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Self-service  
- an emerging concept in the information network

Master's thesis

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Abstract

This master thesis concerns self-service as an emerging concept in information networks. The focuses have been on available self-care services on the Internet, and on consideration of the self-care in the future. The study consists of an assessment of the web-based customer care self-service provided by a bank and a service provider. The focus of the assessment has been from a user's perspective. In order to consider the future, different trends within the new technology have been noticed. This has been done by reading literature, and by interviewing five experts. The result of this paper is not the expected; the future has not been willing to reveal its content.

Supervisor: Professor Johan Schubert, KTH, Stockholm

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## 1. Introduction

Telecom Management Solutions (TM ) is a unit within Ericsson Microwave Systems AB. TM consists of 8 different units of which one is Customer Management Solutions. Customer Management Solutions offers network providers and service providers end-to-end solutions within the area of billing, customer care and mediation.

The reason why this study has been written is the Customer Management Solutions' interest in the development of web-based customer care solution within the telecom business. Customer service and support is growing in importance due to the increased competition following the deregulation of the telecommunication market.

The number of Internet users has grown rapidly since the beginning of 1990. In September in the year 2000, 80 % of the Swedish population had access to the Internet.<sup>1</sup> The usage of the Internet has made people used to information on demand, high-speed communication, and instant messages. Companies have also discovered the advantages with the Internet, and many have during the last five years or so, started to use the Internet as a channel for customer care. This gives the customer the possibility to perform customer self-care. The web-based customer care services are frequently used, and some organisations have recently introduced the services on cellular telephones.

Today, there are more than 6 millions of mobile subscriptions in Sweden, which is more than the number of fixed subscriptions.<sup>2</sup> The use of mobile telephones has increased tremendously during the last ten years, and is expected to increase even more when the next-generation network is developed. The services available on the Internet are assumed to be required on the mobile telephones, and therefore the organisations have developed the mobile Internet. The mobile Internet is presumed to generate a new business era: the mobile services.

Self-service, as an emerging concept in the information network, is an important issue. People do not have time to wait in a telephone line, or a bank line; they want the possibility to perform necessary issues on their own. In the society of today there are an increasing demand for independence. The company who is able to satisfy the customer's demand and needs will be the most progressive one.

### 1.1 Objectives

This thesis is made on commission by the department Customer Management Solutions at Ericsson Microwave Systems AB in Mölndal. The study has two main objectives; one objective is to assess some of the web-based services that are available today. This is done through an assessment of the web-based customer care self-service provided by a bank and a service provider. The second objective is to consider future customer care services on the cellular telephones. What kind of customer care self-service do we think will appear when the second-and-a-half-generation network and the-third-generation network has been fully developed?

### 1.2 Limitations

In this study a few limitations have been made.

The term "customer" has different meanings depending on the situation. There are companies as well as individuals, but in this thesis the focus is on a private person.

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<sup>1</sup> [www.sika-institute.se](http://www.sika-institute.se)

<sup>2</sup> Ibid.

When discussing the term “web-based customer care” I mean the bank’s or the service provider’s supply of customer care via the web channel. The terms “self-care” and “self-service” are also used and they mean mainly the same thing. They are services and functions on a web-site, which the customers activate and/or performs themselves.

Another limitation is the number of corporate web-based customer care being investigated. In this study two of the most prominent organisations on the Swedish markets are chosen: Telia and the SEB.

Today, there are different devices as well as different technologies, concerning telecom, on the market. This study concerns only PC and cellular phones.

## 2. Method

The aim for this thesis is, as already mentioned, to assess some of the web-based services available today and to consider future self-service on the mobile telephones. My approach is qualitative, based on articles, literature, and interviews. The qualitative strategy has a predilection to use case studies, and in this paper a descriptive case study has been chosen.

### 2.1 Qualitative or quantitative approach

A study may have a qualitative or a quantitative approach. The two research processes have different origins and the quantitative process is the so-called traditional one. According to the quantitative approach, the world is controllable and it exists a more or less objective reality, which is separated from the human being. This reality can be measured and investigated and the research is often based on a cause-effect relation. Research is done through experiment and if someone else repeats the study, the results are supposed to be similar.

