have changed as they've become increasingly complex, yet trying to maintain usability and ease of use for customers.

In addition to internet banking there are several services such as payment terminals, payment cards, e-invoicing and e-payments that have gained ground in recent years. Some functions associated to these services might be related to another service provided by the bank such as the internet bank, where e.g. e-invoices can be sent, received, and ultimately paid.

The goal of this thesis is to study how a modern user experiences different services he uses daily related to electronic banking. Be it a private or corporate user, there are lots of similarities in activities that can be found when they use banking services. Very rarely a user only uses one particular product, as the case usually is that there are many different services interrelated and supporting each other. Therefore it's important to study more than one system experience to see what users think of the services.

Another important thing to study is how new services and systems are seen and experienced by people from different backgrounds and ethnicities. People have a tendency to stick with things they are used to and comfortable with. Resistance against change might be extremely strong when something that has been done in the same way rapidly changed. User experience

of a particular service is not only limited to the technical aspects of it, but also the whole perception of it as a modern product is very important part of the study.

Benefits of studying aforementioned areas would help banks and other financial institutions in the banking field, to get a view of current situation from user's point of view. Issues raised in usage and user experiences among different banks will show who controls the current situation when providing customers with modern solutions. Banks, credit companies, operators and other instances don't work alone but need cooperation, and hopefully gaps in their mutual operations can be discovered and solutions developed.

1.1 Research problems, scope and goals

Goal of the thesis is to study how modern banking solutions have affected different users based on user experience and personal perception. In the past many common banking functions have required a visit to the branch but currently most of the services are viewable and controlled by users online.

Research aims to answer the following questions:

- Is user experience with certain new service dominantly negative or positive?
- How well are new services accepted by Finnish and foreign users living in Finland?
- When corporate and private user uses the same service, how are their opinions different?
- What problems users have using new services?

Central interest of the thesis is based around the user experience when using different modern banking solutions and how these systems benefit both users and businesses. Compared to the past there is a whole new way of technology that users need to adapt to and their work or habits are changing with it. New SEPA agreement in Europe brings many advantages by unifying payment areas, but users have to learn new ways of banking. Technical specifications on advanced level will not be observed and studied but a more general view of the systems and processes is described.

1.2 Theoretical framework

The research method used in the thesis is quantitative. In the theoretical part there will be an explanation of the banking systems and services that have been available before modern in-

formation networks. As Internet has grown dramatically over the past few years, it has brought services closer to users and established new technological solutions.

Previous research has been done relating to a particular service, e.g. E-Invoice or E-Payment, focusing on it from business point of view. Internet banking for aged users has been studied before to find out why they are not willing to change their daily banking operations online.

At the moment all of the aforementioned services are available for most of the users and many of them have become almost a necessity when people need to make payments, control their finances and make transactions. While systems and services develop at a constant pace, users have to adapt very quickly to updates and changes in the services. Target group for the research is not limited to a particular age group, as more and more users regardless of age are using modern banking services.

Source literature material is somewhat limited when it comes to finding out how people have used different services in the past. Most of the source materials are gathered from service descriptions of Nordea Bank Plc and by conducting individual interviews of banking personnel and users.

1.3 Terminology

ATM

ATM (Automatic Teller Machine) is a device which offers a range of services to users that are authorized by using a PIN-code. From a cash ATM, user is able to make payments, withdraw money or view account information (Finnish Banker's association 2006a, 4.)

Combination card

Combination has properties of two or more payment cards (Finnish Banker's association 2006b, 4.)

Credit card

Credit card is a card issued by a credit company and used for making purchases on products or services. Credit card can be combined to a payment card giving the user an option which payment type to use.

Datapak

Datapak is a Nordic packet switched network using X.25. Speeds vary from 2400b/s to 64kbps. Datapak over dialed connections X.28 is also possible. (WordIq, 2009.)

EDI

EDI (Electronic Data Interchange) is a way to conduct electronic transactions between companies. The transaction is transferred electronically to the receiver and decrypted automatically to the receiving system. EDI has been in use internationally long before internet banking was created. Finnish equivalent of EDI-standard is OVT (Organisaatioiden välinen tiedonsiirto)

EMV

EMV (Eurocard, Mastercard, Visa) is an international standard for payment cards. It aims to replace payment cards using magnet stripe globally within a few years (Finnish Banker's association 2006c, 4.)

E-Payment

E-Payment, also known as electronic payment is a way for customer to use a bank account or credit and payment card to pay for a purchase made online. All major banks in Finland have the service available and a considerable amount of sellers are using the service in their online shops. E-Payment can be also used to authenticate to several services, e.g. Kela and Verohalinto.

EU payment

By the decision given in 2003 by the European parliament and Council of Europe, it is possible to make a euro value payment inside EU and ETA-countries. If the payment sent contains valid IBAN number and SWIFT code, the charges for the payment are only equivalent to domestic bank payment charges in the respective country.

File transfer

Corporate customers are using mainly electronic means of funds transfer to the bank, based on large amount of data capacity. Customers are able to view their daily transactions, reference payments, and account statement in electronic format. The number of file transfer users has kept steadily growing but hasn't grown dramatically, the number of users currently in Finland being around 226000 (Federation of Finnish Financial Services 2008.)

IBAN

IBAN (International Bank Account Number) is a standard used to identify bank account number over national borders. IBAN standardized bank account numbers are used both inside European Union economic area but also in other countries, due its flexible format. IBAN number consists of two-alpha country identifier, followed by 2 check digits and up to thirty alphanumeric characters. Every country can decide the length of the IBAN number, but it has to be of fixed length.

Internet bank

Internet bank is a service provided by a bank or financial institution making it possible for customers to access their bank account online. Authentication to the service is secured by a unique customer number and code numbers only known by the customer. Customer number and code numbers are issued by the bank. In the Internet bank, customers are able to pay bills, view account information, apply for loan credit or mortgage and to make investments in the stock market, just to name a few (Federation of Finnish Financial Services 2007.)

Kermit

File transfer protocol usually used when downloading data from a mainframe or via a modem. (Dictionary of Information Technology, 2002.)

Luottokunta

Luottokunta is a full-service card payment company that develops and provides card payment solutions for banking as well as merchant and corporate customers (Luottokunta, 2009).

PATU security standard

Parties using electronic banking services have to authenticate each other in a secure way, and the integrity of the messages has to be protected against unauthorized modification or accidental corruption. The customer needs an acknowledgement from the bank on the receipt of the message file he has sent. The PATU procedure comprises the said security functions. PATU protects messages between banks and enterprises (Finnish Banker's association 2001, 6.)

Payment card

Payment card is common term used when describing chip, bank, credit and other combination cards.

Payment terminal

Payment terminals are devices used by vendors for reading payment cards when making purchases using a card instead of a cash payment. Payment terminal records the payment and authorizes the transaction if needed. Modern terminals are ready to accept electronic payment cards equipped with a chip, where older models use magnet stripe to read card information. Payment terminals can be located either on desktop and connected into a cash register or portable, based on business needs.

PIN

PIN (Personal Identification Number) is a number only known by a card holder. Using PIN-code, users are able to withdraw money from a cash ATM or authorize payments using a payment terminal (Finnish Banker's association 2006d, 4.)

PKI

PKI (Public Key Infrastructure) is an international specification for the identification of a party in communication (Nordea 2009a, 4).

SEPA

SEPA (Single Euro Payments Area) is an undertaking by the European Commission to create a common payment area inside European economies. The aim of SEPA is to expand home market area to consist of EU-countries, EFTA-countries, Iceland, Norway, Liechtenstein and Switzerland. Legislation concerning payment transfers and their speed will be unified in the area. Common European payment area will benefit both consumers and businesses (Federation of Finnish Financial Services 2009.)

SWIFT

SWIFT is the Society for Worldwide Interbank Financial Telecommunication, a member-owned cooperative through which the financial world conducts its business operations with speed, certainty and confidence. Over 8,300 banking organizations, securities institutions and corporate customers in more than 208 countries use them every day to exchange millions of standardized financial messages (SWIFT 2009.)

Web Services

Web Services protocol is based on common global standards. Bank connection is always encrypted and PKI method is used for both identifying parties and integrity control. Web Services will replace current file transfer and PATU security standard and it is required when Corporate Payment Service is used. (Nordea 2009b)

XML

XML (Extensible Markup Language) is a general-purpose specification for creating custom markup languages. It is classified as an extensible language, because it allows the user to define the mark-up elements. (Wikipedia 2009.)

2 Evolving banking solutions

In this chapter Finnish banking industry is introduced, banking solutions before internet banking are explained and the transition from only cash and carry society to using cards discussed. Paper invoicing which is still at times largely used and corporate file transfer systems are being explained at the end of this chapter.

2.1 Finnish banking industry

Finnish banking industry has been in the forefront of many new technological experiments when it comes to introducing new services for their customers. From financial point of view, the banking industry looks very different from what it was 20 years ago. After the financial crisis and depression in Finland, many banks needed to rethink their strategies, some institutions merged with others and some vanished totally.

Bank of Finland is the bank for other banks in Finland. It has little less than 20 credit institutions as their customer, offering them central bank services in domestic financial markets. Being part of the European monetary system, Bank of Finland ensures that there is enough liquidity in the financial market in order to ensure functional payment systems. (Bank of Finland 2009.)

Being part of the European monetary system, Bank of Finland fulfil and enforces commonly agreed European agreements and money politic decisions with its Finnish bank customers. This also means that Bank of Finland follows European Central Bank's policies locally in Finland.

Role of Bank of Finland for consumers and companies when introducing new payment systems is often unclear, because marketing, testing and deploying new systems is done by banks themselves or by Federation of Finnish Financial Services.

2.2 Time before Internet banking

Before internet banking, it was possible for corporations to use online banking services without contacting the bank. Main difference compared to the internet era is that connection speeds were lower, and there was little mobility as connection to the bank required software to be installed locally.

As there were only small amount of personal computers, personal banking online was technologically difficult to implement at that stage. Central mainframe machines had been used for years before mainly for data storage, and most financial institutions in Finland were storing their data in these systems. The data was accessed through a dumb terminal that would only be used to view the data requested from the central machine.

First programs that used modem, packet or ISDN networks to connect to the bank, were either designed to contact the respective bank for corporate file transfer, or Multibank programs that enabled users to send transactions to the bank securely using PATU security standard. These programs will be introduced in more detail later.

Especially for private customers, making frequent visits to the branch was cumbersome, queuing common and service charges by the banks considered overpriced. All operations relating to customer data was handled by the banks, initiated and authorized by the customer. All information that customers needed about their finances had to be printed and if needed posted to them, resulting in increasing expenses both for banks and their customers.

2.2.1 Pre-Internet solutions

To better understand what kind of systems were in place before banks created first internet banks, it is important to see what kind of solutions preceded them. Systems were somewhat similar by their technical implementation from bank to bank, but functions inside the systems were different. In this section there will be a description of SYP (Suomen Yhdyspankki) terminal payment programs, as they were amongst the first in Finland to enter the banking market.

Phone banking was already in place in 1982, but there was a need for businesses to conduct their banking without visiting the branch or by using the post. (Säynätkari, V. 26.6.2009.)

Briefly after that, in 1984 first personal computers started hitting the markets and their usage was growing in corporate and later private sector. Businesses needed more efficient ways than phone banking to take care of their financials, so there was a big pressure on getting first programs out for customers.

In the mid-80's, programs such as MikroTeleSyp and TeleSyp could be used by customers. TeleSyp was created in 1979 for large enterprises and came with a terminal device.(Harald, B. 2007) These programs were first created for corporations, and later also for private customers. In order to use the connection to the bank, user needed a workstation and a terminal connection program which was provided by the bank. Personal username and a code card were used same way as today to authenticate the users.

In order to use the system, the user needed a PC with the terminal client, and modem connection using an asymmetric telephone line. When connecting to the bank, modem dialled a given phone number, and for the duration of the banking session, the connection remained alive. Kermit or Datapak connections were the most popular connection types used, both of them still used today in packet switched network connections.

User interface of the system was very simple looking and provided simple text options. In order to get to a certain menu user needed to type in a command or number of the menu. After some time users got more experienced using the system and they learned to use shortcuts by typing many commands in a row thus skipping unnecessary prompting by the system. MikroSyp for corporate customers, was a character based system where based on the user input, system would show a result or an output. (Säynätkari, V. 29.6.2009.)

Picture number 1 is an example of a terminal based system user interface. Example picture is not taken from a bank program as there aren't any versions available anymore, but is very similar of what the user would see when connecting to the bank system.

Picture 1 Example of a character-based terminal system. (<http://www.b-ssd.org>)

```

Session A - [24 x 80]

MAIN                               Student Records System          System:  BSD41000
                                Main Menu

Select one of the following:

  1. File Maintenance Menu          13. Special Education Main Menu
  2. Reports/Labels Menu           14. Health Module Menu
  3. Inquiries Menu                15. Instructor Test Score Menu
  4. Attendance Menu               16. Vo. Tech. Processing Menu
  5. Transportation Menu           17. Phone Master Menu
  6. Scheduling Main Menu          18. Interim Grading Menu
  7. Grade Reporting Menu          19. State Requirements Menu
  8. Student Activities Menu       20. Custom Program Menu
  9. Test Scores/Transcripts Menu  21. File Support Menu
 10. Student Discipline Menu       22. Security Menu
 11. VEMIS Menu                   24. Sign off
 12. Locker/Combination Menu

Selection or command
===>

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
F13=Information Assistant  F16=AS/400 main menu

```

2.3 Introducing payment card systems

In the past, most of payments in private sector by consumers were done by cash payments or before that, by using cheque books. Bank of Finland conducted a survey in 1995 for 5700 business firms and it appeared that cash usage in corporate sector was still very common.(Hirvonen, Viren, 1996, 6).

Although the survey done by Bank of Finland mostly concentrates on business cash flows, it has some interesting information about electronic banking usage between business firms and banks, notably with payment card terminal systems. Table below shows by sector the percentage of companies that were using a payment terminal system in 1995.

Table 1 (Hirvonen, Viren, 1996, 57).

Connections between banks and places of business	Payment terminal in use %
Industry	6,2
Building and installations	3,4
Whosalers	17,5
Retailers	46,9
Motor engine sales, maintenance and fixing	52,5
Hotels and catering	48,8
Transportation and communications	16,9
Other sectors	7,5
Total	17,2

From the table it can be seen, that it is no surprise why motor engine sales, retailers and accommodation providers had the highest percentage rate of payment terminals in use. For transportation sector, heavy industry and building the figures are considerably lower.

When payment cards were introduced, they were first being accepted by reading the card number using a separate machine that would take a paper copy of the card number. After copying the card details, customer was asked to sign the slip. No online authorization regarding coverage on the card was checked, because the card slip needed to be sent to the bank first. Processing the payment would take several days, so it was advised for customers to keep their copy of the receipt to keep track of the card usage. Balance deducted from the account would show within a few days of the original purchase, depending how often the seller sent the slips to the bank.

2.4 Corporate file transfer

File transfer for business users has been available for quite some time, showing no drastic change into one way or another by the number of users. Requirement for file transfer services when not using an internet bank are personal computer and software for bank connection. These programs have either connection to one bank, to several banks through multibank programs.

