Mobile Financial Services
Opportunities in Electronic Banking from Wireless Computing Technology

Bachelor Thesis in Business Administration
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Abstract

The banking industry is a typical example of an industry that has benefited tremendously from applications of information and communication technologies. These applications take their form in Internet-based banking, including transactions for equities trading, account enquiry, bill presentation and payments as well as transfers between accounts and people.

Mobile banking is the natural extension of these kinds of services. With the development of digital wireless technologies, such as the mobile phone, mobile Internet access is now enabled.

This thesis examines the changing landscape of the financial industry due to information technologies and the strategic considerations of mobile banking from a business perspective.

For us a single case study with a qualitative approach has been seen as the most rewarding method to apply in our research. By investigating the market, through sending out a well-structured survey to three of the major Swedish banks (Nordea, SEB and Handelsbanken), with relevant interview questions on their involvement in m-banking, their potential could be distinguished. The interviews were then conducted over the phone.

We conclude that in order to achieve a competitive edge in today’s world of advanced technologies, it is crucial that financial institutions position themselves in deploying these applications. Banks have the necessary capital assets in order to make significant investments in technology infrastructure. Without having adapted themselves to technologies such as ATMs, credit cards, phones and the Internet, they would easily have been excluded from the market. It is likely that mobile banking will have the same impact.
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Sammanfattning

Bankindustrin är ett typiskt exempel på en industri som har tjänat otroligt mycket på information- och kommunikationsteknologiapplikationer. Dessa applikationer tar formen av Internet-baserad banktjänst, som inkluderar transaktioner av värdepapper, kontouppgifter, presentation av räkningar och betalningar samt transfereringar mellan konton och individer.

Mobila banktjänster är den naturliga förlängningen av dessa typer av tjänster. Med utvecklingen av digitala trådlösa teknologier, som mobiltelefonen, är mobil Internettilgänglighet nu förverkligad.

Denna uppsats undersöker den förändrande miljön i finansindustrin som uppkommit till följd av informationsteknologier, och vidare de strategiska affärsögonblicksöverväganden som måste göras inom detta område.

En kvalitativ fallstudie ansågs vara den mest givande metoden att använda i vår forskning. Genom att undersöka marknade, genom att skicka ut en väl strukturerad enkät till tre av de största svenska bankerna (Nordea, SEB och Handelsbanken), med relevanta intervjufrågor angående deras involvering i mobila banktjänster, kunde deras potential avgöras. Intervjuerna utfördes sedan via telefon.

Vi drar slutsatsen att för att bli konkurrenskraftig i dagens värld av avancerade teknologier, är det avgörande att finansiella institutioner positionerar sig genom att använda sig av sådana applikationer. Banker har de nödvändiga kapitaltillgångarna som krävs för att göra betydande investeringar i teknologisk infrastruktur. Om de inte hade anpassat sig till teknologier som bankomater, kreditkort, telefoner och Internet, skulle de lätt ha kunnat exkluderas från marknaden. Det är troligt att mobila banktjänster kommer att ha samma inverkan.
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Abbreviations and glossary

2G. Second generation cellular mobile phone network technologies.

2,5G. Between 2G and 3G networks. A general term used to describe cellular network technologies designed to add capabilities to 2G networks in order to enable faster data transmission speeds and the delivery of multimedia content.

3G. Third generation 3G cellular mobile phone network technologies. Designed to deliver very fast data communication and handle sophisticated multimedia content. Multimedia 3G networks transmit wireless data up to 2 megabits per second, making possible the integration of voice, data and video.


GSM. Global System for Mobile communication. It is a digital 2G wireless telecommunications network system and technology system, which used predominantly in Europe.

LCD. Liquid Crystal Display. It is a form of display that generates output that can view in form of monochrome and color.

IP. Internet Protocol. It is an agreement between two or more parties how data communication should be transmitted by using the same structure and order of operations such as symbols and grammar.

PDA. Personal Digital Assistant. A handheld portable and mobile device used to store data and run software applications, e.g. scheduler and diary Word document. Many PDAs also have in-built wireless capabilities and are referred to as wireless PDAs.

Smart Phone. It is an advanced mobile phone that enables connections to the internet or an enterprise’s networks so that users can access e-mail, faxes, voice mail, web pages and other files.

UMTS. Universal Mobile Telephone Service. The broadband 3G network type is specified primarily in Europe.

WAP. Wireless Application Protocol. It is network architecture for wireless data communication designed to provide web-like Internet content to mobile phones.

WCDMA. Wide-band Code Division Multiple Access. It is a type of 3G network and technology system.

WPKI. Wireless/Wearable Public Key Infrastructure. It enables m-commerce services and business policies, which require a secure identification of the user, by managing relationships, keys and certificates.
1 Introduction

Information and communication technologies open up countless new opportunities in today’s business world. With the Internet accustomed in the society we live in today, it is only a matter of time before the wireless web goes in the same direction. Banks are eager to take advantage of these new opportunities, and they have the resources for it. Swedish banks are in the lead when it comes to adapting to electronic banking, and mobile banking based on Internet protocols is the natural expansion. It is necessary to take on this deployment in order to maintain a competitive edge.

1.1 Background

Electronic commerce originally meant the commercial transactions with the use of EDI (Electronic Data Interchange) which was introduced in the late 1970s. This was then used to send electronically documents as purchase orders and invoices. Later, e-commerce could according to Wikipedia encyclopedia be defined as “buying, selling, marketing, and servicing of products or services over computer networks”. The definition for e-commerce is however debatable and according to the article “E-commerce: The hope and the hype”, e-commerce “includes all business activities involved in the development, facilitation, and implementation of business communication and transaction through the electronic medium, comprising primarily the Internet” (Chennai, 1999). The intranets and Internet have quite recently been accepted as a business platform. This has made e-commerce developing at an explosive pace. The main course for this is the Internet and the World Wide Web (WWW), which make the electronic commerce available for all people. Internet is offering many business opportunities, and its possibilities are only limited to our own imagination. Since e-commerce include trading of physical goods as well as intangible services such as communication, all trading steps such as marketing, ordering, payment and support could be done with the e-commerce (Timmers, 2000).

According to Timmers (2000) the internet commerce has been fast growing because of the following stated reasons:

- It has a low entry cost
- It has a fast return on investments
- It protects investment
- It offers connectivity and communication
- It meets information needs
- It has already built up a critical mass
- It is technology driven with a constant opportunity creation

However, there are still hesitations for some firms to commit to the e-commerce. The main hesitations that firms might feel are stated as follows by Timmers (2000):

- Lack of awareness and understanding of opportunities
- Concerns about total costs
- Concerns about security
- Concerns about the risks
- Uncertainty about applicable law
- Lack of usability of the technology
The world is rapidly changing and no one can tell what e-commerce will look like in the future. Nearly all users of e-commerce are so far assumed to have either fixed or stationary wired infrastructure. The wireless data networks have however become widespread into mobile commerce, compared to the fixed wires in e-commerce. The recent growth of m-commerce is to a large part due to users that want to do business, communicate and share information without the use of a computer (Kalkota & Robinson, 2001). The definition of m-commerce given by Elliott and Phillips (2004:3) reads: "The mobile devices and wireless networking environments necessary to provide location independent connectivity." This extends many of the concepts of the wired Internet.

Even though m-commerce can be considered as an extension of electronic commerce, it has a number of distinctive features and complexities, as it involves a considerable amount of emerging technologies. Progress in content, delivery and mobile devices are making m-commerce an extraordinary business opportunity. It has the potential to eventually be part of every consumer’s life, as businesses expand their IT capabilities to include this technology of wireless commerce (Kalkota & Robinson, 2001).

We have mentioned that m-commerce can be considered as an extension of e-commerce, from that, we can divide m-commerce into four different channels due to the move from informational to transactional services. These include (Kalkota & Robinson, 2001):

- M-ticketing – for flights and other travel, as well as tickets to movies, concerts, and other performances
- M-shopping – “personalized shopping” that can be combined with location-based applications
- M-banking – allowing customers to check bank balances and transfer funds from anywhere and on any device
- M-trading – buying and selling stocks, bonds and currencies while on the go and from the most convenient wireless device

It is our intention to look at the m-commerce used by banks, which is m-banking and m-trading.

The banking industry is mainly based on information and therefore one of the most technology intensive industries around. The industry’s move into applications of information and communication technologies started in the 1960s when the IBM system/360 was introduced. Since then, the technology in the industry has grown rapidly and billions of dollars have been spent on it. In 1980, the industry spent $4 billion on mobile technology and in 1990 the corresponding amount had increased to $13.8 billion (Teixeira & Semergel, 1992). Banks have always been in the lead of acquiring new technologies. An example of this is how, 35 years ago, the automated teller machines (ATMs) were introduced as a first step to make it easier for the customers. Today’s banking is mostly taking place online via various electronic channels as internet and telephone. Banking via the mobile phone is the latest technology for banks to implement and it has been available since the end of the 20th century. All these new ways of delivering financial services have led to a decline in the importance of banks in a physical meaning. Customers can now do their business everywhere if they only have an Internet access or a mobile phone (Suoranta & Mattila, 2004; Asher, 1998).
1.2 Problem

With banking no longer just being a simple branch-based operation, but an industry highly affected by the technology evolution, multiple technologies and applications now emphasise the way services are delivered to retail banking customers. With the increasing number of technology-based remote access delivery channels and payment systems, ATMs have replaced cashier tellers; call centers have displaced the bank branch, e-mail has replaced letters and electronically enabled credit card transactions have displaced the traditional fully manual credit card approach. Shortly, Kamel (2002) states, interactive television will replace face-to-face transactions. What are the specific incentives, and further, gains for banks to adapt to the ever-changing technological environment? For banks, it was the arguments of reduced costs, higher security and faster velocity of money that, for example, were in favour of credit cards and electronic cash displacing traditional cash transactions. Through increased automation of this process, the banks make more money in these operations. With digital wireless technologies mobile banking should be the natural extension of Internet-based banking. From the banks’ perspective, what might be the arguments for banks to invest in mobile banking or mobile payment systems?