The qualitative approach is more recent and assumes that reality is holistic, has various dimensions and is in continual change. Reality is an individual, social, and cultural construction. The focus is on how people interpret and perceive the world they live in. Within the qualitative concept notions such as context, process, and meaning are prominent. The interest is focused on real-life occasions, both in organisations and in private situations.<sup>3</sup>

Today the line between these two strategies is not as strict as it once was. Alternative perspectives have also been created and for this thesis a qualitative approach has been chosen, because a phenomenon within the real-life is studied. It would be difficult to measure and evaluate in the traditional way some of the self-care services on the Internet.

### 2.2 Qualitative approach

The purpose of qualitative studies is to assess what kind of character a certain occasion has and how it will be identified. A qualitative strategy is needed when things are subjective, vague, and have various meanings. The stress is not on a predefined theory, but on the collection of data

Case studies are often used within qualitative research and a case study investigates a contemporary phenomenon within its real-life context.<sup>4</sup> My decision to focus on a qualitative case study derives from the decision to focus on understanding, interpretation, and discovery, rather than trying a hypothesis. By concentrating on one occasion or one situation (the “case”) there is an ambition to illustrate the interplay between factors that characterise the occasion or the situation. Case studies are recommended when the variables cannot be separated from the context. The definition of case studies vary depending on the researcher, but according to Merriam (1994) there are four elementary characteristics: particularistic, descriptive, heuristic and inductive.

Within a descriptive case study, there is an ambition to describe and explain rather than to make predictions based on cause and effect. The purpose is to describe an existing phenomenon. A case study of a descriptive character may be used in order to show the complexity of a situation when more than one factor is involved. It may

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<sup>3</sup> Backman, 1998.

<sup>4</sup> Ibid.

receive information from different sources and gives the opportunity to present that information in alternative ways. It may also contain interviews and articles.<sup>5</sup>

### **2.2.1 Definition of this case study**

A case study is an examination of a specific fact. In this paper, the contemporary real-life phenomenon, self-care on the Internet, is assessed. Two organisations in the frontline of the technology of their branches have been chosen: Telia as a service provider, and the SEB as a bank. The reason why those corporations were selected was the availability. I am myself a customer at the SEB and has a fixed subscription at Telia; thus the accessibility was easy.

### **2.3 The procedure**

The information needed was mostly found on the Internet, since the field is still quite new. Some of the sources are found within the Ericsson Microwave Systems and are therefore not available to the public. This regards, for instance, investigations made of Ovum Ltd. The corporations discussed in the thesis also offer some information on their business at their homepages. A complete list of references is placed at the end of this paper.

During my work with this paper contacts with both the SEB office in Överlida and Telia customer care have been intense. The people who have answered the questions have also sometimes been giving their own ideas, opinions, and impressions. These people are not named here, but their opinions have sometimes been used.

In this thesis, two different techniques have been applied. The study consist of two parts, one where a descriptive case study have been used in order to assess some of the self-care services available today, and one where interviews have been made in order to tell what will come in the future.

#### **2.3.1 The assessment of the self-care services**

In this study, two different companies have been chosen for the purpose of studying self-care services. In order to make an assessment one may look at different aspects, and here the perspective of the user has been selected. There are different definitions on usability, and there are also varying methods for assessment of the usability. Usability is a measurable characteristic that can describe how effectively a user can interact with a product, or it can be thought of as how easy a product is to learn and how easy it is to use. Nielsen and Mack (1994) have divided the methods of usability in four groups: automatic, empiristic, formal, and informal methods. The division into groups has some weaknesses, according to the authors, because there are no working automatic methods today. They also argue that the formal methods are complicated to use. Therefore, I have chosen to consider aspects that was interesting out of my own point of view, and the aspects considered are the simplicity, the structure and the accessibility. Five different use cases are being assessed and they are:

- Getting access to an account or to a subscription
- The log-in function
- The services available
- Getting in touch with the company
- The mobile service

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<sup>5</sup> Merriam, 1994.



### **2.3.2 Interviews**

Traditionally, interviewees are selected statistically in order to guarantee a certain variation of people. According to the qualitative approach, interviewees are chosen by other criteria. A smaller group is selected and has to be picked with greater care, since it is important for the result that the interviewee is positive towards the project. The interviews will be of a more profound character and will not be formal, but rather as conversations. This kind of interview is considered to give more valuable and more individual information.

In this study, five persons were chosen: two from the SEB, two from Teliamobile and a researcher from Chalmers. Three interviews have been made over telephone, since the persons in question were stationed in Stockholm, and two have been made at the interviewee's office, where a tape-recorder has been used. The interviews lasted between 45 minutes and one hour.