Bank program is for payments and transactions between accounts. It is used to get information about incoming payments, handle foreign payments and reference payments and control payments. These activities can all be controlled from the PC (Aalto, Westermarck 1993, 155.) Most of the daily finances can be controlled from the bank program.

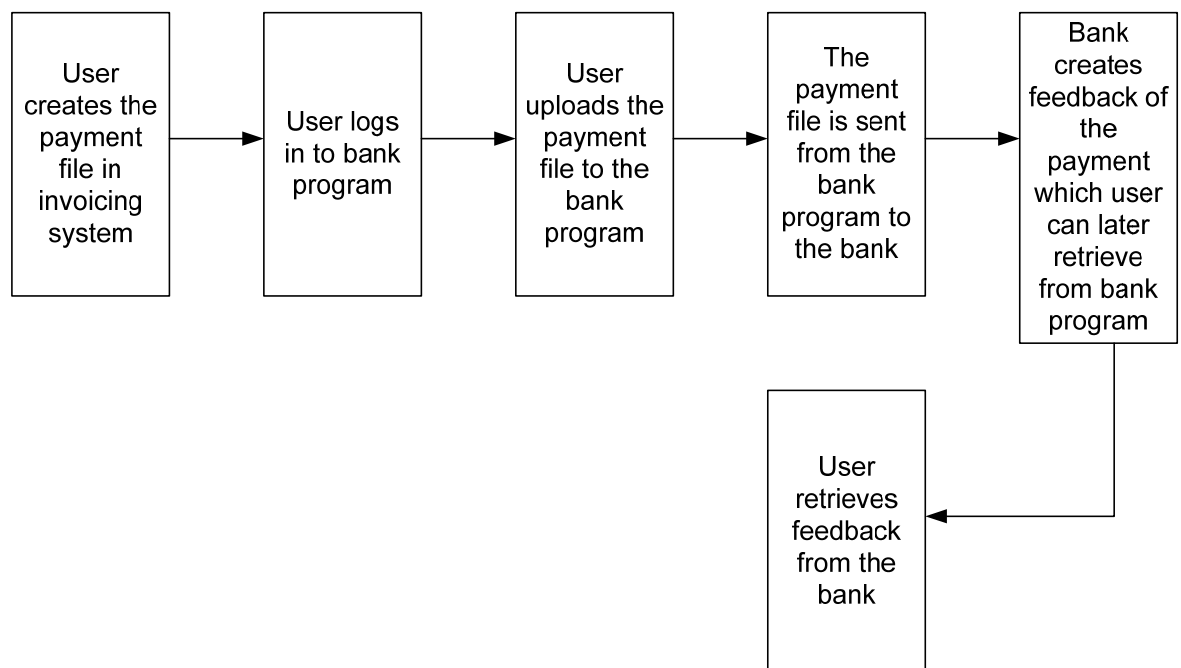
When Internet wasn't yet in use, bank programs used packet networks to connect to the bank. In most cases, a modem connection was used. Connection speeds were low but because only data and not images or pictures were sent, it worked fine as long as the connection was established. In order to use the bank program, user needed to enter PATU security keys to the program from the bank whose customer they were. PATU keys are updated at regular intervals, and they ensure that the connection to the bank meets security standards required. They are still used today to secure bank transactions between businesses and banks.

In terms of usability, bank programs were not too beautiful by interface, but they offered the properties that users needed. Loading a program might take considerable amount of time, if

the workstation the program was installed on proved to be slow. However, using bank programs made controlling payments for companies considerably faster than before. At present, these systems are still widely used but migration into internet banking is steadily ongoing.

As an example of a domestic payment, figure 1 below shows how the payment transfer process works. If there is a problem with the payment, the user needs to contact the bank which will check from the file transfer log if there's a problem with the file sent. In this case, a domestic payment would need to follow certain standard (LM03) established by Federation of Finnish Financial Services. When bank receives the file, validation of the file takes place and if there are too many errors in the file, the whole batch is rejected and the user needs to correct the material and resend it later.

Figure 1 Corporate file transfer using a bank program (Nordea 2009c, 3)



Disadvantages against file transfer using internet bank, is that bank programs have no mobility and they perform slower. Software is installed on the workstation or to the network, but if the user wants to use the services outside company network or at some other location, the software needs to be reinstalled and configured again for that location making it time-consuming and difficult.

2.5 Paper invoicing

Paper invoices haven't disappeared anywhere, and before information networks they were the only option when companies needed to bill their customers. Having an efficient invoicing system results in quicker accounts receivables, and reduces capital used for running the business considerably. By optimizing invoicing, the need of capital can be reduced even by dozens of percentages. (Aalto, Westermarck 1993, 150.)

Paper invoice is created in the invoicing system of the company, printed and after that posted to the customers. Customers are usually given at least 2 weeks time to execute the payment using a reference number and beneficiary account details given in the invoice.

Paper invoicing is expensive for companies, because paper needs first to be produced, printed, enveloped and printed. On top of this, some amount of the paper invoices get lost in the post or don't find their receivers. State administration has calculated that costs for handling one paper invoice are around 30 euro. (Tenhunen, 2009.). In terms of information security, paper invoicing is not the ideal option as confidential data can get compromised quite easily.

On the other hand, paper invoicing is still widely used and discussion about moving to electronic invoicing is active in the media. Consumers need to feel that electronic invoicing is something that benefits them. Paper invoicing is still a common way of invoicing, and there shouldn't be an extra charge for it (Kuluttajavirasto 2009).

3 Current trends in electronic banking

In the previous chapter, time before modern systems was described from the users and systems point of view. In this chapter, modern internet banks both for personal and corporate users are explained, followed by payment card systems in use by businesses and consumers currently. Totally new types of payments such as E-Invoice, E-Payment, SEPA-payments and Web Service have emerged, some earlier some little later on. With Web Service, banks advertise it as a product, but it actually is a connection channel to the bank. These payment types are discussed at the end of the chapter.

3.1 Internet banking

Banks in Finland are and have been pioneers designing mobile and internet banking for 3 decades. There is a lot of experience of what kind of solutions customers need and what the banks are capable of providing. In the beginning of technological revolution it was vital for banks to harness the newest technology to get new customers in the market. Proof of this is that only a percent of bills are paid in the bank branches, and nearly all Finnish citizens have an agreement of internet bank with their bank (Harald, B. 2007). It also created opportunities for IT specialists to present new ideas and ways of working. IT and banking came closely related.

Most pre-internet banking systems were created separately in the banking sector by major banks such as SYP, KOP (Kansallis-Osake-Pankki), Osuuspankki and many others. During 1990's, after the economic crisis in Finland there were lot of fusions in the bank sector, SYP uniting with KOP in 1995 forming Merita Bank, which later had a fusion with Swedish Nordbanken in 1997. Result of this was Merita-Nordbanken (Nordea 2009f.) During that time, first internet banks for private and corporate customers were created, and they were designed to be used from anywhere with an internet connection.

Coming to the year 2000 and onwards, all major banks had internet banks available for both private and corporate users. Some banks had better systems than others, offering more selection of services and functions. Table below demonstrates major properties of systems and comparison between internet banks in 2001. Table includes three main banks in Finland.

Table 2. Comparison of major features of internet banks by major banks in Finland (MikroPC 2001, 4)

Internet banks	Leonia	Merita	Osuuspankki
WWW-site	Leonia.fi	Merita.fi	Osuuspankki.fi
Services			
Recurring payments	create, change, delete	create, change, delete	create, change, delete

Search payments	yes	yes	yes
Foreign payments	yes	yes	after autumn 2001
Unreg. Employer tax payments	can be paid	yes, reference and message needed	can be paid
Instant payments	yes	yes	yes
Due date	2 years ahead	5 years ahead	max 1 year ahead
Direct debits/payment service	yes	yes	after June 2001
Transfer between own accounts	password and key code needed	without password	Password and key code needed
Account statement	current and previous month	2 months	current and previous month, from 6/2001 3 months
Authentication			
Authentication method	customer number	customer number	user id, changing password
Card authentication	piloted	no	id-card, OP gold-card by end of year
Password delivery	from branch	secured envelope posted	secured envelope posted
Encryption method	64, 128 bit SSL	SSL 40-128 bit, IPSec for corporations	SSL2, SSL3, RS1024, 128 bit

From the table it can be seen, that whilst most of the services are being provided by all the banks, they have differences in technical implementations of the service, especially encryption methods and authentication of users. Many technologies are still being tested and options are limited.

3.1.1 Private users

Today all major banks in Finland have an internet bank available for private users. In order to use the service user navigates into the bank's website, and then clicks on a link that directs to the internet bank service.

Banks have established help functions and demo versions of their internet services, where users can familiarize with the interface and functions of the system before starting to use it. Having a test environment online directs people off from the branch in case there is a question. Frequently asked questions are also presented in the website in many cases.

Logging in to the internet bank happens by using a user id and a password. Users are also given a key code list, which is used when authenticating to the service and when confirming payments. It has been found over the years that for private users the best way to login to the bank is to use a user id, password and a key code list, instead of e.g. e-id system where authentication works by using a card device and a card with a PIN. Some of the banks in Europe give users fixed user id's and PIN codes for authentication, but no key codes are given so passwords and id's never change. (Bank of Ireland, 2009).

Picture below is an example Osuuspankki's demo internet bank for private users, where making of a SEPA payment can be done by the user. No real transactions take place, but it is possible to enter data in all of the fields and learn the new payment type easily.

Picture 2 Osuuspankki internet bank demo (Osuuspankki 2009a.)

The screenshot shows the 'SEPA-maksu' (SEPA payment) form in the Osuuspankki internet bank demo. At the top, there are tabs for 'Uusi maksu', 'Siirto omalle tilille', 'SEPA-maksu' (selected), 'Ulkomaan-maksu', 'e-lasku', and 'Maksu-pohjat'. The page number '1 / 3' is in the top right corner.

The form title is 'SEPA-maksu'. Below it, a note states: 'Voit maksaa euromääräisen maksun eli SEPA-maksun EU- tai ETA-maihin tai Sveitsiin, kun sinulla on saajan IBAN-tilinumero ja saajan pankin BIC-koodi eli SWIFT-osoite.' Below this is a link '-- Hae maksupohja --' and a dropdown menu with an orange arrow icon.

The form is divided into two main sections. The left section contains fields for:

- Saajan IBAN (with a help icon)
- Saajan pankin BIC (SWIFT) (with a help icon)
- Saajan nimi
- Saajan osoite (multiple lines)
- Maksetaan tililtä (dropdown menu showing '500094-20026730, käytettävissä euroa Testipäätili')
- Maksajan nimi ja osoite (fields for 'TESTI ANNA', 'MALLITIE 2', and '99999 MALLILA')
- Tallenna maksupohjaksi nimellä (text field)

The right section contains fields for:

- Viesti maksun saajalle (ei €-merkkiä) (text area with a help icon)
- Vitenumero (text field with a help icon)
- Toimeksiantopäivä (date field showing '05.07.2009')
- Maksun määrä (text field) followed by 'euroa'

At the bottom right, there is an orange button labeled 'Jatka »'.

The most common features for private user when they use the internet bank are viewing account information, making domestic payments, viewing card information and account statements. Foreign payments have become more popular and because of the new SEPA (Single Euro Payments Area, new payment types have been introduced to make these payments possible.

Security issues are not compromised by the banks, and they take the security of their customers' information very seriously. In comparison to the situation 8 years ago when internet banks were not used as widely as now, table 3 demonstrates unification of security authentication methods by major banks. For users this development brings extra comfort knowing that the services used are secured by agreed standards.

Table 3. Internet Bank authentication methods as of 7/2009 (Nordea 2009e; Osuuspankki 2009a; Sampo Pankki 2009; Aktia 2009; Ålandsbanken 2009; S-Pankki 2009; Tapiola 2009.)

Internet bank (private users)	
	Authentication method
Bank	
Nordea	SSL
Osuuspankki	SSL
Sampo Pankki	SSL
Aktia	SSL
Ålandsbanken	SSL
S-Pankki	SSL
Tapiola	SSL

3.1.2 Corporate users

Businesses in Finland have had the privilege of being one of the first users for internet banking systems in the world. From terminal based systems, a move to internet-based services has happened already over 10 years ago and most of the businesses use an internet bank daily.

Difference from private to corporate users mainly is the functions inside the service. Logging in to the services happens the same way as private users do. As company's payments are usually done from the same place, it is possible to authenticate using an E-id card with a card reader. This eliminates the use of key code cards and user id's making logging in faster to the system and reducing false login attempts to the system. In order to use a card reader when using Corporate Netbank, user needs to download card reader software and driver. (Nordea 2009d, 3.) For businesses, using a card reader instead of a code card brings flexibility and better usability

Businesses need more information about their accounts from a longer period of time to keep track of their accounting. The number of incoming and outgoing payments compared to normal consumers is considerably larger, growing by the size of the business in case.

As many businesses conduct trade outside of Finland, need for making foreign payments in an efficient way is crucial. New SEPA-payments will benefit businesses by making transactions faster compared to EU-payments, bringing cost-savings and more efficient accounts receivables.

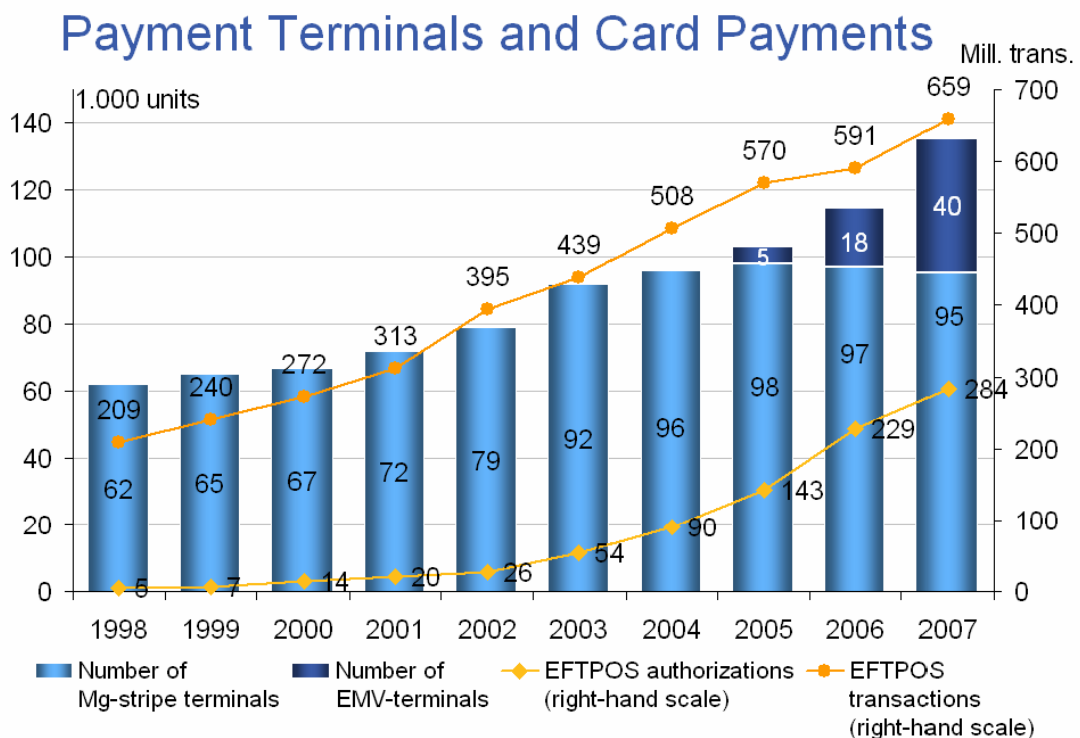
Major difference in making payments between consumers and businesses is that using file transfer to make payments is possible for business users. This means that a payment file is created in an external system, and sent via internet bank to the bank to be processed. Multiple numbers of payments in a same file reduces manual input of payments, when e.g. salaries need to be paid for thousands of people at a time. Entering every payment at a time would prove an enormous and time-consuming effort. Direct debits, account statements, sales receivables, electronic invoices and reference payments can all be collected by using file transfer in an internet bank.