1.3 Purpose

The purpose of our research will be to present a strategic assessment of the current situation of mobile commerce in the Swedish banking industry. More specifically, in order to make predictions and recommendations, we will study and analyse how Nordea, SEB and Handelsbanken respectively deal with this new technology of wireless banking.

1.4 Delimitations

Due to the time constraint that we are experiencing, we base our analysis on the selection of three major players in the Swedish banking market. Hence conclusions are drawn on the base of this selection. Furthermore, it should be noted that it is the business issues of mobile commerce and mobile banking that are our main focus and not the technical aspects, although they will be briefly described.

1.5 Disposition of the study

Beginning in chapter two, the methodology is presented with theories around qualitative versus quantitative studies and the validity and reliability of interviews as a resource in case studies such as this. Continuing, in the third chapter, theories on electronic commerce and mobile commerce are presented and further linked to the banking industry along with a presentation of the actors in this study. In the fourth chapter, the information from the interviews is presented. These are further analyzed in the analytical part that makes out chapter five, in respect to the models presented in the theoretical framework. Once this is done, the findings are put in the context of how well they fit with theory, i.e. theory and empirical findings are integrated in order to demonstrate a more clear and coherent picture of the analysis. The final chapter gives conclusions and suggestions for further research.
2 Methodology

2.1 Research approach

2.1.1 Qualitative vs. quantitative study

Most methods in research hold either a qualitative or quantitative approach, and sometimes even both can be applied. Bouma and Atkinson (1995) give the following description of the two approaches:

“The difference might be summarised by saying that quantitative research is structured, logical, measured, and wide. Qualitative research is more intuitive, subjective, and deep. This implies that some subjects are best investigated using quantitative whilst in others, qualitative approaches will give better results. In some cases both methods can be used”. (Bouma and Atkinson 1995:208)

2.2 Case study approach

In order to be able to collect as much valuable information on the topic as possible, we have decided go with the case study approach. We motivate this choice by quoting Combes (2001):

“Case study inquiry enables you to collect ‘rich’, detailed information across a wide range of dimensions about one particular case or a small number of cases. A good case study, therefore, highlights the numerous factors governing managed communication in a particular setting, portraying something of its uniqueness while also — but not always — attempting to offer insights that have wider relevance.” (Combes 2001:43)

An arrangement of different types of research methods can be used in doing a case study. “…the use of documentation may be linked with an interview or action research approach; however most case studies develop around a detailed and thorough study of an individual incident or case.” (Combes 2001:43)

Blaxter et al. (1996) give the following description of the suitability of a case study to the needs and resources of the small-scale researcher:

It allows, indeed endorses, a focus on just one example or perhaps just two or three… Or the focus might be on one individual, or a small number of individuals, as in life history studies or analyses of how top managers have reached their positions. (Blaxter et al. 1996:6)

For us a single case study with a qualitative approach has been seen as the most rewarding method to apply in our research. Earlier studies in this field has mainly been done by quantitative approaches, thereby we hope and believe that a qualitative approach could bring new information to the subject. By investigating the market, through sending out a well-structured survey to the major Swedish banks, with relevant interview questions on their involvement in m-banking, their potential can be distinguished.

2.3 Interviews

Scale (1998), on the benefits and general ideal of qualitative interviewing, introduces two major traditions on which the examination of interviews centres: interview data as a resource and interview data as a topic.
• Interview-data-as-resource: the interview data collected is seen as (more or less) reflecting the interviewees' reality outside the interview.

• Interview-data-as-topic: the interview data collected is seen as (more or less) reflecting a reality jointly constructed by the interviewee and interviewer.

Qualitative interviews are very flexible and make it possible for us to understand the topic from our informant’s point of view. This is the main reason why we strive to apply the approach of interview-data-as-resource.

2.3.1 How interviews were conducted

The task of finding the right interviewees followed by setting up interviews obviously is essential to the conclusion of our research.

We have chosen to carry out our interviews in a one-to-one small scale enquiry. With this approach, we are aiming for in-depth structured interviews, since they allow a wide scope of information between us as interviewers and the interviewee. This allows us a greater flexibility and questions can be spontaneous and reactive to the latest thing that the interviewee has said.

In the process if identifying the right interviewees, Rubin and Rubin (1995) have noted four key areas of the task: initially finding a knowledgeable informant, getting a range of views, testing emerging themes with new interviewees and choosing interviewees to extend results.

In our quest to find knowledgeable interviewees to our topic, we found out whom in respective bank that had relevant insights in the mobile section of their electronic services. When these contacts were established, we provided them with our questionnaire¹ over e-mail. Further, the interviews were conducted over the phone.

2.4 Criticism

Much of the criticisms of qualitative research lies in, as summarized by Bryman (2001:282-3) its tendencies of being too subjective, difficulties in replication, problems of generalization and lack of transparency.

A lot of the critique of the data-as-resource approach comes from highlighting that interviews are inherently interactional events, that both speakers mutually monitor each other’s talk (and gestures), that the talk is locally and collaboratively produced. The critique also centres on the idea that data-as-resource researchers often incorrectly assume that interview-talk is only about the official topic of the interview. The talk in an interview may be as much about the person producing themselves as an ‘adequate interviewee’, as a ‘specific type of person in relation to this specific topic’. In this sense, interview data may be more a reflection of the social encounter between the interviewer and the interviewee than it is about the actual topic itself: (Rapley 2004:15)

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¹ This questionnaire is to be found in Appendix A (in Swedish) and Appendix B (in English).
2.5 Validity and reliability

If any data should have any significance, it has to be reliable. Reliability refers to the consistency of the measuring instrument. (Combes 2001:33). The aim for any research is to strive for the validity and reliability of data. Accuracy in reliability does however not have to mean that the validity of the data also is correct. Validity tells us whether the measuring instrument is measuring what it is supposed to... Validity confirms the truth of the matter and should measure accurately what it sets out to measure. (Combes 2001:33)

In response to earlier self-criticism, it is our aim to, by paying attention to criteria of reliability and validity, overcoming the criticism of impressionism and subjectivism. Hence, our approach emphasizes objectivity in the sense that we have no attachments whatsoever with our interviewees. About difficulties of replication, as well as generalization and lack of transparency - a qualitative research study such as this is not supposed to be representative of a larger population with different features.

With validity and reliability being measurements of objectivity, which is usually the approach of quantitative research, it is however often considered to be the most effective way of recognizing the quality of research. Blaxter et al. (1996) argue that:

“Research is not a wholly objective activity carried out by detached scientists. It is ... a social activity powerfully affected by the researcher’s own motivations and values. It also takes place within a broader social context within which politics and power relations influence what research is undertaken, how it is carried out, and whether and how it is reported and acted upon.” (Blaxter et al. 1996:15)
3 Frame of References

3.1 M-Commerce in opposition to e-commerce

Mobile commerce, or m-commerce, is the new type of e-commerce business which is conducted through mobile devices using wireless telecommunications network and other unwired e-commerce technologies.

“The essence of mobile commerce revolves around the idea of reaching customers, suppliers, and employees regardless of where they are located. Mobile commerce is about delivering the right information to the right place at the right time. It gives users the ability to access the Internet from any location at any time, the capability to pinpoint an individual mobile terminal user’s location, the functionality to access information at the point of need, and a need-based data/ information update capability.” (Lim, 2003:2)

In many aspects e-commerce and m-commerce are two concepts not too distant from each other. They both aim to make use of business-related opportunities via electronic technologies. While e-commerce is connected to data and information transmission, and Internet access, via wired technologies; m-commerce is concerned with using unwired technology and various portable devices. Whereas e-commerce serves customers and clients that are stationary, m-commerce customers are moving and dependent upon a portable PC, such as a mobile phone or a personal digital assistant (PDA). The similarities between e-commerce and m-commerce have led many people to refer to m-commerce as “mobile e-commerce” (Elliott and Phillips, 2004). This however, according to the author, restricts the m-commerce definition too much. There are a number of essential differences between e-commerce and m-commerce. One example is how m-commerce enables location-based services and products. Furthermore, mobility is treated as an asset, rather than a by-product of the technological domain (e.g. no more need to wait in line at airport check-in desks, etc.). In addition, the Mobile Internet does not pretend to duplicate the wired Internet. The Mobile Internet is constrained by a number of factors, such as display screen size and memory capacity. (Elliott and Phillips, 2004:20)

Table 3-1 offers a comparison of some of the factors that distinguish the idea of e-commerce from that of m-commerce.