A reference group consisting of six "ordinary people" that uses the self-service at the SEB or at Telia, was also chosen. They have been chosen according to their age, in order to get varying opinions on the services. Their age is between 23 and 53. The interviews were made at their respective offices and were not recorded. The interviews lasted approximately 30 minutes.

## **2.4 Validity and reliability**

All investigations and research have as their purpose to produce valid results in an ethical manner. Validity and reliability are two ways to evaluate whether the assessment has been made in accordance with the objective.

### **2.4.1 Validity**

The term validity describes whether the results correspond to reality or not. Does the method fit the objectives of the study? When using a case study as a method the researcher is trying to describe reality as people experience it. In this paper, an assessment of some of the self-care services on the Internet is done. I alone have performed the investigation and description of the services. The final evaluation of the services is done with the help of the reference group. This procedure can, of course, be questioned, but as Merriam (1994) argues, it is what seems to be true rather than what really is true that is important. Reality consists of various mental constructions made by people. I have tried to perform the assessment of the services in a strict and ethical manner, but the result is by necessity to a certain degree coloured by the author's opinion.

The consideration of the future is made by means of five interviews and different articles. In this study triangulation is used in order to get validity. Triangulation means that different researchers, different methods, or different sources of information are used. In this case five different interviewees, unknown to each other, have been employed. Articles as well as information from the Internet have also been utilised. It is my opinion that this procedure has resulted in validity.

### **2.4.2 Reliability**

Reliability is a matter of repetition; reliability has been achieved if the same result would be received if the investigation was performed again. This is a difficult question for the qualitative approach, because the behaviour of human beings is not static; it changes. A low reliability can depend on the interviewee's motivation and state of mind, the environment, and the circumstances under the interview. It is important to keep these factors in mind while performing the interviews, and that has also been my aim.

### **3. The theoretical view**

#### **3.1 Customer care**

Customer care is a customer service that seeks to provide customer satisfaction, build loyalty, and acquire new customers.<sup>6</sup>

Today, companies are aware of the difficulty to maintain relationships with customers, and cannot, as earlier, rely on the customers' loyalty. The educated and demanding customers in today's society are less forgiving than before, and expect a wider range of easily accessible services, value, and competitive pricing. Customer care is imperative, since there are on most markets numerous organisations that can satisfy the customer's product and service needs just as well as the organisation the customer uses at the moment. Therefore, more and more companies focus their customer care activities on customer retention instead of trying to win new customers. Companies must try to develop stronger bonds with its customers, otherwise the competitors will try to do that. The customers will be loyal to the company that cares for them in the best way.<sup>7</sup>

The economic rationality of supporting a strategy focused on customer retention rather than gaining new customers is fairly simple. It is much more expensive to win a new customer than it is to keep an existing one.<sup>8</sup> Kotler (1996) states that it might cost five times as much to attract a new customer than to keep a current customer happy. He says that profits may increase by 25 to 85 % if the customer's loyalty increases with 5 %.

Jakobsson (1998) claims that the most important activity in customer care is to listen to what the customer has to say and act thereafter. Customer care is also about placing yourself in the customer's situation and to consider problems from the customer's perspective. Jakobsson (1998) also mentions the importance of giving feedback to the customer, since it allows the company to show that it cares for its customers.

Dissatisfaction with customer service is the most common reason why customers decide to change to a competitor.<sup>9</sup> This has created a need to find a new way of meeting the customers' needs and expectations. The Internet is a suitable tool for individual marketing and enables enhanced speed in the information process. The Internet also has the potential to bring the customer and the organisation closer to each other and to create spontaneous market places.<sup>10</sup> Companies can rely on the web as a channel for customer care to different degrees. One of the most important reasons for a company to use the web for customer care is the ability to provide them with better service. The increasing use of and the access to Internet allow this possibility. The Internet also provides the companies with both time and cost savings.

##### **3.1.1 Effects for the customers**

One of the advantages of the Internet for the customers is availability: the bank and the service provider are available to the customers 24 hours a day. Another benefit of the web-based customer care is the fact that the customers can work at their own speed, independent of someone else. Furthermore, the web may be seen as a constant interface, always giving the same reception. This is difficult to achieve with

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<sup>6</sup> [www.webproforum.com](http://www.webproforum.com)

<sup>7</sup> Jakobsson, 1998.

<sup>8</sup> Kotler, 1996.