3.2 Payment terminals

Payment terminal is a system where payment happens using a card equipped with a magnetic stripe or chip. After the payment is authorized, seller sends payments stored in the payment electronically to the bank to be processed. Bank cards are being processed by the bank, and credit cards such as Visa, Mastercard, American Express, and Visa Electron are transferred to Luottokunta for processing.

Looking at figure 2, it can be clearly seen that usage of payment terminals and cards has grown significantly over the last ten years. Migration to EMV-based terminals in past 4 years has grown and by the time of writing, it is still ongoing at a rapid pace. The introduction of EMV-cards has led to a slow decline of the number of cards with a magnetic stripe. Because there are no statistics of the current situation yet it is difficult to estimate correctly how situation has changed, but it can be predicted that in 2008 and 2009 the number of cards with a magnetic stripe has reduced dramatically as banks have started offering mostly EMV-cards to their customers. New SEPA-payment area will mean that normal bank card will disappear by the end of year 2010 if everything stays on schedule.

Figure 2. Payment Terminals and Card Payments 1998-2008 (Federation of Finnish Financial Services 2009, 8.)



3.2.1 Desktop terminals

Desktop payment terminals use either modem connection or ADSL connection when transferring money to the bank. Depending on the number of purchases done in a day, terminal usually sends the data into the bank once in a day, usually automatically in the morning. As desktop terminal is connected to the main terminal with a plug, it is usually placed on a counter where customer can enter the PIN or use a signature to authorize the payment. The PIN pad is to be placed in such a manner that outsiders cannot see the PIN entered on the terminal. Most PIN pads are portable by design meaning that they are mounted on a swivel base or can be tilted, ensuring that the customer can safely enter PIN code. (Finnish Banker's association 2006, 16.)

Modern desktop terminals using ADSL connection are fast and cost-effective way for businesses to handle sales without cash. Authentication of the card can be done in 2-3 seconds saving time. (Manison, 2009.)

When the customer decides to pay with a card, it is either read using the magnetic stripe or entered into the terminal if a chip is used. All EMV-cards use a PIN-code when authenticating, and it works the same way regardless of the terminal. Customer is able to cancel or correct the PIN-code if entered incorrectly.

3.2.2 Portable terminals

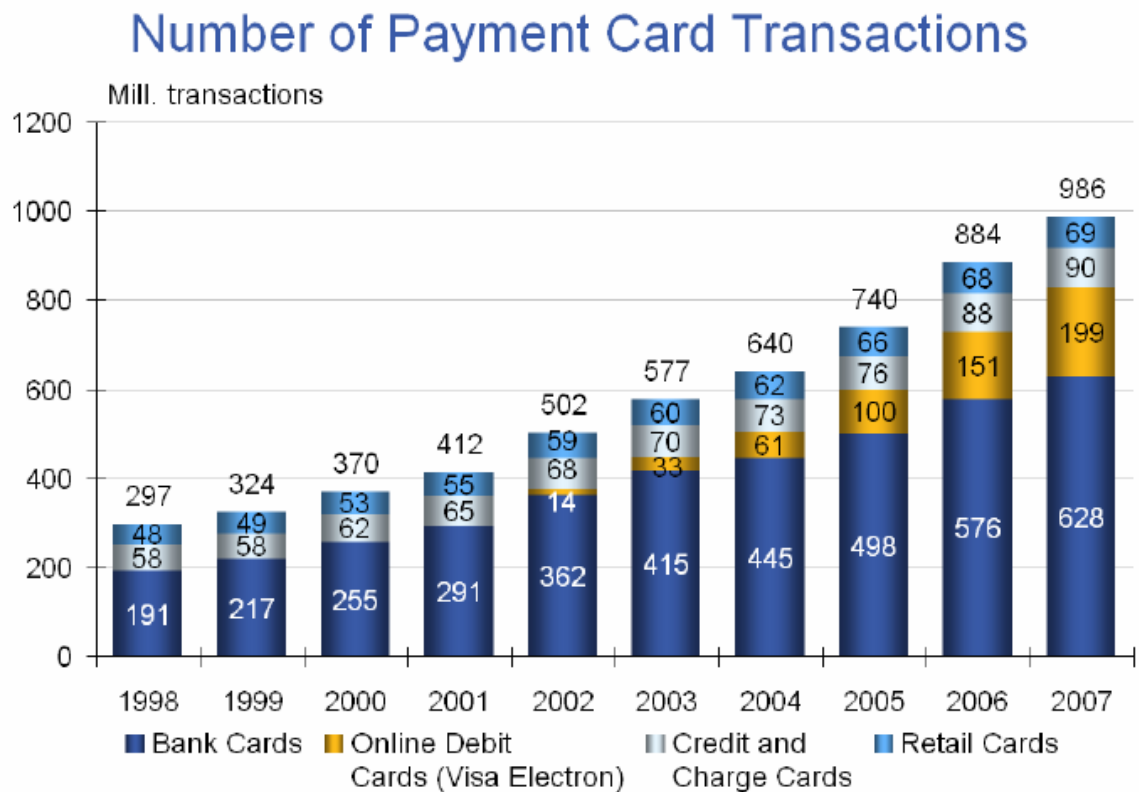
Portable payment terminals use GPRS connection and can be used when the customer is not at the counter. Restaurants and bars use more and more portable terminals, so waiters can receive the payments right at the table instead of going back and forth to print receipt for customer to be signed. EMV-terminals are especially useful as customer can just enter the PIN and take the receipt.

3.3 Payment cards

There are several payment cards in use currently in Finland, most popular ones being Visa Electron, Visa and Mastercard. Bank cards with magnetic stripes are still used but their number is decreasing as EMV-cards are being introduced by banks and payment terminals and ATM's are migrating to use them following international standards.

The number of payment card transactions is growing year by year, statistics being gathered by Federation of Finnish Financial Services to the year 2007. Numbers of bank card transactions in figure 3 have slowly grown from 2005 to 2007, but not as fast as online debit cards, that have doubled their transactions in only two years. EMV-credit cards have not increased their number of transactions as much, because online debit cards have been available for a larger number of users. In addition, using them doesn't depend on user's credit standing. Assumption is that after year 2009 bank card transactions will start to decline at a faster pace due to EMV migration.

Figure 3. Number of payment card transaction 1998-2008 (Federation of Finnish Financial Services 2009, 13.)



3.3.1 Debit and credit cards

Banks in Finland have been distributing their customers SEPA-compatible cards since the beginning of year 2008, so that by the end of 2010 they would be able to make payments on similar terms anywhere in the SEPA area. These cards are acceptable by merchants through-

out the euro area, but merchants remain free to decide what cards they accept. (Federation of Finnish Financial Services 2008, 4.)

Bank cards are being replaced by debit cards and increasing number of consumers already have the card in use. Biggest difference when paying with the card with a debit and credit property using a payment terminal is that user needs to choose whether to use the debit or credit from the card. Finnish customers have been using Finnish terms when using payment cards and transition to new terms has caused some confusion among them. OP-Pohjola Bank has had reclamations from customers who have had to pay commission of ATM withdrawals, when they've used a credit account instead of originally intended debit account. Bank's head of card division Jarkko Anttiroiko believes that new terms will become familiar after few unsuccessful attempts. (Taloussanomat 2009a.)

Another issue facing new EMV-card users is when they pay for petrol using a payment terminal in the petrol station. Most of the stations already have EMV-terminals in place. When using a debit card on a petrol station, customer needs to choose a limit of how much money will be used to fill up the tank. The crediting of the account in the station works on-line, but handling the reservation charge in the bank takes time, director Arvo Ruotsalainen from Neste Oil says. (Taloussanomat 2009b.) When thinking of user experience with a new service like this, it will most probably cause more problems in the future if the issue is not dealt with effectively.

3.4 E-Invoice

E-Invoice, also known as electronic invoice is a new way of invoicing where the invoice is sent and received electronically thus saving the need of sending a paper invoice to the recipient. Electronic invoices don't get lost in the post so deliverance rate is virtually 100% as all invoices can be traced electronically.

If a customer wants to start receiving invoices to the internet bank, it is easily done by finding the biller from the list and sending them receiver information. Most of the big businesses already offer the possibility and some government organizations are already setting deadlines for completely stopping paper invoicing.

Received electronic invoice can be viewed, changed, deleted and confirmed by the receiver. Additional information such as detailed statement of the invoice is provided depending of the

billers. In the example picture E-Invoice is shown in Nordea Bank's website, waiting to be paid automatically off the account as it has been already confirmed. After some time, electronic invoices will replace direct debits.

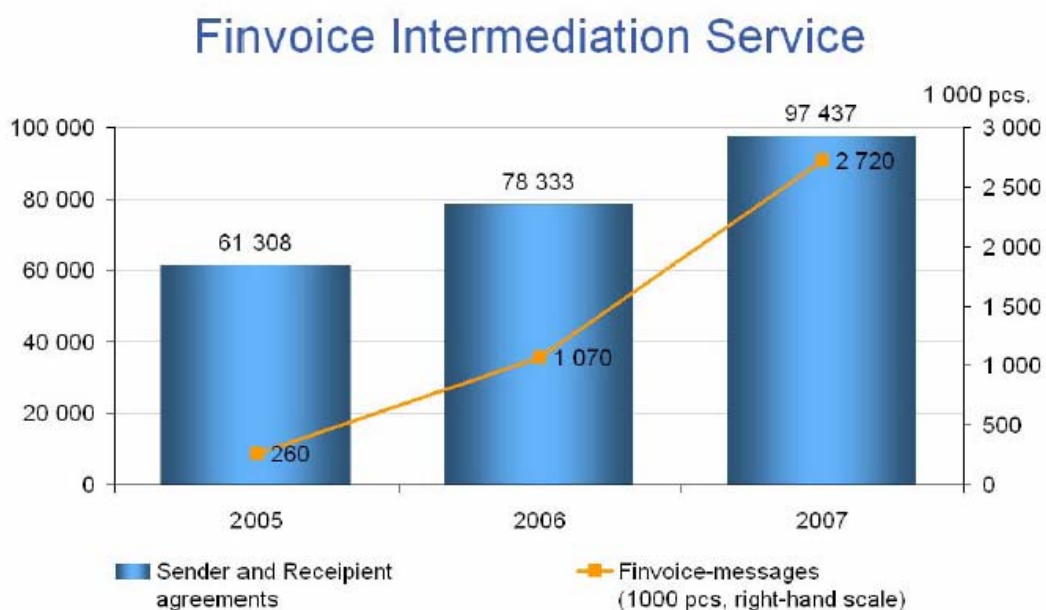
Picture 3 E-Invoice in Nordea's internet bank

Due domestic payments and own transfers					?
Payment date	Beneficiary	To account	Amount		
Käyttötili: XXXXXXXXXXXX - Funds available : XXXXXX + EUR					
13.07.2009	DNA Finland Oy	XXXXXXXXXXXX	24,93+	Edit	Copy Delete
			24,93+	1 pmt(s)	

Use of electronic invoices is on the rise, gaining popularity steadily every year as figure 4 shows. Electronic invoices can be received by consumers and businesses. For consumers, pre-filled invoice is sent to the internet bank eliminating the need of inputting invoice details. Electronic invoice makes recycling, approving and other processing easier (Verkkoratkaisu 2009).

Currently there are still many issues among consumers who don't use electronic invoices, such as complexity of the service, lack of information about it, and general attitude towards new technology. User experience of using a normal paper invoice to pay bills still at some cases feels more comfortable than receiving electronic invoices. Figure below shows a large increase of electronic invoicing since 2005.

Figure 4. Finvoice Intermediation Service (Federation of Finnish Financial Services 2009, 19.)



3.5 E-Payment

Banks in Finland have established a service where users can purchase items over the internet, and use instant payment authenticating with bank user id and key codes. The marketplace has to have an agreement with their respective bank to receive electronic payments, and provide technical implementation of the service according to the bank's service description.

Benefits for consumers is that payments are secure, fast and work the same way as visiting the internet bank. From seller's point of view, they can easily control their incoming payments as all transactions happen online. It is possible to use either the bank account to pay for the purchase, or use a credit account to make the payment. Picture below demonstrates how an E-Payment links look like before the user clicks on them.

Picture 3 E-Payment links for different banks in 2009



Starting an internet shop is simply not worth it for all companies as they vary in size and their needs are different. When starting to receive electronic payments through internet, it is advised to test the service before starting to sell the whole catalogue of items, to avoid unnecessary loss of investments. (Paavilainen 1999, 74.)

3.6 Corporate file transfer

Corporate file transfer using bank program was explained in chapter 2.4. Need for businesses to send payment files to the bank have not changed, but currently there are major changes happening due to the popularity of internet banking. File transfer is nowadays possible using the internet bank, bringing mobility as files can be sent from anywhere. Clearer menu struc-

tures and faster response times make using the service more user friendly than bank program that performed slowly.

The process of sending the file happens generally the same way as from the bank program. After the payment file has been created and saved to a location on the computer or network, user logs in to the internet bank. Using file transfer service inside the internet bank, user selects the type of payment he is going to make, navigates to the file location, sends the file and confirms the transfer. Feedback file from the bank is retrievable for the user after it has been created by the bank.

3.6.1 Web Services

One of the very newest technical implementations of file transfer to the bank for corporations is using Web Service platform. Instead of using an internet bank, files are transmitted through Web Service connection.

Web Service in banking is relatively new technology, and corporate customers are slowly starting to use it by different banks in Finland. In the long term Web Service will replace file transfer which is using PATU-standard encryption and will use PKI-authentication instead. In SEPA area using one unified XML standard for transaction messages brings new possibilities for businesses, making transactions more straightforward and establishing sending larger amounts of unmodified data. (Osuuspankki 2009c.)

3.6.2 SEPA-payments

SEPA migration has been ongoing in the European economic area since the beginning of 2008 and it is still ongoing. Most notable changes for consumers and businesses are EMV-cards and terminals discussed in chapter 3. The planned schedule for completion of migration is by the end of 2010. All services concerning SEPA are in Euro currency, making payments inside Europe easier for consumers and businesses. For example making a SEPA-payment from an internet bank to Sweden using Swedish crown as currency, is not possible.

Making a SEPA payment in an internet bank already works in Finland.. Instead of making a foreign payment to another country, it is possible to make a domestic payment using IBAN account number. If both the sending and receiving banks are in SEPA area, it eliminates the use of SWIFT code in the payment as the system finds it automatically. The payment type is

easy to use, cheaper and at most times faster than normal foreign payment. Problematic fact is that communication by financial authorities and banks about new payment types has not reached the wider public, so many consumers haven't even heard of the possibility to make such payments in the internet bank.