Table 3-1 Comparison of e-commerce and m-commerce (Source: Elliott and Phillips, 2004)

<table>
<thead>
<tr>
<th>Factor</th>
<th>E-commerce</th>
<th>M-commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product or service focus</td>
<td>Product focus</td>
<td>Service focus</td>
</tr>
<tr>
<td>Product or service provision</td>
<td>Wired global access</td>
<td>Wireless global access</td>
</tr>
<tr>
<td>Product or service assets</td>
<td>Static information and data</td>
<td>Dynamic location-based data</td>
</tr>
<tr>
<td>Product or service attraction</td>
<td>Fixed non-time-constrained access</td>
<td>Mobility and portability of access</td>
</tr>
</tbody>
</table>

In the context of the needs for users in either static data products (for e-commerce) or dynamic and mobile data services (for m-commerce) it is an interesting fact that the use of Internet-based m-commerce varies between global regions and national economies. For example, in Japan the wireless industry concentrates primarily on providing Internet-based services to mobile phone customers, and generates a significant amount of income from the provision of Mobile Internet products and services. In contrast, the provision of Mobile Internet services in Europe and the USA is of less economic significance to these areas. (Elliott and Phillips, 2004:21)
A fashionable e-commerce business will not necessarily translate well to the wireless Web, because a cell phone is more suited to some types of purchases than others. The immediacy makes it useful for time-critical transactions, but the small display makes people reluctant to browse extensively; an auction or last-minute bargain site is likely to be more successful than one selling books or computer hardware. (Dornan, 2001:153)

The structural changes that have taken place in the last two decades in e-commerce are shown in figure 3-2. The scope and pace of change are unique in these decades. The system integration and business reengineering required an internal change of the corporation. For example, both the steel industry and the automotive industry had to go through cost-cutting, restructuring and reengineering.

Figure 3-1 Market Evolution (Source: Kalakota and Robinson, 2001)

Three major structural shifts have occurred in a rapid pace since 1995, the e-commerce, e-business and the m-business. “E-commerce has had tremendous impact on how companies interact with their customers. E-business has had similar impact on the supplier and employee side. Since it is too early to definitely say, one can only speculate that m-business will have even more impact since its tentacles spread everywhere.” (Kalakota and Robinson, 2001:21)

Ee-Peng Lim (2003) points out that mobile commerce has features not available to traditional e-commerce. These are: ubiquity, reachability, localization, personalization and dissemination. This means that the fundamental nature of mobile commerce builds on the idea of reaching customers, suppliers, and employees regardless of where they are located. Hence, m-commerce is about delivering the right information to the right place at the right time.
3.2 Technical issues of m-commerce

According to Louis (2001), the changes that are occurring in the Internet have taken place on several technical fronts, namely:

- New and improved Internet protocol (IP).
- Overlaying the IP over existing network signalling protocols.
- Faster and bigger routers.
- Faster network access.
- Creating business alliances that result in merging new types of content in the Internet business.
- New companies focused on serving specific pieces of the Internet business, such as outsourcing operations, Web site creation, Web site administration, and e-mail.
- Improved Internet encoding formats and scripting languages.
- Wireless Internet technologies.
- New types of terminal devices such as mobile handsets.
- Internet-only desktop and laptop computers, small, palm-sized terminals, and so on.

The challenging task under these circumstances is how to fetch the Internet to the mobile user (Louis, 2001).

"When it comes to the Internet, what counts for users is speed, accessibility, reliability, desirable content and effective services. We expect that users will look to mobile data services for the same attributes." (Marche and Watters, 2004:252)

M-commerce can bring more to the marketplace than shopping for durable and nondurable goods. The challenges that face the mobile e-commerce marketplace are both technical and business-related. However it is generally considered that the business issues of m-commerce are harder to understand than the technical issues (Louis, 2001).

Technically, there are some main differences between accessing the Internet from a PC (or laptop) and accessing and viewing the Mobile Internet from a mobile phone. PCs and laptops have a high quality of the screen image. For mobile phones, the displayed content is normally abridged and text-based. Another difference is that the Internet has relatively small technical and organizational restrictions, which makes it possible for all organizations and individuals to publish a web page. In Mobile Internet it is the WAP portal provider that sets the parameters and restrictions for full open access discretion. A business relationship with a WAP portal provider is thereby necessary. Therefore, the Mobile operators are the connectivity providers that own the wireless network infrastructure by having a large customer base for mobile communication services. These operators have been investing large amounts on upgrading, maintaining and expanding their networks. Examples of such mobile operators are Ericsson and Nokia, which are some of the operators that have been the leaders of the development and success of mobile communication markets. This, through providing personal communication and information services through wireless networks (Elliott & Philips, 2004).

The first wireless communication tool was 1G that was generally used in the 1980s. During this time the wireless communication devices were slowly evolved and practiced only in certain environments, such as the military. In the late 1980s the popularity of wireless communications was increased. A demand of increased network capacity and security lead
to the development of a second generation wireless system (2G). This system was based on digital rather than analogous technology. When the telecommunications network GSM was developed in the early 1990s, it offered a higher capacity. The 2G mobile phones could receive and send limited amounts of data, which introduced the SMS and wireless applications protocol (WAP). The purpose and goal of WAP were to enable portable mobile phone users to access data and information on the internet (Elliott & Philips, 2004). The third generation technologies allowed users to transfer any form of multimedia data and information between remote wireless locations to provide full location independent connectivity. 3G can be used as data and information lifestyle portals rather than merely as voice communication devices. It was assumed that WAP would disappear with the development of 3G technology and networks. However, WAP reinvented itself at the end of 2.5G technology to become integrated within the 3G mobile environment (Elliott & Philips, 2004).

The most important development that has affected the access to the Mobile Internet has been the development and use of broadband and wireless services such as UMTS and WCDMA (Elliott & Philips, 2004). It is however still a limited bandwidth that restricts the amount of material that can be realistically sent across the wireless communication pathways. The amount of data that is sent to the wireless device from a server or from another device must therefore be carefully considered by the developers. A condition for increased bandwidth for the third-generation technologies is that the adoption and usability should increase (Mennecke & Strader, 2003).

For mobile commerce applications, well-designed and usable interfaces are critical for reaching success and attract new mobile users. It is still a large challenge for researchers and developers to explore the interface design and the usability for applications. The input devices that are available today for mobile phones to access data or commands are keyboard, keypads, styluses, buttons, cameras, microphones and scanners. It can also be achieved by mouse buttons, thumbwheels and other special-purpose buttons. The integration of a full keyboard in phones and handheld can although be a problem because it relies on a more limited keypad for input (Mennecke & Strader, 2003).

The output data is received by video screens and speakers. The primary technology for screens is the liquid crystal display (LCD) screen. It is used to produce output in the form of images and text on a wireless data application. The current limitations of screens on wireless devices are their size, resolution and color capabilities. This makes it limited and difficult to display large amounts of text and graphics. If the screen size was to be enlarged, the size and weight of the mobile device would at the same time increase. Furthermore the color screens with higher resolutions will use more power than the already existed ones, which leads to that it requires recharging more often. It would also lead to an increase in battery weight. There are however some recent technological developments that address some of the disadvantages of the currently wireless screens. One solution could be flexible screens which allow the screens to be rolled or folded up (Mennecke & Strader, 2003).

## 3.3 M-commerce services

Louis (2001) includes the following Web services as being available to the user of a wireless handset in the m-commerce marketplace:

- Financial news: General business information that is updated on a periodic basis.
- Personalized stock portfolio watch: The user identifies specific stocks about which the m-commerce site is to transmit stock quote information.
News media reports: Current events. Often broken down into the categories of national and international news.

Online stock trading: Trading on the stock market via specific online trading companies.

Banking transactions: Depositing money or transferring money between accounts.

Entertainment Ticket purchases, horoscopes, movie listings, lottery results, and movie reviews.

Directory assistance: Telephone number and address display.

Retail store sales information: Based on location information obtained from the carrier’s network.

Location of the nearest store or place of business: As of mid-2000, the location information element appears to have the potential for enhancing the wireless Internet for the user.

Auction locations: Some people consider auctions a great place to shop.

Traffic reports: Vehicular road conditions and airport status.

Weather reports.

Internet search engines: Via business relationships, specific Web search engine companies agree to create abbreviated versions of their Web pages for the sole purpose of searching the Internet.

E-commerce Web sites: Those that are normally accessed via the wireline Internet.

Portal access: Many wireless carriers have created their own portals to specific “hot types of sites.”

E-mail.

At this stage, a wireless carrier providing Web access does not offer the same broad level of access to various sites as the wireline WWW. However, the majority of people who are currently buying the service do not care because current expectations of m-commerce growth are low and wireless users are not sure of what they want (Louis, 2001).

3.4 M-banking market evolving

A wide range of the literature on this subject use the term “mobile banking” as a sense of traditional retail banking activities such as checking an account balance, transferring money and paying bills. However, as Marche and Watters (2004) state that: “Banking as a commercial endeavour is of course substantially more complex than these retail services. Most large banks have wholesale relationships with corporations, merchant accounts, payment systems, interest in clearinghouse operations, retail and wholesale investment banks, etc.” (Marche and Watters, 2004:232)

Electronic banking has been the most important part of lowering customer service costs for most of the banks that are operating in areas with higher Internet penetration. It is also an improvement for customers that they no longer have to leave home to take care of daily banking routines. The growing access of mobile handsets enable banks to offer the same services to a broader customer base both today and in the future (Paavilainen, 2002).