<sup>9</sup> [www.webproforum.com](http://www.webproforum.com)

<sup>10</sup> Gezelius, 1997.

personnel-based customer care. It is not always the same person who answers the telephone-call, which means that the customer might get different treatment from time to time. There may also be a problem with keeping record of the customer's preferences and purchase history. This is not the case when dealing with an automated customer service; the technique enables the company to have full control of what is offered to the customer. Another advantage is that more information can be given through a web-interface than over a telephone. Also, all information is gathered in the same place.<sup>11</sup>

The level of customer's satisfaction depends on the user's knowledge about the Internet as well as the habit to handle it. The self-care services for customers should be simple and repetitive tasks, i.e. services, which require a lot of administration and time for the banks and the service providers. Tasks that require creative thinking or creative acts should not be carried out on the Internet.<sup>12</sup>

A disadvantage is that the impersonal nature of the web can, in fact, be a problem. If the web pages are not updated, incorrect information will affect all the visitors. That causes much greater difficulties than an incompetent person may do in a call centre, since one person meets only a limited number of customers. A malfunctioning web-site will create a negative impression, and therefore it is very important to handle the web-site with great care.

### **3.1.2 Effects for the organisations**

More and more companies use the Internet for communication solutions, e-business, and building relationships with customers and suppliers. Some companies use it with the aim to find and gain new customers, and others in order to perform web-based customer care. Another common reason to use the Internet is to reduce costs. But one of the most important reasons for a company to use the web as an interface towards its customers is the ability to provide them with better services.<sup>13</sup>

In the future, the competition about the customers will be harder for organisations. The customers' increasing requirements of service will make them change corporation if they are not satisfied. This will bring changes in the business both for the banks and for the service providers. One change is rationalisations. The need to be overstaffed is reduced when customers use the web for customer care. The major cost in traditional customer care is the use of a person and their time, and when parts of the manual work is automated it is possible to reduce costs by reducing personnel time.<sup>14</sup>

Generally, using the Internet for customer care is a way to cut costs and also a way to transfer more information to the customers. Another effect is reduced costs of an international launch, since it is cheaper to translate the web pages into a different language than it is to have employees in different countries.

Customer care on the Internet is an effective tool to gather information about the customers. It makes it possible to measure how the services are used, how many people uses them, etc. This is an advantage over telephone-based interaction, because it is much more difficult to evaluate a telephone call. The statistics can be used in order to measure and evaluate the market, i.e. customers' behavioural patterns. The purpose is to analyse the most popular services, for example how rapid the development is, but also to analyse the customers on an individual level. The reason for that is the ability to approach each customer in the most appropriate manner.

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<sup>11</sup> Lipschütz & Nyström, 2000.

<sup>12</sup> www.ehpt.com.

<sup>13</sup> Jakobsson, 1998.

<sup>14</sup> www.ehpt.com.

With a web page companies also face global competition. Customers used to the Internet and its services become very demanding, not only of the services available, but also of how the companies work with their homepages

### **3.1.3 Technology**

The future expansion of broadband infrastructure is an important aspect of the development of web-based customer care. Broadband will probably change the business environment of both banks and telecom service providers. Customer care on the Internet is assumed to be very important when broadband has developed, since self-service will become a natural way to administer the relationship with different companies. Web-based customer care is also considered to become a natural way of administrating different kinds of future payment system on the Internet.<sup>15</sup>

Today, banks and service providers offer both self-care and other services on the mobile telephone. The technique used is WAP, Wireless Application Protocol, which gives services instantly. It is assumed that, with the development of the next-generation network, both services and self-care on the mobile telephone will increase tremendously.

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<sup>15</sup> [www.ehpt.com](http://www.ehpt.com).

## 4. Self-care today

The web-based customer care has developed rapidly during the last five years. In order to assess what kind of services that are available on the Internet today, a comparison of two different branches has been performed. Two branches that have put a great effort into making customer care on the Internet a valuable service for the customer are the banks and the service providers.

### 4.1 Presentation of the corporation

#### 4.1.1 The SEB

The SEB Group is a European bank focused on the Internet, savings, and the Nordic Corporation market. The Group is represented in some 20 countries and has approximately 21 000 employees. The activities of the SEB are organised into five divisions: Personal Banking Sweden, Personal Banking International, BfG, Corporation & Institutions, Investment Management & Life.

SEB E-banking is part of the Personal Banking Sweden and the following countries are included: Sweden, Denmark, Germany, and smaller countries gathered under Pan-Europe. Here the focus is on the SEB E-banking Sweden.