For businesses, it is possible to make SEPA transfers through some banks in Finland using before mentioned Web Service channel. It is advised that companies request their affiliates account information in IBAN and BIC-format and to follow information about SEPA by the banks and financial authorities. (Federation of Finnish Financial Services 2009.)

4 Research implementation

This chapter will start with description of research process, moving on to focus on the research method used and how surveys for private and corporate users were designed and conducted. At the end of the chapter the validity of gathered information and reliability of results are analyzed.

4.1 Research process

Research process aims to discover new aspects related to the research problem and by using a systematic approach it is easier to reach conclusions. The aim for research methodology is to bring methodically possible analysis into problem setting and results finding. The research question should be set so that it is possible to answer, at least to some extent. (Nummenmaa, Konttinen, Kuusinen, Leskinen 1997, 19.)

Based on the research problem and goals, tools and instruments for research can be chosen whether them being tangible or intangible such as a video camera or survey. For empirical research it is important to confirm that the observed construction is empirically understandable. (Nummenmaa etc 1997, 21.)

During research process the materials are gathered using methods and procedures that are considered applicable. When choosing research strategies, most common ones are experimental, survey and case study strategies (Hirsjärvi, Remes & Sajavaara 2000, 122). Research strategy chosen depends of the research problem and what the research aims to achieve. Is it supposed to be predictive, descriptive, explanatory or mapping?

4.2 Research method

In order to find out what is the best research method, it is needed to define how research problems are to be analyzed. Most used research methods in empirical research are quantitative and qualitative research. These research types can supplement each other and are not easily separated from each other. They are considered as supplementary approaches instead of competing with each other, making it possible to use them side by side. (Hirsjärvi etc 2000, 125.)

In the quantitative research it is vital to state the hypotheses, define terminologies, choose test personnel and define sample to get coherent results. Conclusions are made based on statistical analysis by e.g. using percentage charts (Hirsjärvi etc 2000, 129.)

4.3 Survey design

The survey for research was designed first on paper as a draft version, including questions and statement both for private and corporate customers who use bank services in Finland. Internet-based Webropol system was used to design the survey for a final format to be viewed by the users of survey. The survey was designed to be primarily answered through internet link, and it was also available to be filled in paper format if needed.

Two different surveys were designed, one for private users and other for corporate users. From both of the surveys there was an English version created, target sample group being non-Finnish users in Finland.

Questions in the survey were selected so, that for Finnish and non-Finnish private users and corporate users the question pattern would be similar, including similar topics and questions. This kind of approach would bring opinions from different target groups using same services. For corporate user there were additional questions relating to services that are only available for them.

Because the survey included questions about more than one new banking service, it was designed to be easy and fast to fill out, to minimize frustration when answering a relatively large number of questions. Multiple choices, statements and scaled grading were used to evaluate

user experiences on modern banking solutions. Large number of questions was intentional, for the researcher to be able to pick relevant topics for analysis phase.

All surveys were tested beforehand by two test persons to point out mistakes and to test technical implementation of the survey over the internet. Few faults in survey design were found during the testing and were corrected accordingly.

Estimated target to reach for private user survey was to get at least 100 responses within a month. As the survey was primarily targeted for Haaga-Helia University of Applied Sciences students during summer holidays, it was requested to get a large number of recipients for the internet survey. Survey was sent twice inside a time frame of 3 weeks to maximize number of responders. From a number of 3500 recipients 723 responses were gathered surpassing greatly the expectations set in the beginning making it possible to close the survey on time.

Survey for corporate users was not sent out as mass posting, and the target for responses was set considerably lower, to 30 responses. Businesses that were sent the survey operated mainly in service industry, building maintenance and accounting. Email addresses of the companies were retrieved by using internet search engines. Paper versions of the survey were created for businesses in addition to the email surveys sent, after realizing that by sending only email survey links the target would become difficult to reach. The initial target of 30 was not reached and the time frame for survey completion had to be extended by 2 weeks. After that, 24 answers in total were gathered. Due to the small number of answers from businesses most of the questions answered in the survey couldn't be used for research.

4.4 Validity of results

In a research it is vital to aim to minimize possible errors, but how valid research is, may differ from time to time. It is therefore important to evaluate the validity of results whenever doing research (Hirsjärvi etc 2000, 213.)

In the research for modern banking usage, both Finnish and non-Finnish were given exactly the same survey to be filled out taking extra care of translations to avoid misinterpretation of questions. Both target groups had the same initial basis on filling out the survey. All of the users were known to use Finnish banking services, and they were able to fill out the survey through internet.

To get valid results, there is a need to get a sufficient amount of responses from the respondents to get the maximal variety of users giving their views and opinions. Given the structure of the questions in the survey, they leave very little room for misinterpretation in the analysis phase, as no open questions were available for the respondents.

4.5 Reliability of results

One major concern for a researcher when gathering results is the number of sufficient responses gathered. With proper planning from the beginning, good results can be achieved. Suitable size of material gathered improves both reliability and cost-effectiveness of results. (Nummenmaa etc 1997, 22.)

To get reliable results, survey questions were designed so that they were understandable both for the researcher and the target group. By testing the survey with different users before sending it out, possible errors were spotted and changes needed were done accordingly.

From private users, a total of 723 responses were gathered, of which 654 responses in Finnish. Same survey in English was answered by a total of 69 users, forming the target group of non-Finnish users. Considering the time of the year survey was conducted, the number of responses provides reliability to the analysis. Most of the persons in the target group were on summer holiday during the time survey was conducted, especially many foreign users spending time elsewhere than in Finland.

From businesses that received the survey, a total number of 24 were answered. Initial target for responses was set to 30, but 24 answers can be considered as acceptable amount of responses. However, small amount of responses affects the results so, that they are more directive than providing exact conclusions.

5 Research on modern banking usage

In the past few years, increasing amount of users have internet banking, electronic invoicing and payment cards in use. These services have become daily necessities for private users and businesses when dealing with their daily financials.

Due to the increasing amount of foreign users in Finland, same services that are used by Finnish citizens are being used by non-Finnish users. They have different perception of services, perhaps having never used electronic banking or the level technology in their original country is much lower.

In this research, main target groups are Finnish and non-Finnish private users that deal with new electronic banking services in Finland. Third main target group are businesses that use same services, such as electronic invoices.

5.1 Background variables for target groups

Main background variables for users were age, sex and the bank they were using. Figure 5 shows that 2/3 of the answers came from female users when the survey was answered by Finnish users. Survey for non-Finnish user provided a more equal spread between respondents sex, demonstrated in figure 6. The caption is taken from the same institution for both target groups, so it can be noted that answering activity for male non-Finnish users was slightly higher than their Finnish counterparts.

Survey was also designed for businesses, containing same questions as surveys for private users. Aim of the research targeted for businesses was to get another view of experiences of same services, by different kinds of user groups.

Figure 5. Sex of respondents (private users)

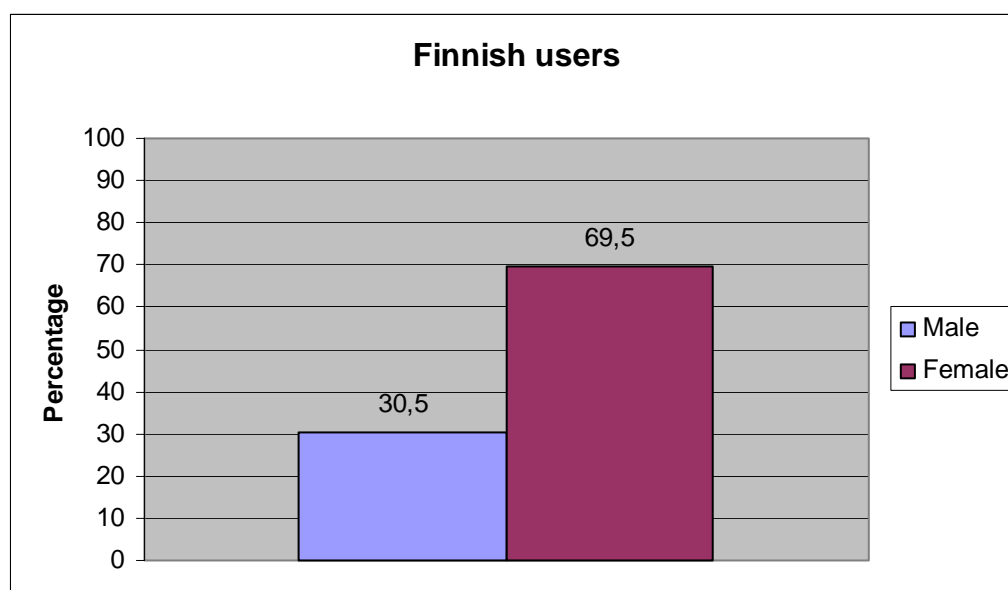
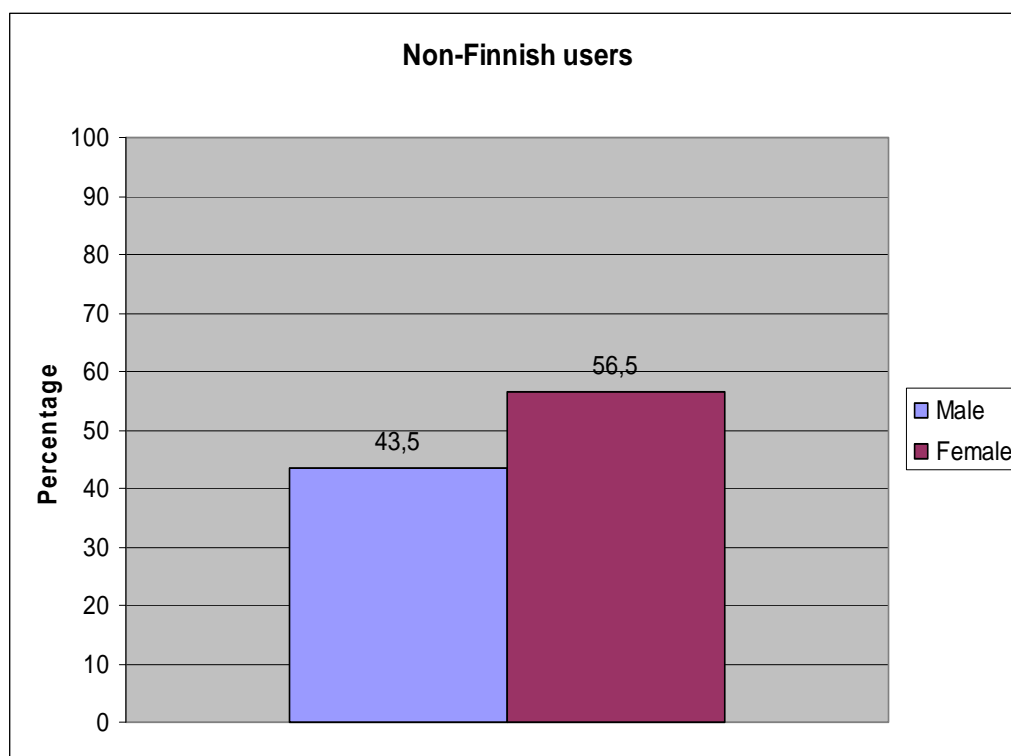


Figure 6. Sex of respondents (private users)



Age division in both surveys for Finnish and non-Finnish users shows that most of the answerers belonged to the group where age was between 18-25 (58% Finnish users, 59, 4% non-Finnish users). In both target groups no answers were gotten from users under 18 years and above 60. This was anticipated because the main target groups for surveys were University level students. Figures 7 and 8 demonstrate the age division of respondents. All others but two Finnish respondents filled their age in the survey.

Figure 7. Finnish respondents by age

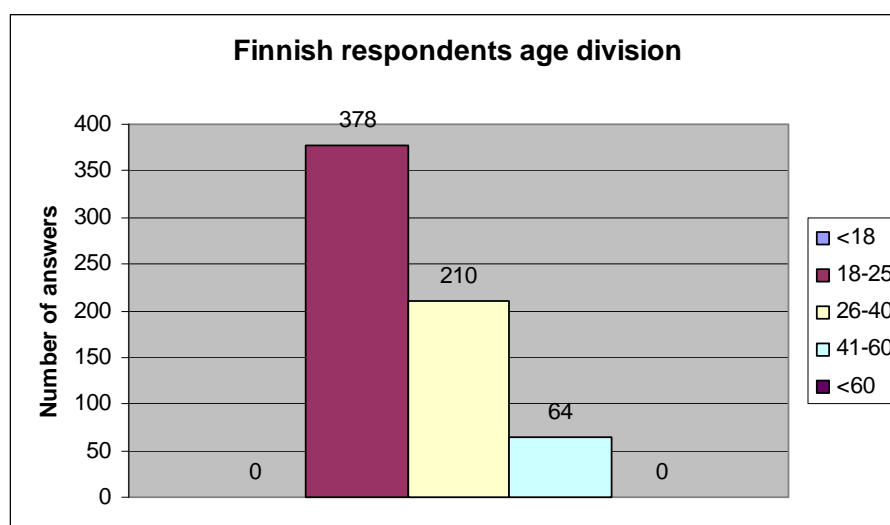
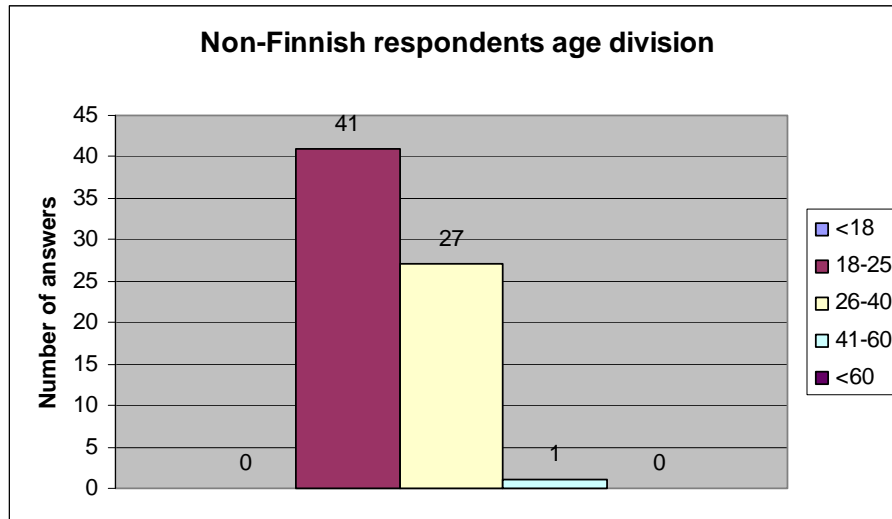


Figure 8. Non-Finnish respondents by age



Three of the major banks in Finland were represented in the research, and from all surveys a sufficient number of results by each bank were retrieved. Especially with non-Finnish users, most of the respondents were using one of the three major banks. Smaller banks had less users. Nordea Bank had most users in both surveys, dominating both results by numbers. Questions in the research were formed in a way that possible effect on the results is minimized as research does not compare banks. In figure 10, only banks that had users are shown in the graphic as from the target group, only major banks had customers.