Paavilainen (2002) stresses two main reasons for the strong expected growth of mobile banking; namely fast penetration rates for handsets and the emerging use of banking services via the fixed Internet. The key characteristics of mobile banking are basic services and advanced mobile services.
The basic services, listed below, include the same functions found in fixed Internet banking applications.

- Account and credit card balance.
- Recent transactions.
- Interest and exchange rates.
- Funds transfer.
- Bill payment.

Advanced mobile services are used to differentiate and create additional customer loyalty. These services are specifically designed for mobile users offering location, independent and time sensitive instant messages and integration to mobile shopping services. Some of the advanced mobile banking solutions are (Paavilainen, 2002):

- Automatic balance notification, according to predefined limits.
- Credit line notifications.
- Downloadable exchange rate calculator.
- Instant consumption credit agreement.
- Direct integration between mobile merchants and banking services.

Sustainable competitive advantage in the mobile industry is reached through differentiation, awareness of customer demand and good estimation of technological development. These elements create economic value for the players involved in the mobile value chain that give them the potential for profitability (Porter, 2001).

3.5 The user

Whether it is e-commerce, e-banking, m-commerce or m-banking, neither can ever be successful unless they take user considerations into account. Mobile data services require a wide demand from the community to be feasible as a platform for banking.

The mobile operator provider needs to build an understanding of the elements and special features of wireless electronic channels that are value-adding from the consumer's point of view (Keen and MacKintosh, 2001). The demand side of m-commerce is a search for value and every company that enters should have the goal to deliver customer value (Kalakota and Robinson 2001).

3.5.1 Customer perspective

Figures from the European Union bureau of statistics, Eurostat, show that Sweden has the highest percentage of mobile phone subscriptions in Europe (74%). Statistics from the Swedish Statistical Central Department (SCB) show that in 2004, 530,669 mobile phone users had access to Internet through their phone. This accounts for about 8% of the total amount of mobile phones (6,006,656) being used by individuals that age 16-74 in Sweden. The country has the potential and capacity to develop further within technology-driven sectors such as that of mobile applications. The Organisation for Economic Co-operation and Development (OECD) stated that, from the late 1990s through 2001, Swedish R&D investments accounted for 3-4% of GDP per year, which was the highest percentage of any OECD country.
A report by the American credit rating company Moody’s presented in Dagens Industri (10 Aug 2000) states that “If one looks ahead, Swedish banks will be able to profit from Internet-related cost savings at a time when most European banks must make additional investments”.

In order to better forecast the future, it is crucial that banks are aware of the different factors that influence customers’ choice between traditional and alternative ways of banking.

The mobile user uses the phone mainly for using short message service (SMS), making routine bank services, booking cinema or theatre tickets, reservation of restaurant tables, calendaring, reading and receiving news, buying products, listening or downloading music, playing games, chatting and stock trading (Anckar & D’Incau, 2002).

Forecasting a completely new service’s popularity among customers is extremely difficult. To help companies reach its specific target segments, certain consumer behaviour aspects can be taken into consideration. These are convenience, motives of belonging and being part of a group, saving time, saving money, general interest in new things and recognition (Paavilainen 2002).

### 3.5.2 Customer needs

According to Coursaris and Hassanein (2002), five primary needs can be identified which creates demand for m-commerce customers. Each of these attributes, listed below, is connected with anytime, anywhere access.

1. Connectivity needs overcome geographical and compatibility constraints. Consumers can reach information and communicate by their mobile phone anytime and anywhere without regard of where the user’s position is.

2. Communication needs are referred to mobile phone users that communicate with others for business or personal purposes.

3. Information needs allow mobile users to search for location-specific information that is required. This information can be either static or dynamic, such as yellow pages or search for a products’ price.

4. Entertainment needs refer to practical entertainment solutions, such as access to games or leisure information. Mobile users want their mobile devices to be useful and fun.

5. Commerce needs refer to the conduct of m-commerce transactions and the value of making them.

The main concerns for the mobile consumer as proposed by Coursaris and Hassanein (2002) are privacy, security, reliability, download times, cost and usability.

Consumers might feel threatened since they can be localized by the mobile phone. This information can be revealed to interested businesses at all times. The vulnerability of wireless networks creates an increased risk for privacy interruptions through potential network security breaches. The ability to snoop in on a mobile user’s conversation and monitor data transmission might generate uneasiness for the consumers. The risk increases with the degree of interaction and the sensitivity of the information exchanged. It is then important that the connection quality is to be maintained and reliable; otherwise this can result in loss of data (Nielsen, 2000). Download times to access a desired content should not take a considerable amount of time (Cole, 2001). The pricing of mobile services is currently a signifi-
cant barrier for the customers in adoption of mobile commerce (Aarnio et al., 2002). Factors influencing the quality of the user’s experience include a user’s ability to read the screen, input data, manipulate files, and access sites of interest (McGinity, 2000).

3.6 The strategy

3.6.1 Mobile portal development

Financial institutions can choose between four main strategies regarding development of a mobile portal (Paavilainen, 2002). These are:

1. *Acquire more knowledge of mobile banking solutions and wait until customers are more receptive to electronic banking.* This option is suited for companies who operate in markets with low mobile phone penetration and have slow Internet adoption. Customers are not used to handle their banking routines via electronic channels. Investment would be a waste of money since they have no application tools to use the service.

2. *Follow the development closely and provide mobile banking services to customers. No active participation in portal development.* This strategy is for companies that have an emerging mobile phone penetration. The market’s mobile portals are weak and consumers use the mobile mainly for voice communication. There is an upcoming trend towards higher mobile penetration and data-capable devices.

3. *Provide mobile payment and financing to all portals. The services are portal-driven, focusing on solving some of the challenges regarding payment and security.* Consumers have adapted to the new technology and it is profitable to provide mobile phone services.

4. *Develop their own portal. Innovative concepts and service models to increase customer loyalty and satisfaction.* This creates a strategy to create a competitive advantage and services that are unique.

3.6.2 Partnerships

When it comes to co-operations, they can give the acquired knowledge and benefit to reach similar goals. When considering partnerships, financial institutions should aim to deploy one of the following three strategies (Paavilainen, 2002).

- Synergy strategies, companies co-operate with companies that have similar objectives and views of the future. Core competencies and expertise are brought together which enable them to learn from each other. An example is mobile operators that co-operate with financial institutions.

- Control strategies develop concepts and procedures to ensure the company’s position in the value chain of mobile commerce. In co-operation with device manufactures or mobile operators’ payment and security, solutions can be developed to provide services in the future.

- Technology co-operation provides the developers with the skills and knowledge that are required to develop technical solutions in the mobile commerce framework. This can be co-operation with system integrators, software developers and platform providers.
3.6.3 Price

All mobile services have been considered quite expensive for either the company or the customer. A mobile service always has different costs including expenses for radio access, advertising and sponsors etc. The mobile users have never taken for granted that the mobile services should be free, although they do not always get charged (Ahonen, 2002).

Currently there are three prevailing pricing options for mobile services. They are flat rate, per minute and per bit. Flat rate is a nominal charge for unlimited access for a given length of time. When per minute rate is applied, the mobile user is charged for every minute connected to the network. The rate per bit charges for the total volume of data transferred in a given period of time (Coursaris & Hassancin, 2002).

The charge for content can have a minimum fee. In that case, the mobile operator has a built-in mechanism to handle tiny payments. In mobile telecom every second of airtime can be carefully tagged and logged. The mobile phone has the opportunity to charge for content with a relatively small value (Ahonen, 2002).

3.7 Models of analysis

3.7.1 Porter’s five forces

The intensity of competition and profitability in a certain industry is determined by many features. Porter’s five forces model is a useful framework for classifying and analysing factors in the external environment. This model is used to explain an industry’s attractiveness and the rules of competition that affects a firm. Furthermore the approach can help the company to develop an advantage over rival firms by understanding the industry’s environment. The five forces that influence the industry are (Grant 1995):

- Intensity of rivalry amongst existing competitors
- Threat of entry by new competitors
- Pressure from substitute products
- Bargaining power of buyers (customers)
- Bargaining power of suppliers

The five forces of competition can be divided into a horizontal and vertical perspective. The horizontal competition includes competition from suppliers, of substitutes, the threat of competition from entrants and competition from established producers. Vertical competition includes the bargaining power of suppliers and buyers.

The interaction between these forces is illustrated in figure 3-2 on the following page.
The rivalry can either be weak or intense in an industry, depending on the competition and profitability in the industry. The intensity of competition in the industry is mainly affected by the number of competitors and their relative size. When the concentration of sellers is high it will be hard to gain market shares due to the cost conditions that appear. The companies in the industry can avoid this cost rivalry by not offering any similar products. The differentiation of products will also decrease the customer’s willingness to substitute into a competitor’s product. The profitability in an industry is over time cyclical due to changes in the balance between demand and capacity. For example, when the industry experiences a declining market demand, excess of capacity will occur. The companies in the industry then have unused capacities that will lead to that the companies have to spread their fixed cost over a greater sales volume. This results in a price cut for the products or services in the industry which decreases the profit. It then becomes hard for the company to decide to which level it should set the price, concerning the competitors’ price level and the cost of producing the product or service (Grant, 1995).