In Sweden in the year 2000, the Internet Bank had 380 000 customers and was thus considered the best developed Internet bank market in the world.<sup>16</sup> SEB was one of the first banks on the Internet, they used the Internet already in 1993. The computer maturity in Sweden is high and 25% of the customers of the SEB used *bank on the Internet* during 1999. During the last two years, the use of the *bank on the Internet* has increased tremendously: SEB gained 140 000 new customers during 1999 and expects an increase of 200 000 in the year 2000. 25 % of SEBs customers used *bank on the Internet* and logged in more than 1 million times per month. The number of visitors in the bank-offices is less than that figure. 20 % of the private stock exchange transactions are performed via *bank on the Internet* and 30 % of the private invoice payments is performed via *bank on the Internet*. This means that earnings from e-customers are greater than from other clients. SEB believes that when the Internet becomes wireless, the development will accelerate even further.

#### 4.1.2 Telia

Telia is the leading Nordic communication company. In order to focus its activities on the future and meet all upcoming challenges, the company has divided its organisation into five business areas - four core business areas, plus the Enterprises business area. The core business' areas are Mobile, People Solution, Business Solution, and Carrier & Networks. In this thesis People Solution will be considered.

Telia has become the leading Nordic communications company, because it serves demanding and technology-driven customers. Consumers in Sweden are among the most technically sophisticated in the world and are always eager to test new technology in the market. The aim of Telia is to ensure that customers are always given attractive products and services.

The People Solutions business area also intends to expand its *Mina Sidor* ("My Pages") service to increase the number of registered users. At *Mina Sidor*, Swedish subscribers can send ten SMS messages for free, check their account status and test IP-based telephony, among other services.

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<sup>16</sup> [www.seb.se](http://www.seb.se).

At “telia.se” customers can get information about Telia’s services, prices, news, press releases, and also read about different technical issues. Telia.se is considered an “open” page and *Mina Sidor* a “closed” page, that is of more a personal character. Access to *Mina Sidor* is free of charge.

## 4.2 The assessment of the self-care services

The assessment of the current self-care services is made out of a user perspective. The aspect chosen are simplicity, accessibility, and the structure of both the information and the navigation.

The chosen use-cases are:

- Getting access to an account or a subscription
- The log-in function
- The services available
- Getting in touch with the company
- The mobile service

### 4.2.1 Getting access

#### 4.2.1.1 The SEB

The start page of SEB offers different opportunities and the information is available to everybody (see Appendix A). The information on the page changes every day, because daily economical news are introduced. The information is focused on both corporations and individuals. When a private person wants to become a customer at the SEB he fills in an application found under the link *Bli kund*. After a few days information will reach the customer whether or not he is accepted as a customer. For customers already holding an account and wanting to have *bank on the Internet*, the procedure is almost the same. They use the same link, *Bli kund*, but fill in another application. Within a week, information about *bank on the Internet* as well as a “digipass” will be sent to the customer. The “digipass” is used to make the access to the accounts secure. You are required to use it every time you log in.

#### 4.2.1.2 Telia

The information about the activities of Telia will be found on its homepages, and this information is intended for both corporations and individuals. The information changes twice a week, when news about Telia is introduced (see Appendix B). Telia has considered the customer care aspect and therefore created special pages for that issue. These pages are called *Mina Sidor*. Everybody can register to the service by choosing the link *Läs mer och registrera dig*. You can also choose the link *Privat* to the left of the page and then click on the link *Mina Sidor*. In order to fill in the application you need a Swedish social security number and a Swedish non-private address. It is not necessary to be a customer at Telia in order to use the web pages; all you need to do is to register on the Internet. Within a week an activating code reaches the customer, and after activating the code the customer is free to log in and use the available services.

When a new customer wants to apply for a subscription at Telia he needs to make a telephone call. It is not possible to apply for a subscription on the Internet unless you have access to *Mina Sidor*.

#### 4.2.1.3 Assessment of getting access to an account or a subscription

To apply for the service *bank on the Internet* is easy. The information is clear and structured. A customer without knowledge about applying for an account or how to get access to *bank on the Internet* is practically lead by the hand. The links and the context of the links are obvious. There are only a few questions to answer: do you want to become a customer as an individual or as an organisation, and are you already a customer of the SEB? Then you only fill in the application, and it takes thereafter approximately one week to become a customer at SEB, which is an acceptable time.