Figure 9. Number of Finnish answers by bank

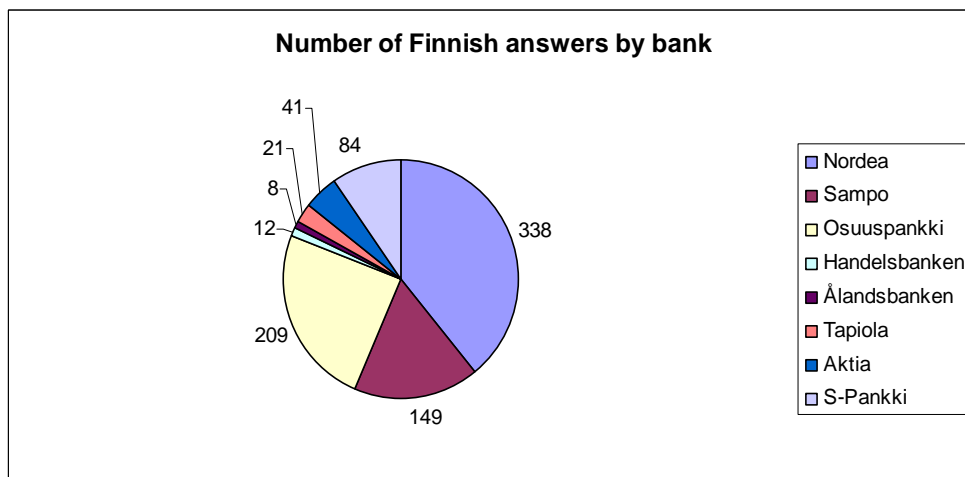
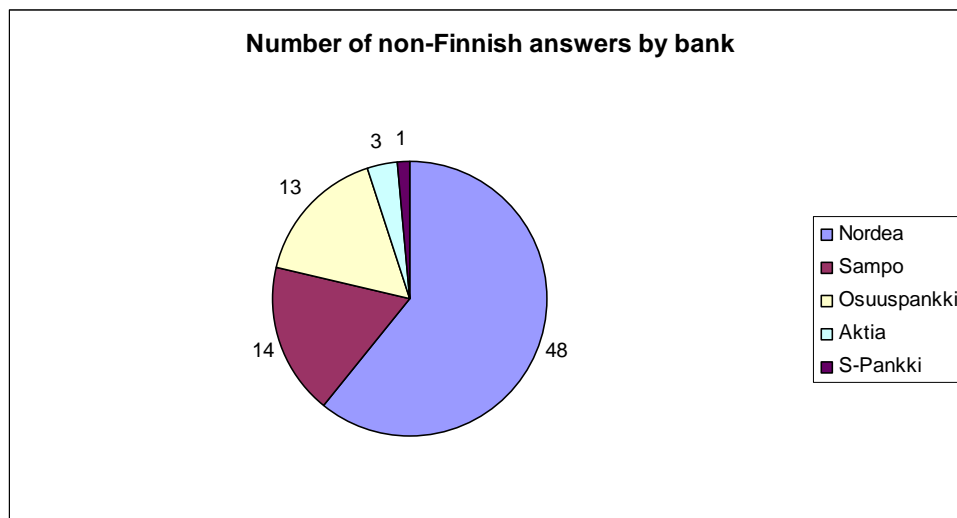


Figure 10. Number of non-Finnish answers by bank



5.2 Differences in modern banking experiences

The idea of the research was to study how modern banking solutions used daily are perceived by Finnish users and non-Finnish private users, to find out if there were differences on how different services are accepted and used. In addition, businesses were asked about same topics. Focus of the research was on internet banking, electronic invoicing, payment cards and SEPA payments. These services are used weekly or even daily by users, regardless of the bank they are customers with.

5.2.1 Internet banking

Internet bank is widely used by users living in Finland. Nearly all daily banking operations can be done online and usage of the service had become extremely familiar regardless of the bank a person is using. Both for Finnish and non-Finnish users it is clearly seen in figures 11 and 12, that there is no resistance of using the service, and it is widely accepted. Percentage of users for non-Finnish is only slightly lower, but still proving that all banks have sufficient services for foreign users using other language than Finnish. 87, 5% of business users were using an internet bank. Low percentage can be explained by small number of responses.

Figure 11. Finnish internet bank users

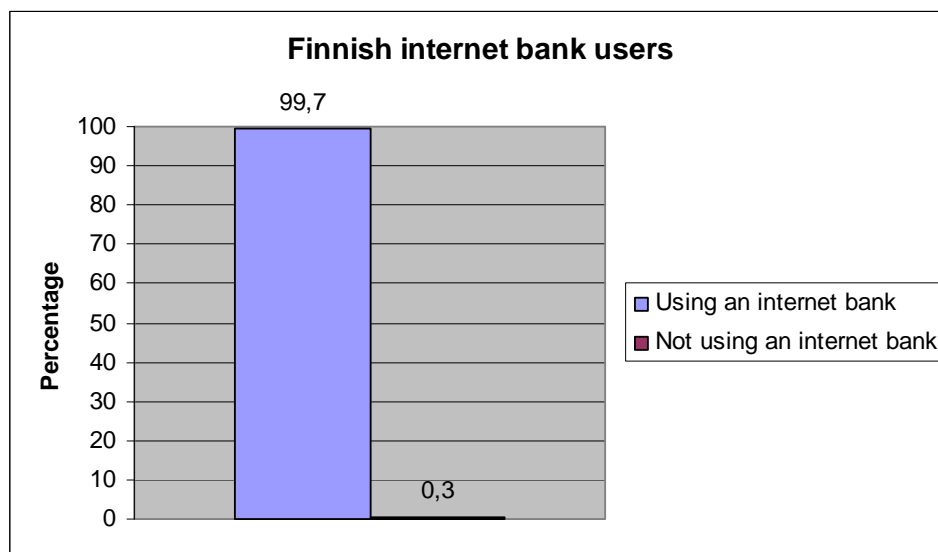
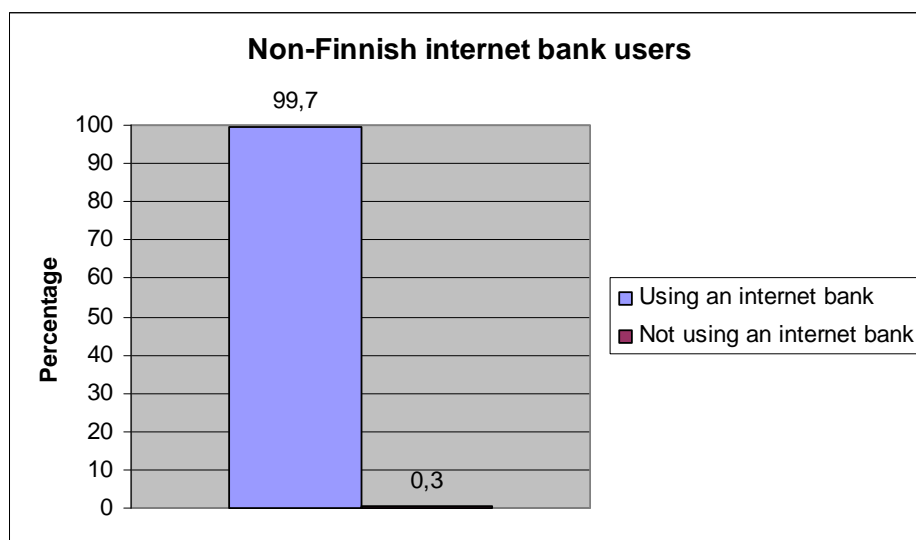


Figure 12. Non-Finnish internet bank users



To find out about user experience, users were also asked, if the internet bank they are using included sufficient amount of help functions inside the service. In figure 13 it is shown, that 91, 3% of Finnish users are happier with their internet banking when it comes to help functions inside the service. Percentage for non-Finnish users is slightly lower at 74, 6%, which still can be considered as a very good result. For businesses, 81% of them considered the amount sufficient, placing them between Finnish and non-Finnish users.

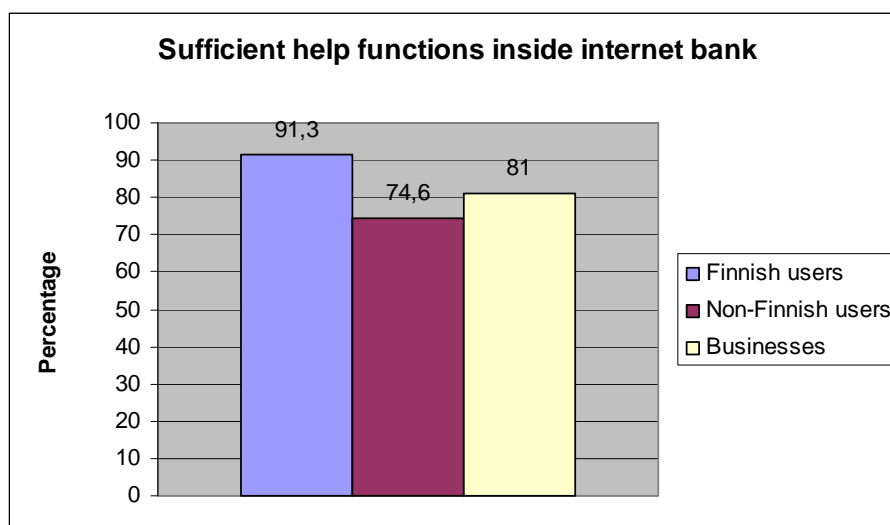
Possible reasons for the difference is that other users than Finnish might not have had enough guidance in the internet bank usage when starting the service, and are only able to learn it by using it and by using the help functions provided. Businesses tend to be more critical of services, as they use them more frequently and pay more for services.

When asked to rate the importance of help sections of the service, users in all target groups used a scale of 1-10 where 1 marked little importance against 10 with strong importance. Results in this rating proved that clear majority of both target groups rated the availability of help functions at number 7 or higher (72% Finnish, 75% non-Finnish, 76,2 businesses).

Overall user experience of the internet bank, ranked positive by 56, 9% of Finnish users, and 50% by non-Finnish users. Very positive user experience was higher among non-Finnish users at 37, 5% against 24, 6% among Finnish users. Business users were more careful, 66, 7% rating the service positive. Conclusion of this can be drawn that as pioneers of internet banking, Finnish banks are able to offer their customers user-friendly and working systems.

Although the general attitude towards banks as service providers is positive, it is worth noting that 18, 2% of non-Finnish users have considered changing their bank due to the poor usability of the internet bank. Same figures for Finnish private users were 9% and only 4, 8% for businesses. Usability for users other than Finnish leaves improvement for all banks in this category.

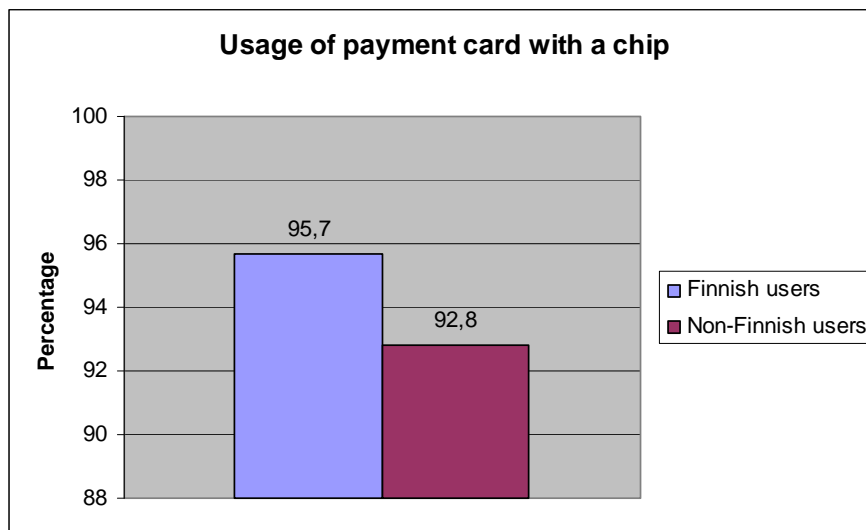
Figure 13. Help functions inside internet bank



5.2.2 Payment card usage

Today EMV-cards are becoming increasingly popular in Finland. Users were asked about card usage, user experiences and possible problems encountered while using the cards. User experiences regarding debit cards were given specific importance. Figure 14 shows, that nearly all of the users regardless of their background are already using modern EMV-cards. This is due to the fact that banks are strongly encouraging users to try on new services, and to the fact that regular bank cards are disappearing at a rapid pace.

Figure 14. Users with a payment card equipped with a chip



Regarding debit card usage, users were given the following statement: “Following international agreements, Debit cards are introduced in Finland and some customers already use them. Please choose from the following statements the ones that apply best to your experiences”. Statements are shown in figures 15 and 16. From business users, only 5 out of 24 were using payment terminals, so figures are based only on Finnish and non-Finnish users..

Comparing figures 15 and 16, it can be seen that both user groups think of debit cards as a positive thing, foreign users topping up to 53, 1%. Successful payments made with the card have higher percentage rate among foreign users. This may be due to the reason that similar cards have been used by them abroad in their original country of origin or place of living.

Considerable differences between the two target groups were how information of the cards is perceived, and what the purpose of the card actually is. 33, 1% of Finnish users think that there is not enough information about the cards and 34, 2% of them find the purpose of the

card unclear. Respective percentages with foreign users were 12, 5% and 14, 1%. Such a big difference may be explained by the fact that debit cards are already used widely outside Finland, therefore giving foreign users already existing knowledge about how the cards work.