In most industries new companies cannot easily enter a market where established firms already are in existence. How high the entry barriers are in an industry are affected by the environment in which it operates. For example, the established firms might already have a cost advantage such as low-cost sources in raw material. Further, they might have a benefit in required skills if they have been in the industry for a longer time and hence know the rules of the game. It can be costly for a company to establish themselves within a certain industry due to discouraged new entrants. Industries that are capital- or research intensive require a large scale of producing which requires large cost capital. New entrants are then faced to choose between entering on a small scale and accepting high unit costs or entering on a large scale and risk an underutilization of capacity until sales volume has been building
Established firms have already created a brand awareness and customer loyalty which can make it hard for entrants to establish credibility and goodwill. A strategy can then be to establish a niche position in the market or competing by cutting prices. Another problem than can occur for new entrants can be the channel of distribution due to limited capacity in the form of shelf space, risk aversion etc. that they have. Governments can also affect the barriers by introducing barriers in form of licences by a public authority, patents, copyrights and more. Further potential entrants can be dependent upon the retaliation by established firms. Retaliations can take the form of aggressive price cutting, increased advertising, sales promotion or litigations (Grant, 1995).

A company should also look at the amount of substituted products in the industry to see how willing customers are to shift their purchases. A strategy to reduce customers’ switching to other alternatives can take its form in a price strategy. The response of price changes depends upon customer’s relative performance in relation to price, although it may not be necessary to set a lower price. A product that is hard to differentiate and satisfies more complex needs has a lower extent of substitutes and price differences than a product that is easily imitated (Grant, 1995).

Bargaining power of buyers can be divided into two factors that determine the strength of buying power; these are the buyer’s price sensitivity and the relative bargaining power. The buyer’s price sensitivity depends on differentiation, the number of substituted products and the quality of the products or services in the industry. If the products in the same industry are similar to each other, the purchase decision will mainly be based on the price. With an increased importance of a product’s quality, the less sensitive are the buyers to the price they are charged. Bargaining power depends on the buyer’s switching costs, the buyer’s information about the supplier and the size and concentration of buyers relative to suppliers. Larger buyers can easily negotiate lower prices than small ones. If the companies’ suppliers sell to a few large buyers they will have a significant leverage to negotiate better prices than with many small buyers. The better informed buyers are about supplier’s relative prices the better they are able to bargain (Grant, 1995).

Factors that determine supplier power are supplier concentration, switching costs and uniqueness. If multiple suppliers produce the same commodity, the company will base its purchase decision mainly on price which tends to lower the costs. When a single supplier produces a product or service, the company will have a little negotiation power. The size of the company also has an impact on negotiation with suppliers, in the sense that a large company has more negotiating power due to purchases of large quantities (Grant, 1995).

### 3.7.2 The PESTEL framework

The PESTEL framework is used to look at the future impact of environmental factors. These six environmental influences are categorised as political, economic, social, technological, environmental and legal. These factors are linked to each other through, for example, how changes in technological development affect people’s working conditions. It is important that managers understand how these factors impact the organization in order to know how to take action when the environment changes around them (Johnson & Scholes, 2002).

The political factor implies the policy that the country has. A company can for example be affected by government stability, social welfare and taxation policies.
The economic factors which can influence the organization are the business cycle, money supply, disposal income etc.

The social factor implies the effects of the countries’ cultural environment that the company is affected by. Examples of social factors are population, social mobility, lifestyle changes, levels of education and consumerism.

The technological aspect describes the technological standard that the country has. Factors that can affect the standard for a firm are government spending on research, new development, the speed of technology transfers and rates of obsolescence.

The environmental factor describes the impact regarding nature. It can for example be environmental protection laws, waste disposal and energy consumption.

Finally, a company may also be affected of legal rights such as laws and legislation.

### 3.7.3 The SWOT analysis

SWOT stands for strengths, weaknesses, opportunities and threats. The model is a way to examine the key issues regarding the business environment and strategic capabilities, which are likely to impact the strategy development for an organization. This information can then be important for the company when it comes to future actions for them. The main purpose with the SWOT analysis is to identify how the strengths and weaknesses inside the company can deal with the opportunities and threats from the business environment (Johnson & Scholes, 2002 & Kotler et al. 2002).

In the context of strengths and weaknesses, only the main features inside the company should be listed. Here it is important to base the strengths on facts and compare it to competitors. It is also recommended not to put something as strengths if there are competitors who are better. The weaknesses can be that the company organization has a poor profit performance, unknown brand name or a relatively low advertising budget etc. (Johnson & Scholes, 2002 & Kotler et al. 2002).

When it comes to the opportunities and threats in the SWOT analysis, these are the external influences for the organization. Opportunities and threats for the organization arise in the environment for many reasons. It could for example be the technology, market, politics, demographic changes or the economic climate which influence the organization. However, not all the threats have to be of concern for the company, instead it is important for managers to assess the potential damage of each of the threats and prepare plans to meet them in advance. Concerning the opportunities, the manager should do the same as with threats and assess the opportunities’ potential and the attractiveness for the company (Johnson & Scholes, 2002 & Kotler et al. 2002).
4 Empirical Study

4.1 The actors in this study

According to the Swedish Banker’s Association, in the first half of 2003 Swedish Internet banking rose from 4.5 million to 5.1 million and it was confirmed that close to 60 percent of Swedes accessed their accounts and conducted transactions online. Ulla Lundquist, the association’s CEO, is quoted saying that “Bank customers’ use of Internet services cements Swedish banks’ world leading position in online financial services” (ISA, 2005).

It is mainly the high PC penetration levels and the technically literate population that attribute to that Swedes in particular have adopted electronic banking in such a large scale (ISA, 2005).

4.1.1 Nordea

The large concern of Nordea, represented in 22 countries, involves 503,000 employees. They focus mainly on retail banking, corporate and institutional banking. It is one of the world’s main Internet banks, with over 7.7 million e-customers. The general consumer base is almost 11 million (Bolagsfakta, 2005). At the moment, they have more than 2,000 e-payment agreements with vendors who accept e-payment, and over 700 of these are represented in the electronic marketplace Solo Market, accessible from Nordea’s local web sites in Denmark, Finland, Norway and Sweden (Nordea, 2005).

4.1.2 Skandinaviska Enskilda Banken

The North European financial banking group SEB is represented in 20 countries and has a staff of some 18,000. Its customer base is made out of around 4 million, of whom 1.6 million are e-customers. The concern involves traditional banking service, private banking, merchant banking, investment banking, administration of funds as well as insurance activities (Bolagsfakta, 2005).

4.1.3 Handelsbanken

Svenska Handelsbanken, SHB, is a universal bank represented in close to 20 countries and has a staff of 9,000. They focus mainly on traditional company deals, investment banking, trading and private banking including insurances (Bolagsfakta, 2005). SHB estimates that around 30 percent of their private customers and 50 percent of their corporate customers use their Internet banking services. In 2004 they saw its share of the market grow as its Internet user visits increased by 21 percent (ISA, 2005).

4.2 Information of respondents

The interviews were conducted separately; however it was our intention to put forward the empirical results in a more or less format of a group discussion. This way, it makes it easier to outline and compare the answers.

The interviewees have been conducted through the following people from the different banks:
• Rickard Svensson, Product Manager, Nordea
• Sofia Bäckman, Design and Usability, Skandinaviska Enskilda Banken (SEB)
• Daniel Carlman, Business Developer Internet & Wireless, Handelsbanken (SHB)

4.2.1 Background

Question: Since what year does Your bank offer mobile banking services?

Answer: Nordea

Nordea started with m-banking in Finland in 1996 with SMS services and with wireless application protocol (WAP) services in 1999. This was later introduced in Sweden. Nordea in Sweden started with WAP services in 2000 and SMS services in 2002. The reason why Nordea in Sweden was so much later with the introduction compared to Finland, was that the Finnish society had a much greater tradition on that type of technology. Also, it was the Finnish bank Merita, which started with the technology before they merged with Nordebanken to form MeritaNordbanken in 1997. They later changed their name to Nordea.

Answer: SEB

Enskilda Banken, which is a small unit for important customers within SEB, started with a WAP service in November 1999. In 2000 they changed the service to include all their customers, even outside the earlier narrow target group. This WAP service was however limited to Ericsson R380. In 2003 they went into 3G together with 3, even if it still works over the usual net too.

Answer: Handelsbanken

Svenska Handelsbanken claims that they, in 1999, were the first bank to deliver a working WAP application.

Question: Which were the main factors that got Your bank to implement mobile banking services?

Answer: Nordea

Nordea’s strategy is to offer the customer freedom of choice and convenience. The mobile services therefore suited the organization’s strategy with customers able to reach the bank when and how it fits them. Other factors were the possibility to further build on their existing Internet service platform, and the boost for WAP. In a short time WAP became trendy among banks, and since Nordea in Finland already had the competence, the Swedish Nordea took help from them to implement it.

Answer: SEB

SEB’s main factor for introducing mobile services was to strengthen their brand. The general opinion within the company was that this was something that suited SEB’s image. They also add that competition from other banks was not a determinant factor to implement the services.
Answer: *Handelsbanken*

Handelsbanken state that it was mainly the trends and the “e-habit” in the technological sector that made them implement the mobile banking service. This was around the time when the IT-bubble was at its height.

**Question:** Which mobile banking services are offered to Your customers today? Which one is the most commonly used?

**Answer:** *Nordea*

Nordea offers three different versions for its customers when it comes to mobile services. These include SMS-service, WAP-service and a WAP light version. The SMS-service is the most commonly used when looking at the amount of log-ins/orders. It is a pull-service where the customer calls a certain telephone number, where after an SMS is trigged and sent to the customer’s mobile, showing the balance and the ten latest transactions on the customer’s account. The WAP-service is almost a complete banking service with payments, transactions, trade of funds, trade of financial assets etc. and the WAP-light service is a more basic service where you can check your balance, financial assets, current events and transfer money between your own accounts.

**Answer:** *SEB*

The mobile services that SEB has to offer its customer today are account overview and balance account, payment of bills, making transactions between accounts and banks, following the stock prices, buying and selling financial assets, watching your financial portfolio and reading financial news.

However, these services only function on the following phones: Hand computer with Pocket PC, Sony Ericsson P800, Sony Ericsson P900, Nec e606, Nec e808 and Motorola A920.

SEB’s customers mainly use the mobile services to get an account overview and make transactions.

**Answer:** *Handelsbanken*

Handelsbanken offers a variety of services including account information, transaction services, gaining market information, buying and selling stocks and paying bills. The service which is most popular is the service to check your account balance.

**Question:** Are You charging for Your mobile banking services, and if so, how does the customer pay for them?

**Answer:** *Nordea*

The SMS-service costs 2 SEK/SMS which is drawn from the customer’s account on one occasion every month. The WAP-service costs 7 SEK/month while the more basic light version is free of charge. The cost service is built via Internet technology which means that it does not go through any operator and the costs are therefore drawn from the customer’s bank account and not from the mobile bill.
Answer: SEB

SEB’s mobile services are free of charge. However, the customer needs to be registered for the Internet office, which costs.

Answer: Handelsbanken

Handelsbanken’s mobile services are free of charge, but an Internet office is needed in order to use the service. This Internet office has a yearly cost.

4.2.2 Customer base

Question: How large share (%) of Your total customer base is using Your mobile services?

Answers: Nordea, SEB and Handelsbanken

All banks have figures on this information but claim that the numbers are confidential. However, they say that only a small part of their customers use their mobile services and that these are made out of the Internet banking customers.

Question: Which is the consumer base of Your mobile banking services? Age, sex, income?

Answer: Nordea

Nordea has no statistics on this, but it is generally suggested that their customer base is made out of more technically advanced customers. The target group which is attractive to Nordea is persons that actively deal with applications such as stock trading. Generally, households do not have a large need to use mobile services, since they usually have a PC.

Answer: SEB

SEB has not made any analysis on this, but they believe that their customers are young middle-aged men, who use the service because it exists and not because they need it.

Answer: Handelsbanken

SHB believe that there is a large spread in different customer types and no specific customer base is suggested to exist.

4.2.3 Strategy

Question: Which strategy have you been using in the implementation, and how have you been able to apply Your earlier experience of Your Internet-applications?

Answer: Nordea

Nordea’s aim is that all their services should be seen as usable, secure and customer friendly. One important aspect is that their services are neutral to operators so that all customers can reach the services. The services should also be harmonized with other channels so that the customer recognizes menus and dialogues. To reach this and at the same time be cost-efficient, the services are to a large part built on the same platform as the Internet bank. Consideration is also put on the special conditions and possibilities that can be found in mobile applications. Nordea has put the Internet-, mobile- and telephone-banking under the same section within the bank, in order to make the different services look similar, so that the customers should recognize themselves in the different systems.
Answer: SEB

The aim for SEB is that one should recognize oneself towards the internet, by making it an “Internet office in your pocket”. This is why the mobile services are located under the Internet banking office. Internet has given experiences towards the mobile service, but the mobile service also has provided experiences that have been useful to the Internet service.

Answer: Handelsbanken

The mobile is formed according to the already existing online banking service. WAP-service does not offer the required service to turn it into a separate setting. By integrating their digital services, it is believed that their e-services will gain further.

Question: What opportunities and threats do you see in mobile banking services? (E.g. market position, new technology, laws, computer security)

Answer: Nordea

The opportunities are usually viewed to lie in improved customer service and a potential increase in revenue. The market position can be strengthened through attracting important customer groups to apply the mobile. Another possibility is that mobile traffic can go through various types of push-services.

The main threat is the immature technology, e.g. when it comes to telephones and standardization. To some extent also the customer’s sense of integrity (“do I dare doing my banking on the bus?”), and computer security in the form of possible spread of virus and spy ware etc.

Answer: SEB

Opportunities that SEB mentioned are increased band-width, better mobiles and screens which can increase attraction for mobile bank services.

Laws and EU directives are always potential threats, but being prepared and updated should help. Viruses are also certainly a threat for the future and these needs to be considered.

Answer: Handelsbanken

Handelsbanken see an opportunity in integrating the mobile banking services with their online financial office. However, they do not see their mobile services as a separate section. A threat in this context could be that they loose their competitive edge in these services compared to the other banks when the mobile “hype” goes further.

Question: Which corporate co-operations do you have that are aiming towards developing and specializing yourself in this field?

Answer: Nordea

Nordea has co-operations with different IT-suppliers who make out the infrastructure, directs the SMS traffic, etc. Besides these suppliers, Nordea is also an active member of the organization Mobey Forum, which aims at implementing financial services in mobile terminals.
Answer: SEB

Today SEB does not have any co-operation within this field. They have had co-operations with the operators (3 within 3G) and Ericsson, but now they consider that they have the knowledge needed within the company and they got their own portal for the banking services.

Answer: Handelsbanken

When introducing the WAP application, SHB had strategic partnerships with IBM and Nokia. IBM provided the software to translate bank information to the form that can be sent through a mobile phone. Also IBM contributed with project management, design and programming skills. Besides providing the state-of-the-art phones that would receive the information, Nokia provided the server through which this information could be sent over the wireless network.

At the moment, a research and development (R&D) project concerning WPKI is mentioned as a co-operation between Handelsbanken and Nokia and SonyEricsson. WPKI enables services that require a secure identification of the user and enables legally accepted signing.

Question: How do You look at the competition within banking concerning mobile banking services?

Answer: Nordea

Nordea states that the competition today is generally taking place within other fields, but it is considered that when new technology is developed and mobile services get more commonly known, it will increase. When it comes to wireless identification and mobile payments, banks are more likely to compete with actors from other branches. These other branches include operators, which already today have systems for direct payments through, for example, pictures and ring signals. This is considered to lead to future competition along with newly started companies who will dedicate themselves to this service.

Answer: SEB

SEB considers the competition as not being obvious, they find the service being like the Internet – it is something that you are expected to have. They also state the operators have some advantages, with their ability to handle micro payments.

Answer: Handelsbanken

Handelsbanken has the clear-cut view that, at least in the implementation stage, all banks has a shared responsibility of seeing to that all banks should work together in order to make the market expand.

Question: What do You see as Your strengths respective weaknesses in the organization for mobile services? (E.g. knowledge, motivation, reactions of employees, technology)

Answer: Nordea

Nordea’s strengths include that they have a long experience and competence within the field of Internet and mobile services. They also have good relations with suppliers on the IT side. Weaknesses for Nordea are that the technology makes it harder for employees to inform customers about the services. The employees do not use the service to a large extent on a private level, which hinders them from bringing the information further. The
education that the employees receive does not help them if they do not continuously use it. Other weaknesses are the selling organization which not actively tries to inform about the service and the marketing.

Answer: *SEB*

SEB states that their strengths are their brand and what it stands for. Also, SEB has been technically ahead, which gives the company both competence and experience which make them independent of external help. Weaknesses are that the competences for mobile services are not present everywhere in the organization. It is mainly the employees who work continuously with it that has the knowledge. Also, they do not promote the service, besides what was done when 3G was introduced.

Answer: *Handelsbanken*

Handelsbanken is working decentralized where every office has its own responsibility. They believe in a local approach. This is seen as an advantage since they can direct themselves locally, and adapt the range of products to the market. This way they can also act more personal over the net. All offices have their own homepage. In m-banking, they believe in the approach of offering a small selection of banking services through the mobile, but that works on all models of mobile phones.

**Question:** The biggest concerns for customers in using mobile services are usually stated to be security, price, integrity, reliability, download times and usability. How do you get to terms with these?

**Answer:** *Nordea*

Nordea believes that the on-going technical shift from WAP to ”mobile internet” will increase the general usability of mobile services and make faster downloading. However, even if the usability is improved it is believed that the customers probably always will prefer to make most of their banking with a large screen and a full keyboard though mobile services could be useful at some errands and occasions.

It is also important that the customers recognize themselves among the bank’s mobile services and that they can use the same way of logging in as in the Internet service. When it comes to safety, Nordea continuously watch over it the same way as they do for Internet. Continues efforts are made towards reducing risks. One aspect of security is that no “important” information is coming out from the mobile. This means that there are no bank credit numbers etc. that are shown once the customer is “in” the system. Also, there is a need for social security number, personal code number and one-time codes in order to make transactions to other accounts. The price should not be a big concern for the customers since it is almost free.

**Answer:** *SEB*

Considering downloading times and usability, SEB tries to suit the service to the mobile by asking themselves, what the customers demand. “Does the customer have a need to fix their pension funds thru their mobile phone? -Probably not, then we don’t offer it.” By offering only the essential, the downloading time could be shortened and the usability increased.