Figure 15. Debit card usage experiences for Finnish users

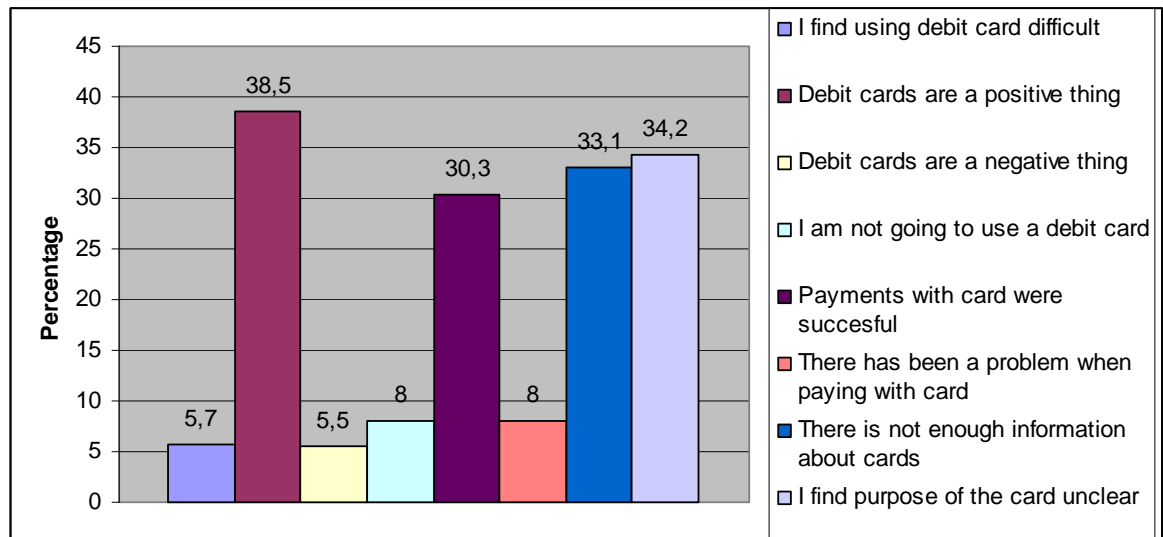
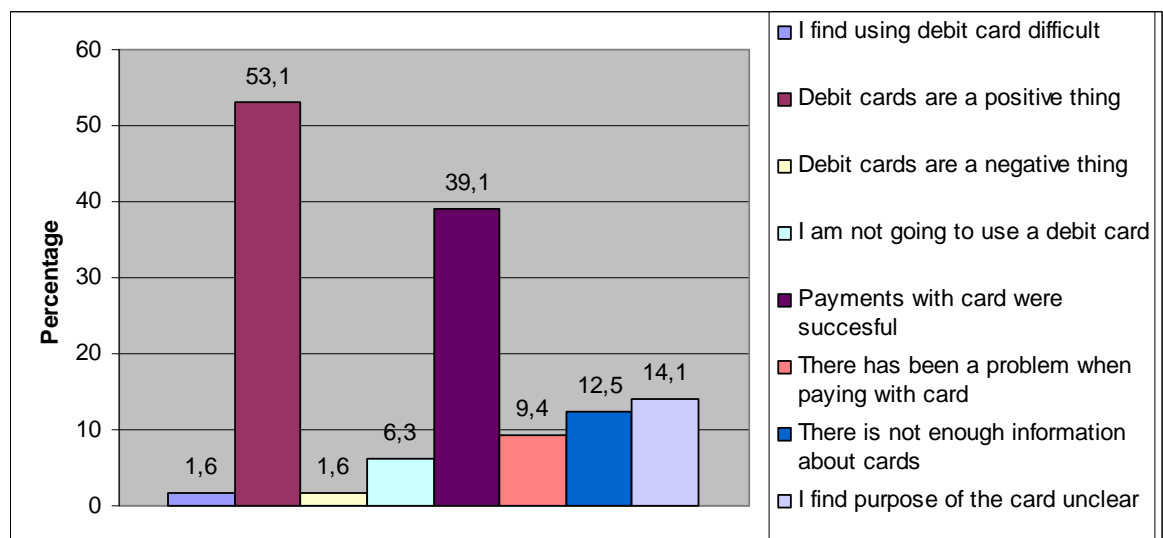


Figure 16. Debit card usage experiences for non-Finnish users



Possible problems when using payment cards were studied in the research, shown in figures 17 and 18. Again, users were able to select from a number of statements the ones, which best applied to the user experience of the card. Figures are mainly similar between the target groups, except when the problem was associated by the user to deal with bank or a credit company. 19% of Finnish users experienced problems with the payment card and associated the cause of the problem to be in the bank or the credit company. On the contrary, only 4, 9%

of non-Finnish users experienced similar situation when using payment cards and terminals. When businesses were asked, problems were mainly associated with problems with the terminal (40%) or forgotten PIN code (20%). Question was answered by only 5 businesses, so results are not reliable.

The root cause of the difference is probably that Finnish users tend to associate payment problems with a financial institution rather than the technology itself. One possibility of the difference is that the number of answered surveys between the target groups was large, therefore most likely had there been more answers from non-Finnish users the difference would have been smaller.

Figure 17. Possible problems encountered using cards (Finnish users)

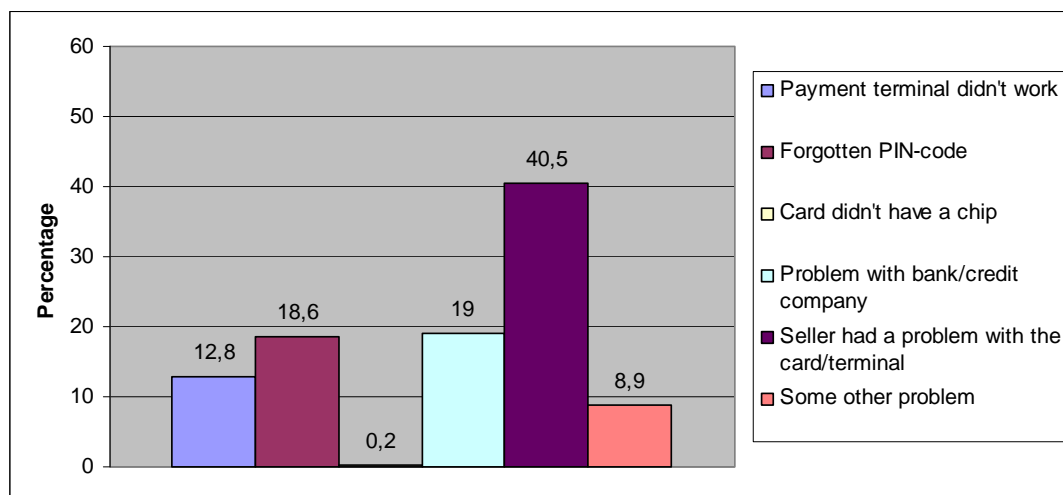
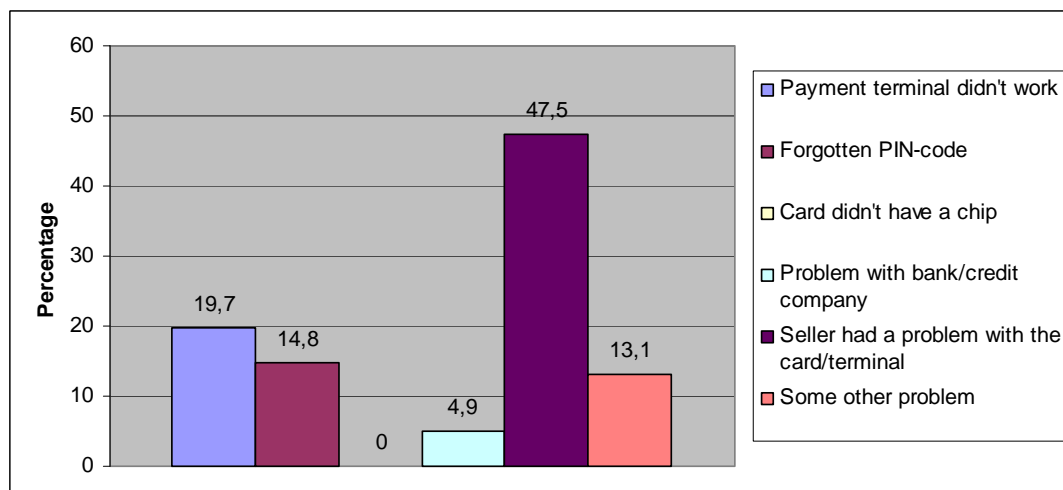


Figure 18. Possible problems encountered using cards (non-Finnish users)



5.2.3 Electronic invoicing

Using electronic invoices is becoming increasingly popular and especially businesses start to offer only electronic invoices to their customers, or charging extra costs for paper invoices. Figures 19 and 20 contain statements regarding electronic invoicing.

378 answers from Finnish users were from users aged between 18-25 years. After filtering results, it was discovered that 29,1% of this target group rather paid for a paper invoice than used an electronic one. For a user group that is considered of technologically advanced generation, results are surprising. Respective figures for non-Finnish users 18-25 years were 7,7%. Finnish users have much stronger resistance against change in technology based on the results. Yet, both Finnish and non-Finnish users consider electronic invoicing as a positive trend and understand it's importance on preserving environment.

Figure 19. User experiences on electronic invoicing (Finnish users)

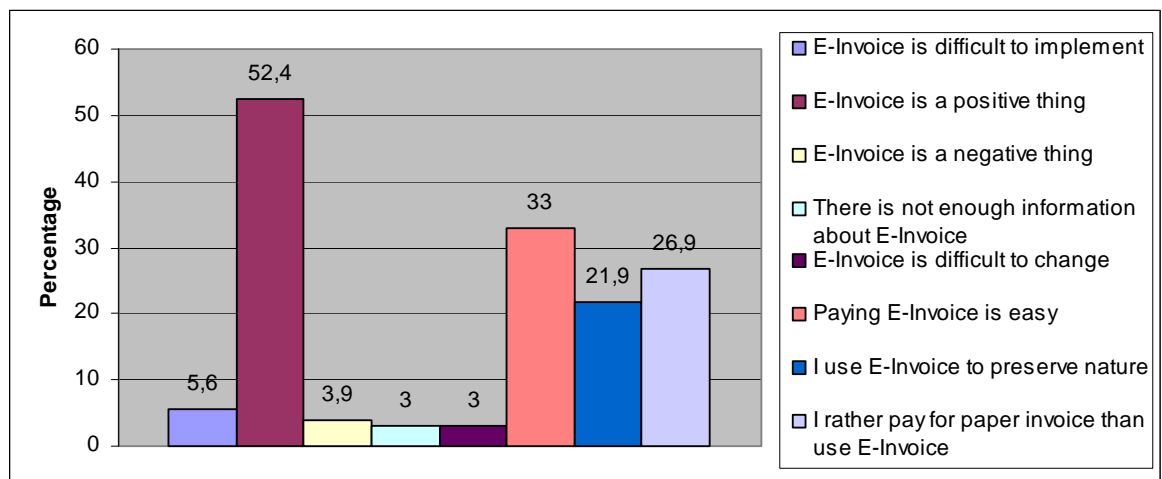
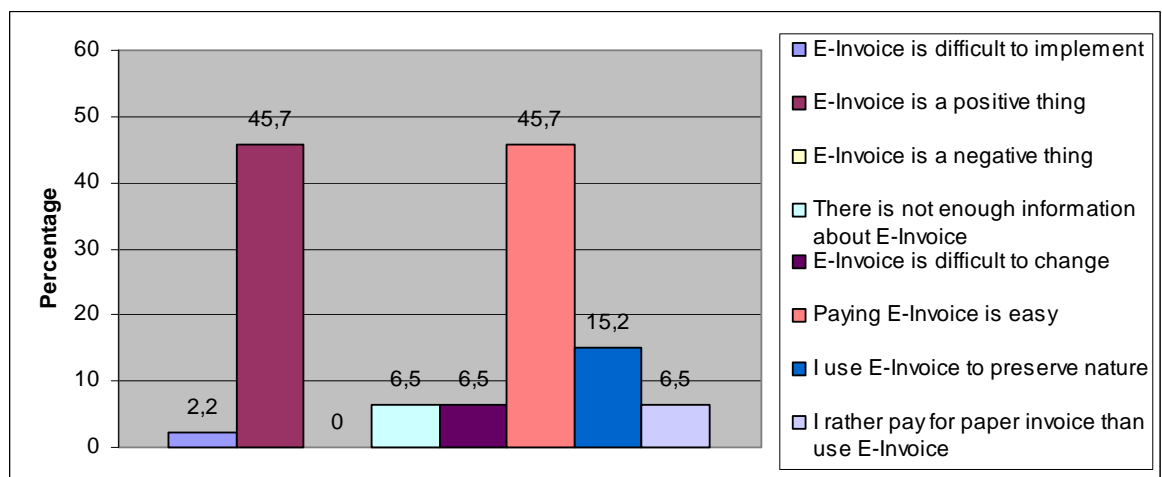


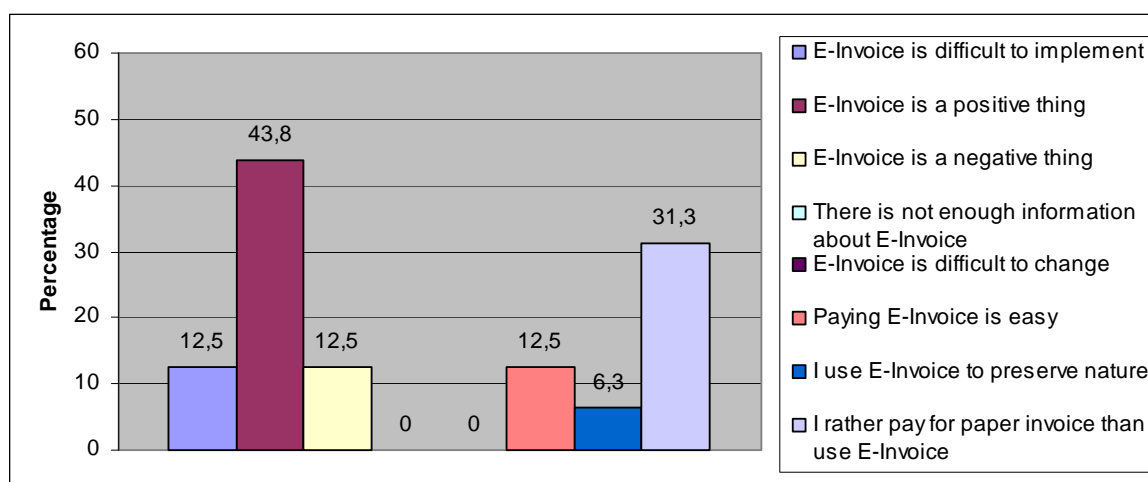
Figure 20. User experiences on electronic invoicing (non-Finnish users)



When businesses were asked the same questions, it was notable that 31,3% of all of them would rather pay for a paper invoice than use an electronic invoice. Percentage runs highest of all the three groups considered, and it seems that implementation of electronic invoices for businesses causes frustration and problems, as figure 21 shows.

Based on the results there are difficulties expected when greater number of businesses switch from paper invoicing to using only electronic invoices. As majority, 54,2% of businesses had from 2-20 employees, it needs to be considered when analysing the results. Had there been more answers from bigger businesses with 100 or more employees, it would have most probably brought the percentage down when considering paper invoice over electronic one.

Figure 21. User experiences on electronic invoicing (Business users)



5.2.4 SEPA payments

Following international agreements, there are many changes going on in the European economic area concerning payments inside European Union. New SEPA area will make it possible to make SEPA payments to other EU countries in euro currency, instead of using the normal currency payment. Users are able to make payments by using the beneficiary IBAN account number and need not fill out the SWIFT code or the receiving bank. This makes making payments easier, and the customers don't have to pay as many service charges as before.

All three target groups in the survey answered the same question related to SEPA payments. The migration deadline in the EU area for SEPA is due to complete by the end of 2010, and the whole process is already way over halfway towards completion. Users were given statements regarding SEPA payments and asked to fill out the ones that were most relevant concerning their user experience on making SEPA payments.

By comparing answers between businesses and private users, it is clear that SEPA term is very unfamiliar for private users regardless of their background, whereas businesses have more information about it already. Only 4, 8% of business users in figure 23 admitted that SEPA is a new term to them and 19% of them had done the payment successfully. For Finnish and non-Finnish private users the same figures are 48, 8% (figure 22) and 40% (figure 23). Successful payments done by private users were both under 10%, at 8, 9% for Finnish and 8, 3% for non-Finnish users.

Explanation to these results can be drawn from the fact, that businesses have a lot more transactions outside Finland, and may have currency payments done on a daily basis. For a normal Finnish private user, sending money abroad is relatively seldom needed. For non-Finnish users, lower percentage is explained perhaps by the fact, that users have a bank account in their country of origin, and send money there regularly. It is expected that SEPA payments will be used by them by greater numbers in the future, if the money is sent to another country in Europe.