The security is continuously looked upon and today there is a need to use SEB’s Digipass, which is a code application, in order to use the online services. They also believe that if the customers trust the bank, then they probably also trust the bank’s services.
SEB has removed the WAP service since they were concerned about the price. They thought that it was too expensive for both the customers and SEB to continue with it. This is the reason why they only have mobile Internet today.

**Answer:** Handelsbanken

The mobile phone is more personal than a computer. Still, this has both positive and negative implications considering mobile users’ integrity. However, if one looks at the small amount of data which is sent through the mobile phone, the PC is more vulnerable to unauthorised access. When it comes to 3G, they do not believe that it will make too much of an impact. This is because their service, which is usually made out of text messages, simply do not require it.

**Question:** What is your bank’s vision of the mobile banking services of the future?

**Answer:** Nordea

Nordea see themselves in a continuous leading position within mobile banking services and mobile payments. In the future, Nordea hopes that the bank automatically can send out SMSs to customers when needed. Also, Nordea in Finland have made it possible to use the telephone as a credit card when shopping in some stores. This kind of mobile-wallet is also something that can be interesting for the Swedish market.

**Answer:** SEB

SEB’s vision for mobile banking is that it should become an extension of the Internet. The bank should be close to the customer in all their applications.

**Answer:** Handelsbanken

The penetration of mobile services is believed to develop further according to Handelsbanken. The bank’s overall customer service strategy is to have a broad range of banking services to enable customers to conduct banking business when, where, and how it best suits them.
5  Analysis

As the theoretical framework suggests, m-commerce is an integrated part of e-commerce. This suits very well with our findings on m-banking vs. e-banking. The reasons behind this are mainly since both directions have similar features in some aspects. This is shown by looking at the ways companies have integrated their Internet and mobile services into the same departments. By doing this they believe that both services will gain from interacting with each other and the long experience that the banks have from Internet banking could be applied on the mobile banking. The interaction also makes it easier for customers to switch between the services, since they can make the services look similar. However, the technical directions will not all look exactly the same in practice. This is mainly due to that mobile technology has constraints regarding the display size and memory capacity for example, and it therefore makes it hard to translate Internet services to the mobile services.

In the theoretical part, it is mentioned that the mobile internet does not pretend to duplicate the Internet. However, the companies try to make the services look similar in order to make the customers recognise themselves. Therefore it could be said that they in one way try to duplicate the internet, although the mobile telephone is suited to some applications directly taken from the Internet whereas others are harder to transfer into the wireless area. This gives an opportunity to develop other ways of purchasing applications more suitable to the mobile telephone. An example of this is the so called mobile-wallet that Nordea already has in Finland. In Sweden, there should be a large potential, considering the amount of mobile subscribers, to move into mobile banking. However, at this stage not enough mobiles are able to connect to the Internet, which at present lowers the customer adoption to mobile Internet.

The fundamental idea on mobile commerce, which is to reach customers, suppliers and employees no matter where they are located, is consistent with the banks’ view on their mobile service. The banks want the mobile service to be an extension of the internet service they provide in order to offer freedom of choice and convenience for the customers, as Nordea states it. It is also SEB’s vision that the bank should be close to the customers in all their applications. However, the immature technology for mobile banking can be a large threat towards this.

Considering theories on strategies of mobile portal development, and connecting them to the research findings, one can confirm that it is most likely the development of an own portal that suits best with where the financial institutions in this study are heading. This assumption is based mainly on the fact that the banking services are portal driven, and that at the moment at least SEB have their own portal. SEB further claim that they at present are independent from partner synergies due to that they have managed to keep the competences gained from earlier co-operations within the bank. Partnerships seem to be a general theme, at least in the early stages, when implementing mobile technologies in the area of banking. However it is hard to match a specific strategy of deployment mentioned in the theories of strategy in this context. More likely synergy strategies, control strategies and technology co-operation are likely to be present among the banks in this study in one way or the other.

Mobile banking is a relatively new way for customers to do their banking. New technology can always make concerns for customers and as proposed in the theoretical part, the main concerns regarding mobile services are privacy, security, reliability, download times, cost and usability. When it comes to privacy and integrity, Nordea states that it is more the con-
sumers who decide if they want to do their services on the bus or not. Security is something that the banks constantly look upon, in order to make it as reliable as possible for the customers. The threat of potential viruses and spy-ware in the future has therefore made security a main issue. The banks require codes to facilitate the customers to log on to the mobile services, in order to raise the security level to the same level as for the Internet service. This means that transactions etc. cannot be made by another person if the person does not have the code. It also means that the customers must consider the security level as high when it comes to the banks’ mobile services. Download times are another concern for customers. SEB has shortened these, by offering only the most essential applications to their customers. They state, that it is not in the customer’s value to be able to make all the types of services that the Internet offers. Nordea, on the other hand, states that the technical shift from WAP towards Mobile Internet will decrease the downloading times and there is no need to take away services. Both Nordea and SEB also think that their changes will increase the usability for mobile services. The banks do not see the cost as something that the customer should be concerned about. Although the costs associated with mobile services are considered high according to the frame of references, there are today low costs for using the mobile services in the different banks for the customers. In SEB and Handelsbanken, the cost can be considered as a flat rate for the mobile services, since the customers require an Internet office, which has a yearly cost, in order to use the mobile services. However, there are no specific costs for using the mobile service in these two banks. Nordea has a different system regarding the price, where they charged a per bit fee for the SMS and a flat rate for the WAP service.

All the banks that we have studied claim that only a small number of their customers use the mobile services that they provide. Since Sweden has the highest percentage of mobile phone subscriptions in Europe, with more than 6 million phones, the banks have to do more in order to get their customers to use the service. Nevertheless, one problem is that the number of mobile phones that have access to Internet through the phone only accounts for eight percent of the mobile phones. A problem for the banks is also that they do not have any information about their customers. None of the banks in our interview had analysed the demographics of the customers that were using the mobile services. Some stereotypes of customers were mentioned, but in order to target the right segments, some studies of consumer needs might be useful. This can also help the banks to advertise the service better, which banks might have to do. The banks claim that they do not market their service and that they neither inform the customer to a high degree about their services and how they can be used. We state that it might be necessary for the banks to start advertising about it, due to the low number of users at present.

The new evolving technology makes it hard for employees to follow and understand according to both SEB and Nordea. The Internet department has high knowledge about the mobile service, although other parts lack this knowledge. It is then hard for the employees to inform the customers about the services the bank is providing and education for the employees is therefore a critical factor.

In the theoretical part, Paavilainen stressed two main reasons in 2002 for a strong expected growth of mobile banking. One of the reasons was the fast penetration of mobile phones, while the other was the emerging use of banking services via Internet. As explained above, the number of mobile phones in Sweden is high and so is the use of banking via internet. Despite that, Sweden only offers basic banking services as account balance, transactions etc. and not the advanced services that Paavilainen mention.
Most qualitative research studies, such as this, bear an underlying question of whether the material is valid and applicable outside the studied persons and cases. However, to generalise in qualitative studies is a subject of discussion. In this case, a statistical generalisation is not present. In qualitative method literature, it is often discussed whether studies like this one give an analytical or a theoretical generalization. The discussion usually goes that if a number of cases show the same features within many or all subjects of question, then it is possible to draw conclusions more generally. The patterns that come out in these cases can most likely take place in other contexts. We consider that this study bears reliability on the base that a large amount of the interview answers are similar between the banks in question. This should make it possible to draw conclusions more generally, i.e. the patterns that come out in the interviews are likely to take place in other institutions.

5.1 Porter’s five forces

All large banks in the financial industry in Sweden have implemented the mobile banking services. The diversity among mobile services between the banks is relative small, which is mainly due to the fact that the actors have only involved in this new industry for a short time. So far, only a really low percentage of the customers are using the service. Therefore, the rivalry in the mobile banking industry is low. The existing choices of mobile services that are offered by the banks are to a large extent similar to each other, and so are the price levels. This means that a customer does not change bank just because of the mobile services.

The substitution effect for mobile services is also declined by that the majority of their potential customers are not even aware of what their banks have to offer within the m-banking setting. A pressure from substitute products would require a larger market, more knowledge of the already existing products and a development in mobile services. The substitution choices for mobile banking services are the traditional way of handling bank errands and the Internet. The mobile has the advantage of being wireless and therefore the services can be reached no matter the location.

In the early stage that m-banking is today, banking customers still do not base their choice of bank due to the mobile applications that are apparent. More likely, traditional and less technological aspects still play the biggest part. The price sensitiveness in the industry is low due to that the banks’ m-banking services are either free of charge or relatively cheap. However, when the customers need and expectations are becoming higher, prices will also go up. The numbers of buyers of mobile services are small in the industry. This mainly depends on the limited information that is given to potential customers. Revenue for the companies regarding mobile services is also low, and customers therefore have a small ability to bargain for better products, prices and costs.

The barriers to enter are relatively high due to the cost of implementing the commerce system. It also requires co-operation with mobile operators in order to be able to offer competitive mobile services, which can be costly. For example, a co-operation with a WAP portal provider is a must to get access to the mobile Internet. One competitive advantage that is considered by all three banks in the study is to establish co-operations and develop the required skills that are necessary in the company. All of them have or have had co-operations with IT-suppliers. Handelsbanken also has a research and development program in the field of WPKI at the moment. This establishment of knowledge can make it difficult for other companies to enter the mobile banking industry.
The suppliers, in the form of mobile operators, have a large impact on the future for mobile commerce. They have been the leaders in the development and success of mobile communication. A risk may therefore be that the operators may take charge over some part of mobile banking.

5.2 The PESTEL framework

Considering the political tendencies within the PESTEL framework, we do not really see any conflicting aspects in the Swedish market regarding mobile services within the banking sector as it is today.

Economic factors, like how the customers deal with savings and consumption of their disposable income, certainly decide who will have a mobile phone and what it will be used for. The Swedish economical market setting is at present mobile friendly, in the sense of the high number of mobile users in the country.

The socio-cultural factors, such as population demographics, lifestyle changes and consumerism, have throughout our interviews proved not to have great impact. Each and every one of the banks claim that they do not see a certain pattern of demographics in their customer base, besides that it is generally considered that a wide range of the consumers using these applications are more technology positive than non-users.

The technological part, when it comes to mobile banking, is pretty obvious, since that is what the whole business concept builds on. Speed of technology transfer and new discoveries are to a large extent present in today’s Sweden where government spending on research and development and the government and industry focus on technological efforts are apparent to a large extent.

Environmental aspects, worthy to bring out, include the possibilities of decreasing waste, due to that papers used for confirmations of transactions, payments etc. will be reduced thanks to the digital possibilities.

The legal environment in the mobile banking field is not apparent at the moment, but the banks are aware of that for example an EU directive could appear, which would make it crucial for them to be prepared for changes.

5.3 The SWOT analysis

The SWOT analysis is made in order to show the results of the internal and external findings from the analysis of mobile banking services, and to show the main key issues for the organizations.

Strengths that the organizations have when it comes to mobile banking services are among other things, a strong business relation with other companies (with the exception of SEB).

In the Internet departments, there are competences among the employees regarding mobile services. The banks also have long experience when it comes to the similar service, Internet banking. Furthermore, it is a strength (for Nordea) that they offer education for the employees to increase the knowledge regarding the service.

Weaknesses for the organizations are that they do not intensively inform the customers about their mobile banking service. There is also a lack of knowledge in some parts of the
company about the service as for example, the sales department. Advertising does not exist and they have no information about their customers.

Opportunities are for example, that new applications are developing and the technology will be improved. Sweden is a technological country with a high number of mobile users.

Threats for the banks regarding mobile banking are the immature technology and also the potential for future viruses and spy-wares. Threats are also, that only a low number of the customers have access to Internet through their cell phone and that customers might have concerns when it comes to the technology.

The figure below shows the main issues regarding mobile banking service for organizations.

Figure 5-1 SWOT Analysis (Source: Porter, 2001)

<table>
<thead>
<tr>
<th>POSITIVE</th>
<th>NEGATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td><strong>Weaknesses</strong></td>
</tr>
<tr>
<td>Business relations</td>
<td>Information to customers</td>
</tr>
<tr>
<td>Mobile competence</td>
<td>Employee competence</td>
</tr>
<tr>
<td>E-commerce experience</td>
<td>Lack of marketing</td>
</tr>
<tr>
<td>Offering of education</td>
<td>Weak customer base knowledge</td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td><strong>Threats</strong></td>
</tr>
<tr>
<td>New application development</td>
<td>Immature technology</td>
</tr>
<tr>
<td>Improved technology</td>
<td>Viruses and Spy-Ware</td>
</tr>
<tr>
<td>High number of mobile users</td>
<td>Low amount of Internet mobiles</td>
</tr>
<tr>
<td></td>
<td>Customer concern</td>
</tr>
</tbody>
</table>
6 Conclusions and Discussion

The purpose of this study was to present a strategic assessment of the current situation of mobile commerce in the Swedish banking industry, and further to see how a selection of Swedish banks dealt with this new technology.

We have noted that the financial institutions of Nordea, SEB and Handelsbanken all, to one extent or the other, have seen the mobile service as a way to give customers more alternatives for banking errands. The current situation of mobile banking is characterized by a small customer adoption, immature technology, co-operations between institutions, low competition and similar service offerings.

As an integrated part of mobile commerce, m-banking extends the thought of doing bank errands on-line; i.e. e-banking – the extended branch of electronic commerce. However, this new application may offer new possibilities of services being provided, while it of course at the same time to some extents gets more limited.

In order to gain ground and be competitive in this new application, banks need to understand their potential in the context of strategy and technology. Technology is a critical factor for mobile banking to develop into a successful branch of financial transactions. Nevertheless, it is critical that technology does not get confused with strategy. All the banks in the study have developed their own distinct strategies in order to in the most beneficial way that is possible.

There are a low amount of customers using the mobile banking services at the moment, compared to the high number of mobile phones in circulation. In order for the banks to increase this number so to benefit from the service, they need to improve their advertisement and make customers aware of the service. The banks might also need to convince the concerned customers about the security, which they obviously possess. When this is done, we believe that the technology must develop even further with better displays and memory in order to increase the usability and reach more customers.

Besides the security aspect of mobile banking, it is also vital to the whole industry with an increase in the amount of mobile phones with Internet applications, since the number at present is low. We would like to stress that we do not believe that the mobile banking services will become as big as banking through the Internet in the near future. Anyhow, m-banking will certainly develop further due to increased mobile adoption in today’s society. For mobile banking to be able to develop further, it is essential that the usability and adoption of the technology is increased. Co-operations between mobile operators are one important factor on the way towards accomplishing this and further expand the industry.

It is crucial that the financial services sector, in order to stay competitive, realizes the importance of adapting to the technological development that is present in today’s banking. The lack of customers that are using the applications today is certainly not reason to lag behind in adapting to mobile banking. Instead banks have to look ahead and prepare themselves of what is coming. Without having adapted themselves to technologies such as ATMs, credit cards, phones and the Internet, they would easily have been excluded from the market. It is very likely that mobile banking will have the same impact.
6.1 Suggestions for further research

To facilitate the forecast of the future, it is fundamental that banks learn to understand the different factors that constantly are influencing customers’ choices between traditional and unconventional instruments of banking. Hence, further research, could focus on and go deeper into investigating the consumer behaviour regarding the potential of mobile financial services. Furthermore, the value chain is something that could be studied, in order to identify ways that banks can use to create more customer value and increase markets.
References


Homepages:


Appendix A: Interview Questions in Swedish

Frågeformulär angående mobila banktjänster

(Används som underlag i kandidatuppsats inom företagsekonomi inom "Mobile Banking")

BAKGRUND

Sedan vilket är erbjuder Er bank mobila banktjänster?
Vilka var de främsta faktorearna som fick Er bank att införa mobila banktjänster?
Vilka mobila banktjänster erbjuds Er kunder i dagsläget? Vilken service är mest använd?
Är Er mobila banktjänster avgiftsbelagda, och i så fall hur sker betalningen?

KUNDKRETS

Hur stor andel (%) av Er totala kundkrets använder sig av Era mobila applikationer?
Vilken är kundbasen av Era mobila banktjänster? Ålder, kön, inkomst?

STRATEGI

Vilken strategi har ni använt er av i implementeringen, och hur har ni kunnat använda er av Er tidigare erfarenhet av Era Internet-applikationer?
Vad ser ni för möjligheter och hot för mobila banktjänster? (T.ex. marknadsposition, ny teknologi, lagstadgar, datasäkerhet)
Vilka företagsamarbeten har Ni i syfte att utveckla och specialisera er på detta område?
Hur ser Ni på konkurrenserna inom bankväsendet rörande mobila banktjänster?
Vad ser ni vara Era styrkor respektive svagheter inom organisationen för mobila tjänster? (T.ex. kunskap, motivation, anställdas reaktioner, teknologi)
De största orosmomenten för kunder att använda mobila tjänster brukar nämns vara säkerhet, pris, integritet, pålitlighet, nedladdningstider och användbarhet. Hur kommer Ni tillrätta med dessa?
Hur ser Er banks vision ut för framtidens mobila banktjänster?

Tack för att ni tagit er tid att besvara detta frågeformulär.

Med vänliga hälningar, Anders, Mattias och Mikaela

Internationella Handelshögskolan, Jönköping
Appendix B: Interview Questions in English

List of questions on mobile banking services

(To be used as a base in bachelor thesis within “Mobile Banking”)

BACKGROUND

Since what year does Your bank offer mobile banking services?
Which were the main factors that got Your bank to implement mobile banking services?
Which mobile banking services are offered to Your customers today? Which one is the most commonly used?
Are You charging for Your mobile banking services, and if so, how does the customer pay for them?

CUSTOMER BASE

How large share (%) of Your total customer base is using Your mobile services?
Which is the consumer base of Your mobile banking services? Age, sex, income?

STRATEGY

Which strategy have you been using in the implementation, and how have you been able to apply Your earlier experience of Your Internet-applications?
What opportunities and threats do You see in mobile banking services? (E.g. market position, new technology, laws, computer security)
Which corporate co-operations do You have that are aiming towards developing and specializing Yourself in this field?
How do You look at the competition within banking concerning mobile banking services?

What do You see as Your strengths respective weaknesses in the organization for mobile services? (E.g. knowledge, motivation, reactions of employees, technology)
The biggest concerns for customers in using mobile services are usually stated to be security, price, integrity, reliability, download times and usability. How do You get to terms with these?

What is Your bank’s vision of the mobile banking services of the future?

Thank You for taking Your time to answer these questions.

Best regards, Anders, Mattias and Mikaela

Jönköping International Business School