Figure 22. User experiences on SEPA payments (Finnish users)

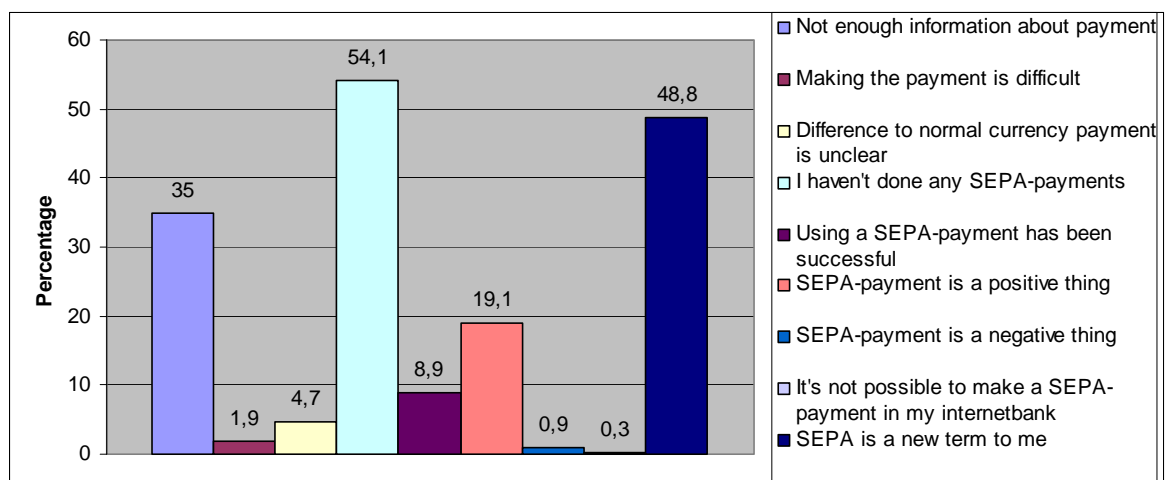
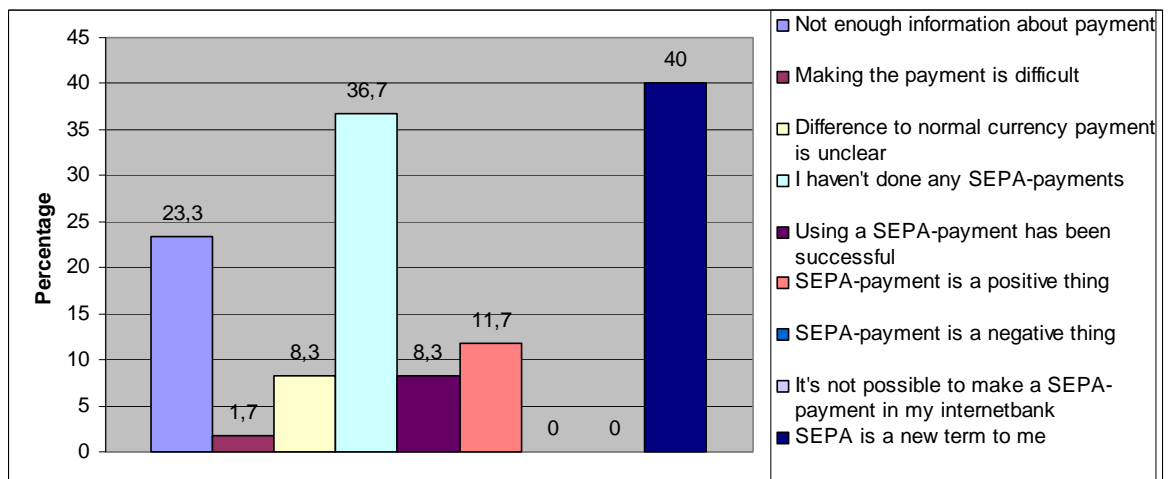
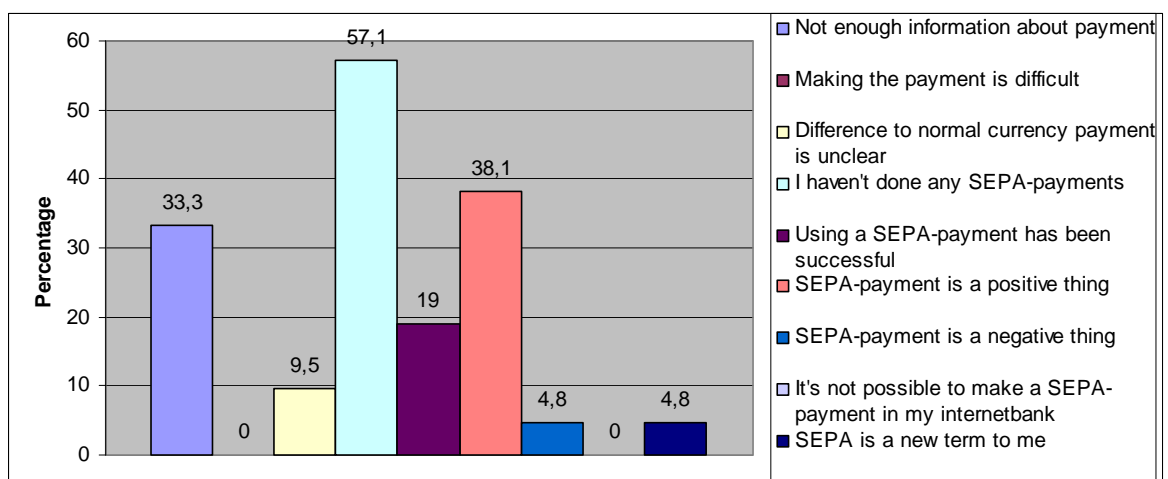


Figure 23. User experiences on SEPA payments (non-Finnish users)



When looking at how information of SEPA payment is available, it is surprising that figures for businesses and private users regarding information availability about the payment, are somewhat similar. 33, 3% of businesses think that there is not enough information about the payment (figure 24). Non-Finnish private users are the group who seem to be updated best regarding information, where 35% of Finnish users share the same view as businesses. It seems that banks need to inform their customers better in terms of new payment possibilities, especially their business customers.

Figure 24. User experiences on SEPA payments (Business users)



It must be noted from the results, that given the small amount of answers from businesses, no definite conclusions can be drawn. 57, 1% of businesses in the survey admitted that they hadn't done any SEPA payments. This figure is most likely influenced by the small amount of

responses, thus had there been a bigger sample, the percentage would have most likely been lower. Results for Finnish and non-Finnish users are considered reliable, due to the large number of answers from both target groups.

6 Conclusions

Research was carried out to find out about user experiences regarding modern banking solutions between different target groups in Finland. Surveys were conducted for three different user groups. Finnish and non-Finnish private users and businesses were all designed a survey to be filled out, containing similar questions and topics.

For Finnish users, total of 654 private users and from non-Finnish users a total of 69 users answered the survey. From businesses, 24 answers were gathered in total. Age division for private users was 18-60 years, and for businesses 18-60 years and over. Businesses that answered the survey had from 1 to 1000 employees.

Even though users were asked about their age and the bank they were customers with, the focus of the research was on differences between user groups. Results shown include all the age groups that answered the survey, if not otherwise stated. The differences between user experiences with different user groups are compared in the statistical figures.

6.1 Main results of the research

Research shows that age is not a major factor when evaluating user experiences and feelings about electronic invoicing. Even the youngest sample target group is somewhat resistant against electronic invoicing and willing to pay for old technology instead of adapting a new one.

When asked about debit card usage following SEPA migration in EU, most of the private and business users thought the service had a positive impact. Most of the problems encountered were associated with payment terminal usage or with financial institution. Results were different by each user group.

Using an internet bank has spread widely in Finland, and nearly all private users and businesses use the service. User experience regarding internet banking ranks positive, even very

positive at all user groups. This shows that Finnish banks have functional and user-friendly systems that are easy to use for Finnish and non-Finnish users.

Regarding internet bank usage, users were asked whether the service contained enough help functions. As expected, Finnish private users and businesses were more satisfied with help functions than non-Finnish users. However, the percentage difference is not a major one between target groups.

New payment types being introduced, users were asked about their experiences using SEPA-payments. Research showed that SEPA as a term is relatively new to Finnish and non-Finnish private users. Businesses are familiar with the payments, but small amount of them have made successful payments. Small number of answers from businesses affects reliability of these results. Informing users about payments needs improvement by banks and financial institutions based on results by all user groups.

6.2 Future research

Surveys for the research included main topics discussed in this thesis, but it soon became apparent that the number of questions in each survey was far too big and the scope of the questions too large in order of all the material gathered to be used in the research. Many questions used in the survey were left intentionally out from the research, because scope of the thesis had to be limited.

Extra material gathered in the survey phase makes it possible to concentrate on other areas of banking, and provides opportunities for comparison between banks. For example by using results from Finnish users, it is possible to find out which bank has most satisfied customers at the moment, when it comes to modern banking services and their usage. Research material also gives valuable information for banks about their competitors.

By using a large sample of businesses, it is possible to study how electronic invoicing is accepted and what problems there are when using it. Migration from bank programs to internet banking is ongoing and by targeting the survey to a relevant interest group, it is possible to study which bank operates best transferring bank program features into internet banking.

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12) Onko käytössäsi siruominaisuudella varustettu pankkikortti tai luottokortti?

- ☐ Kyllä
☐ Ei

Jos vastasitte edelliseen kysymykseen "Ei", oikaa hyvä ja siirtykää kysymykseen numero 16.

13) Oletteko maksaneet ostoksia käyttäen maksupäätteillä tunnistautumiseen PIN-ominaisuutta allekirjoituksen sijaan?

- ☐ Kyllä
☐ Ei

14) Kuinka turvalliseksi koette tunnistautumisen käyttäen PIN-koodia maksupäätteillä?

1 erittäin helppo 2 helppo 3 normaali 4 turvallinen 5 erittäin turvallinen

Turvallisuus ☐ ☐ ☐ ☐ ☐

15) Jos sirukortin kanssa on ilmennyt jokin ongelma, mikä seuraavista kuvaa sitä parhaiten?

- ☐ Maksupäätte ei toiminut
☐ Unohtunut PIN-koodi
☐ Kortissa ei ollut sirua
☐ Luottokannassa/pankissa häiriö
☐ Kauppialla ongelma laitteen/kortin kanssa
☐ Jokin muu ongelma

16) Oletteko käyttäneet maksukorttia ostoksiin Internetissä? Jos olette, kuinka helppokäyttöiseksi koette palvelun?

1 erittäin vaikea 2 vaikea 3 neutraali 4 helppo 5 erittäin helppo 6 maksukorttia ei ole käytetty Internetissä

Helppokäyttöisyys ☐ ☐ ☐ ☐ ☐ ☐

17) Kuinka arvioisitte maksukortin ja päätteiden yleistä käyttökokemusta?

1 erittäin negatiivinen 2 negatiivinen 3 neutraali 4 positiivinen 5 erittäin positiivinen

Käyttökokemus ☐ ☐ ☐ ☐ ☐

18) Kansainvälisten käyttäjien mukaisesti uudet Debit-kortit otetaan Suomessaakin käyttöön ja suurella osalla asiakkaista kortteja on jo käytössä. Valittak seuraavista parhaiten sopivat vaihtoehdot korttien osalta.

- ☐ Koen Debit-kortin käyttöönoton hankalana ☐ Koen kortit myönteisenä asiana ☐ Koen kortit negatiivisena asiana ☐ En aio käyttää Debit-korttia ☐ Kortilla maksaminen on sujunut ongelmitta
- ☐ Kortilla maksassa on ollut ongelmia ☐ Kortista ei ole tietoa tarpeeksi ☐ Kortin käyttötarkoitus on epäselvä

E-palvelut

19) Onko käytössäsi E-lasku?

- ☐ Kyllä
☐ Ei

20) Kuinka arvioisitte E-laskun käyttöönottoa ja käyttämistä?

1 erittäin vaikea 2 vaikea 3 neutraali 4 helppo 5 erittäin helppo

Asteikko ☐ ☐ ☐ ☐ ☐

21) E-lasku yleistyy käyttäjien keskuudessa. Valittak seuraavista vaihtoehdoista parhaiten sopivat liittyen E-laskun käyttökokemukseen.

- ☐ E-lasku on hankala käyttöönottaa ☐ Koen E-laskun positiivisena asiana ☐ Koen E-laskun negatiivisena asiana ☐ E-laskusta ei ole tarpeeksi tietoa ☐ E-lasku on hankala maksaa
- ☐ E-lasku on hankala muuttaa ☐ E-laskun maksaminen on helppoa ☐ Käytän E-laskua ympäristöystävällisesti ☐ Maksan mieluummin paperilaskusta kuin otan E-laskun käyttöön

22) Oletteko käyttäneet E-maksua?

- ☐ Kyllä
☐ Ei

23) Kuinka arvioisitte E-maksun turvallisuutta?

1 erittäin helppo 2 helppo 3 neutraali 4 turvallinen 5 erittäin turvallinen

Asteikko ☐ ☐ ☐ ☐ ☐

24) Kuinka arvioisitte E-maksun käyttöönottoa ja käyttämistä?

1 erittäin vaikea 2 vaikea 3 neutraali 4 helppo 5 erittäin helppo

Asteikko ○ ○ ○ ○ ○

Uudet maksutyytit

25) Uusi yhtenäinen euromaksusääntö mahdollistaa SEPA-maksun tekemisen normaalin valuuttamaksun sijasta. Valitkaa seuraavista parhaiten sovit lähtyen SEPA-maksun käyttökokemukseen.

- ☐ SEPA-maksusta ei ole tiedotettu tarpeeksi ☐ Maksun teko on hankalaa ☐ Ero normaalin valuuttamaksuun häilyvä ☐ En ole tehnyt SEPA-maksua ☐ Olen maksanut onnistuneesti SEPA-maksun
- ☐ Koen SEPA-maksun myönteisenä asiana ☐ Koen SEPA-maksun kielteisenä asiana ☐ SEPA-maksun teko ei onnistu verkkopankissani ☐ SEPA on minulle tuntematon käsite

26) Lopuksi arvioikaan asteikolla 1-5 (1=toteutunut erittäin huonosti, 5=toteutunut erittäin hyvin) kuinka seuraavat asiat ovat toteutuneet palveluiden kehittyessä viimeisen vuoden aikana.

	1	2	3	4	5
Uusista palveluista tiedotetaan tarpeeksi	○	○	○	○	○
Palvelut ovat helpokäyttöisiä	○	○	○	○	○
Pankkiasiointi on helpottunut	○	○	○	○	○
Verkkopankkini vastaa tarpeitani	○	○	○	○	○
Maksukorttini vastaa tarpeitani	○	○	○	○	○
Uudet palvelut on helppo ottaa käyttöön	○	○	○	○	○
Uudet palvelut säästävät rahaa	○	○	○	○	○
Uudet palvelut säästävät aikaa	○	○	○	○	○
E-lasku on selkeä ottaa käyttöön ja maksaa	○	○	○	○	○
Maksaminen ja asiointi verkossa kortilla on helppoa	○	○	○	○	○
Sirukortilla maksaminen on valtatonta	○	○	○	○	○

Lähetä



Appendix 2: Kysely yrityksille modernista pankkiasioinnista

1) Sukupuoli

- ☐ Mies
☐ Nainen

2) Ikä

- ☐ <18 ☐ 18-25 ☐ 26-40 ☐ 41-60 ☐ >60

3) Kuinka monta ihmistä yrityksessänne työskentelee?

- ☐ 1 ☐ 2-20 ☐ 21-100 ☐ 101-1000 ☐ yli 1000

4) Minkä pankin asiakas olette?

- ☐ Nordea
☐ Sampo
☐ Osuuspankki
☐ Handelsbanken
☐ Ålandsbanken
☐ Tapiola
☐ Aktia
☐ S-Pankki

Verkkopankki

5) Käyttättekö verkkopankkia?

- ☐ Kyllä
☐ Ei

Jos vastasitte edelliseen vastaukseen "Ei", oikaa hyvä ja siirtykää vastaamaan osioon "Maksupäätteet ja kortit".

6) Kuinka arvioisitte verkkopankkinne turvallisuutta?

- | | 1 erittäin helppo | 2 helppo | 3 normaali | 4 turvallinen | 5 erittäin turvallinen |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Turvallisuus | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

7) Vaatiko verkkopankkinne käyttöönotto ylimääräisten ohjelmien asennusta?

- ☐ Kyllä
☐ Ei

Jos vastasitte edelliseen kysymykseen "Ei", oikaa hyvä ja siirtykää kysymykseen numero 8

8) Kuinka helppokäyttöinen asennus oli?

- | | 1 erittäin helppo | 2 helppo | 3 normaali | 4 vaikea | 5 erittäin vaikea |
|-------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Helppokäyttöisyys | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9) Arvioikaa asteikolla 1-10 (1=merkitys vähäinen, 10=suuri merkitys) eri ominaisuuksia joita verkkopankilta vaaditte.

	1	2	3	4	5	6	7	8	9	10
Sisäänkirjautumisen helppous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Valikot ovat selkeit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verkkopankki toimii vakaasti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Navigointi palvelun sisällä	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Palvelu sisältää ohjeita	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Palvelun asetusten muuttaminen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tietoturvaluus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Käytettyinä on miellyttävän näköinen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10) Sisältääkö verkkopankkinne ohjelta sovelluksen sisällä riittävät?

- ☐ Kyllä
☐ Ei

11) Arvioi, onko verkkopankkinne yleisesti käyttökokemusta.

	1 erittäin negatiivinen	2 negatiivinen	3 neutraali	4 positiivinen	5 erittäin positiivinen
Käyttökokemus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12) Oletteko harkinneet verkkopankkipalvelun vaihtamista toiseen pankkiin huonoon käytettävyyden takia?

- ☐ Kyllä
☐ Ei

Maksupäätteet ja kortit

13) Onko käytössäsi maksupäätte joka ottaa vastaan uusia sirukortteja?

- ☐ Kyllä
☐ Ei

Jos vastasitte edelliseen kysymykseen "Ei", oika hyvä ja siirtykää kysymykseen numero 19.

14) Kansainvälisten käyttäntöjen mukaisesti uudet Debit-kortit otetaan Suomessa käyttöön ja suurella osalla asiakkaista kortteja on jo käytössä. Valitkaa seuraavista parhaiten sopivat vaihtoehdot korttien osalta.

- | | | | | |
|--|--|--|---|--|
| <input type="checkbox"/> Asiakas kokee Debit-kortin käyttöönoton hankalana | <input type="checkbox"/> Asiakas kokee kortit myönteisenä asiana | <input type="checkbox"/> Asiakas kokee kortit negatiivisena asiana | <input type="checkbox"/> En aio käyttää Debit-korttia | <input type="checkbox"/> Kortilla maksaminen on sujunut ongelmitta asiakkailla |
| <input type="checkbox"/> Kortilla maksuissa on ollut ongelmia | <input type="checkbox"/> Kortteista ei ole tietoa tarpeeksi | <input type="checkbox"/> Kortin käyttötarkoitus on epäselvä | | |

15) Oletteko maksaneet ostoksia käyttäen maksupäätteellä tunnistautumiseen PIN-ominaisuutta allekirjoituksen sijaan?

- ☐ Kyllä
☐ Ei

16) Kuinka turvallisena koette tunnistautumisen käyttäen PIN-koodia maksupäätteellä?

	1 erittäin helppo	2 helppo	3 normaali	4 turvallinen	5 erittäin turvallinen
Turvallisuus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17) Jos sirukortin kanssa on ilmennyt jokin ongelma, mikä seuraavista kuvaa sitä parhaiten?

- ☐ Maksupäätte ei toiminut
☐ Asiakas unohti PIN-koodin
☐ Kortissa ei ollut sirua
☐ Luottokunnassa/pankissa häiriö
☐ Asiakas vaati allekirjoitusta PIN-koodin sijaan
☐ Jokin muu ongelma

18) Kuinka arvioisitte maksupäätteen ja kortin yleistä käyttökokemusta?

	1 erittäin negatiivinen	2 negatiivinen	3 neutraali	4 positiivinen	5 erittäin positiivinen
Käyttökokemus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

E-palvelut

19) Onko käytössäsi E-lasku?

- ☐ Kyllä
☐ Ei

20) Kuinka arvioisitte E-laskun käyttöönottoa ja käyttämistä?

	1 erittäin vaikea	2 vaikea	3 neutraali	4 helppo	5 erittäin helppo
Asteko	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21) E-lasku yleistyy käyttäjien keskuudessa. Valitkaa seuraavista vaihtoehdoista parhaiten sopivat liittyen E-laskun käyttökokemukseen.

- | | | | | |
|---|---|--|---|--|
| <input type="checkbox"/> E-lasku on hankala käyttöönottaa | <input type="checkbox"/> Koen E-laskun positiivisena asiana | <input type="checkbox"/> Koen E-laskun negatiivisena asiana | <input type="checkbox"/> E-laskusta ei ole tarpeeksi tietoa | <input type="checkbox"/> E-lasku on hankala maksaa |
| <input type="checkbox"/> E-lasku on hankala muuttaa | <input type="checkbox"/> E-laskun maksaminen on helppoa | <input type="checkbox"/> Käytän E-laskua ympäristöystävällisesti | <input type="checkbox"/> Maksan mieluummin paperilaskusta kuin otan E-laskun käyttöön | |

22) Oletteko käyttäneet E-maksua?

- ☐ Kyllä
☐ Ei

23) Kuinka arvioisitte E-maksun turvallisuutta?

1 erittäin helppo 2 helppo 3 neutraali 4 turvallinen 5 erittäin turvallinen

Asteikko ☐ ☐ ☐ ☐ ☐

24) Kuinka arvioisitte E-maksun käyttöönottoa ja käyttämistä?

1 erittäin vaikea 2 vaikea 3 neutraali 4 helppo 5 erittäin helppo

Asteikko ☐ ☐ ☐ ☐ ☐

25) Arvioikaas asteikoilla 1-5 (1=runsaasti parannettavaa, 5=ei huomauttamista) seuraavia verkkolaskuihin liittyviä asioita.

	1	2	3	4	5
Pankkien ja operaattorien yhteistyö	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Palveluiden yhdenmukaisuus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verkkolaskusta on tarpeeksi tietoa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finvoice-standardi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verkkolaskuosoittelu on ajan tasalla	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verkkolaskuosoitteet on helppo löytää	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laskuttaminen on helppoa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laskun vastaanottaminen on helppoa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Yrityksen maksut

26) Uusi yhtenäinen euromaksusääntö mahdollistaa SEPA-maksun tekemisen normaalin valuuttamaksun sijasta. Valitkaa seuraavista parhaiten sopivat liittyen SEPA-maksun käyttökokemukseen.

- ☐ SEPA-maksusta ei ole tiedotettu tarpeeksi
☐ Maksun teko on hankalaa
☐ Ero normaalin valuuttamaksuun häilyvä
☐ En ole tehnyt SEPA-maksua
☐ Olen maksanut onnistuneesti SEPA-maksun
- ☐ Koen SEPA-maksun myönteisenä asiana
☐ Koen SEPA-maksun kielteisenä asiana
☐ SEPA-maksun teko ei onnistu verkkopankkiani
☐ SEPA on minulle tuntematon käsite

Pankkiohjelmista verkkopankkiin

27) Pankkiohjelmista ollaan siirtymässä käyttämään samoja palveluja verkkopankin kautta. Valitkaa seuraavista välttämistä ne, jotka parhaiten liittyvät käyttökokemukseenne palvelun vaihtoon liittyen.

- ☐ Pankkiohjelma ei ole yrityksessä käytössä
☐ Käytän mieluummin vanhaa pankkiohjelmaa
☐ Verkkopankissa ei ole kaikki pankkiohjelman ominaisuuksia
☐ Verkkopankin käyttö pankkiohjelman sijasta on toiminut hyvin
☐ Verkkopankin käyttö pankkiohjelman sijasta on toiminut huonosti
- ☐ Verkkopankkiin siirryttiin liian aikaisin
☐ Verkkopankkiin olisi pitänyt siirtyä jo aiemmin
☐ Olen ollut tyytymätön pankkiohjelmassani enkä halua käyttää verkkopankkia
☐ Haluan siirtyä käyttämään vain verkkopankkia
☐ Pankkiohjelma on hankala käyttää
- ☐ Verkkopankki on hankala käyttää

Web Services

28) Uudet Web Services -palvelut antavat yritykselle mahdollisuuden maksaa kaikki tilisiirtoina maksettavat maksut käyttäjien yhtä kansainvälistä sanomastandardia. Valitkaa seuraavista sopivimmat välttämät koskien uutta yhteydetapaa.

- ☐ Web Services on minulle uusi käsite
☐ Olisin halukas kokeilemaan Web Servicesiä
☐ Käytän mieluummin verkkopankkia kuin Web Servicesiä
☐ Käytän mieluummin Web Servicesiä kuin verkkopankkia
☐ Palvelun käyttöönotto on hankalaa

Lähetä



Appendix 3: Questionnaire on modern banking usage

1) Sex

☐ Male ☐ Female

2) Age

☐ <18 ☐ 18-25 ☐ 26-40 ☐ 41-60 ☐ >60

3) Which of the following banks are you using?

☐ Nordea ☐ Sampo ☐ Osuuspankki ☐ Handelsbanken ☐ Ålandsbanken
☐ Tapiola ☐ Aktia ☐ S-Pankki

Internetbank

4) Do you use an Internetbank service?

☐ Yes
☐ No

If you answered "No" to the previous question, please move on to the section "Payment terminals and cards".

5) Please grade the security of the internetbank service.

1 very vulnerable 2 vulnerable 3 neutral 4 secure 5 very secure
 Security ☐ ☐ ☐ ☐ ☐

6) When started to use the internetbank, did it require installation of additional programs of software?

☐ Yes
☐ No

If you answered "No" to the previous question, please move on to question number 8.

7) How easy was the installation?

1 very difficult 2 difficult 3 neutral 4 easy 5 very easy
 Ease of use ☐ ☐ ☐ ☐ ☐

8) Please grade different properties needed from an internetbank service on a scale of 1-10 (1=little importance, 10=strong importance).

	1	2	3	4	5	6	7	8	9	10
Easy login	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clear menu structure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Service is stable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Navigation inside the service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Service contains help sections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Properties can be changed by the user	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Service performs fast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
User interface looks nice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9) Does the internet bank include sufficient amount of help functions inside the service?

☐ Yes
☐ No

10) Please grade the overall user experience of the internetbank service.

1 very negative 2 negative 3 neutral 4 positive 5 very positive
 User experience ☐ ☐ ☐ ☐ ☐

11) Have you considered changing a bank due to poor usability of the internetbank?

☐ Yes
☐ No

Payment terminals and cards

12) Are you using a credit or payment card with a chip?

- ☐ Yes
☐ No

If you answered "No" to the previous question, please move on answering question number 16.

13) Have you used the PIN-code for authentication instead of a signature when paying purchases?

- ☐ Yes
☐ No

14) Please grade the security when authenticating with the PIN-code.

1 very insecure 2 insecure 3 neutral 4 secure 5 very secure
 Security ☐ ☐ ☐ ☐ ☐

15) Had there been a problem with the payment card or terminal, which of the following describes it best?

- ☐ Payment terminal didn't work
☐ Forgotten PIN-code
☐ Card didn't have a chip
☐ Problem with bank/credit company
☐ Seller had a problem with the card/terminal
☐ Some other problem

16) Have you used your card to pay over the Internet? If yes, please grade the usability of the service.

1 very poor 2 poor 3 neutral 4 good 5 very good
 Usability ☐ ☐ ☐ ☐ ☐

17) Please grade the overall user experience of a payment card and terminal.

1 very negative 2 negative 3 neutral 4 positive 5 very positive
 User experience ☐ ☐ ☐ ☐ ☐

18) Following international agreements, Debit-cards are introduced in Finland and some customers already use them. Please choose from the following statements the ones that apply best to your experiences.

- ☐ I find using Debit card difficult ☐ Debit cards are a positive thing ☐ Debit cards are a negative thing ☐ I am not going to use Debit card ☐ Payments with card were successful
☐ There has been a problem when paying with card ☐ There is not enough information about cards ☐ I find the purpose of the card unclear

E-Services

19) Do you use E-Invoice?

- ☐ Yes
☐ No

20) Please grade implementation and usage of E-Invoice.

1 very difficult 2 difficult 3 neutral 4 easy 5 very easy
 Scale ☐ ☐ ☐ ☐ ☐

21) Use of E-Invoice is increasing among users. Please choose from the following statement the ones that best describe user experience with E-Invoice.

- ☐ E-Invoice is difficult to implement ☐ E-Invoice is a positive thing ☐ E-Invoice is a negative thing ☐ There is not enough information about E-Invoice ☐ E-Invoice is difficult to pay
☐ E-Invoice is difficult to change ☐ Paying E-Invoice is easy ☐ I use E-Invoice to preserve nature ☐ I rather pay for normal paper invoice than start using E-Invoice

22) Have you used E-Payment?

- ☐ Yes
☐ No

23) Please grade the security of E-Payment.

1 very insecure 2 insecure 3 neutral 4 secure 5 very secure
 Security ☐ ☐ ☐ ☐ ☐

24) Please grade implementation and usage of E-Payment.

1 very difficult 2 difficult 3 neutral 4 easy 5 very easy
 Scale ☐ ☐ ☐ ☐ ☐

New payment types

25) New Single Euro Payments Area (SEPA) makes it possible to make SEPA-payments abroad instead of a normal currency payment. Please choose from the following options the ones that best describe your experience about the payment.

- ☐ There hasn't been enough information about the payment
 ☐ Making the payment is difficult
 ☐ Difference to normal currency payment is unclear
 ☐ I haven't done any SEPA-payments
 ☐ Using a SEPA-payment has been successful
- ☐ SEPA-payment is a positive thing
 ☐ SEPA-payment is a negative thing
 ☐ It is not possible to make a SEPA-payment in my Internetbank
 ☐ SEPA is a new term to me

26) Finally, please grade from 1-5 (1=carried out very poorly, 5=carried out very well) how following things have been carried out in the past year when new services have been introduced.

	1	2	3	4	5
Information about new service is available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Services are easy to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Banking has become easier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet bank meets my needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New services are easy to deploy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New services are saving money	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New services are saving time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-Invoice is easy to deploy and pay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paying with card online is easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Card authentication with PIN works ok	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Submit