It is not possible to apply for a fixed or wireless subscription at the web pages, unless the customer has registered to *Mina Sidor*. To register to *Mina Sidor* is not difficult, but there are two different links to choose, which may be confusing. The links do not lead to the same page, which is not good. When a customer wants to know the content of *Mina Sidor* he may have problems to find both the service and to understand the function of it. It is not obvious what it contains. When following the link *Läs mer och registrera dig* the information does not contain what kind of services the customer will receive by using *Mina Sidor*. Instead there is information about the requirements that Telia has on the customer. To find what the service really offers the customer has to continue to another page. This structure is unnecessarily complicated and could be made easier. The current structure requires that the customer is eager and really wants to know what *Mina Sidor* contains of. This also gives a negative impression of Telia not being really interested in the customer.

It is easier both to find information about the web-based services and to get access to an account at the SEB than to find information and get access to a subscription at the homepage of Telia.

### 4.2.2 Log-in function

#### 4.2.2.1 The SEB

When the customer logs in he must use the small drop-down list on the left (see Appendix C). This time the option *Privat* is chosen, since the interest is in the services available to a private person. On the following page the customer begins with writing his social security number. The next page demands a “digipass”, which is sent to the customer in a registered letter after he has been accepted as a customer. Here, the customer follows the instructions on the homepage, and fills in the given figures in the empty space, clicks OK and he has logged in.

#### 4.2.2.2 Telia

It is easy to log in to Telia’s *Mina Sidor*; the customer only fills in the username and the password right in the middle of the start page (see Appendix B). When the customer logs in for the first time, he needs to activate a code, which is sent to him by mail. This is done in order to create some kind of security. This is only required the first time and hereafter the customer logs in only with the username and password.

#### 4.2.2.3 Assessment of the log in function

To log in to the SEB’s web-based customer care services requires security. Therefore the customer must use a “digipass”. This requirement is inconvenient for the customer, since he needs to bring the “digipass” with him if he wants or needs to use the services elsewhere than at home. The tool is not large, but easy to forget. It can also take some time to get used to the tool; it is easy to get stressed when you know that the number on the display only last for twenty seconds.



Logging in to Telia is easier, but the requirements of security are not as high as for a bank. The first time the customer logs in he has to activate the code. This moment can be problematic for some people (the code is long and it is easy to type the wrong letters), but when it is done the customer can easily log in whenever he wants to.

To log in to SEB's *bank on the Internet* requires safety. The "digipass" is one way to make the security higher. The requirement is understandable, since the SEB as a bank is handling important papers and also considerable amounts of money. The security therefore has to be as high as possible. To log in to Telia does not require the same security, since the information on *Mina Sidor* is not as sensitive as on the SEB's *bank on the Internet*. It is easier to log in to Telia, because the customer does not need a "digipass" and even if the need for security is understandable it is still inconvenient for the customer.

### 4.2.3 The survey of the account and the subscription

#### 4.2.3.1 The SEB

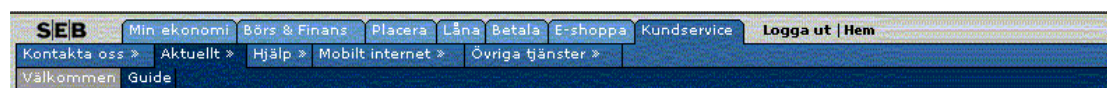


Figure 1.

Here are all the possibilities which a customer has on *bank on the Internet*. News on the stock exchange are also introduced on the first page. There are different services under each flap and to get a survey of the accounts you choose *Min ekonomi* and then *Kontoöversikt*. All the accounts of the customer are shown: share-accounts, fund-accounts, pension account, salary-account etc.



Figure 2.

#### 4.2.3.2 Telia

The start-page welcomes the customer by name (see Appendix D). New services and other offerings are introduced on this page. On the left of the page you find the following:



Figure 3.

Here are all the possibilities that a customer has. Under each link different services are available.



Figure 4.

Here the fixed subscriptions are shown. The customer has to click on the number in order to access to other services. The wireless and the Internet subscription works in a similar way.

#### 4.2.3.3 Assessment of the survey aspect

Under each flap at the *bank on the Internet* the customer can see all the options and possibilities. If a customer does not have an account under a specific flap, information is given about that and also a question if the customer wants to apply for the account or the service. The survey is clear and it is easy to navigate. For a beginner it may take a while to get used to the environment, but the structure is logic and easy to follow.

Telia has built up its service in a different way. The options are covered under a link and this makes it hard to know what kinds of services are offered. It is not until the customer has got into the actual number, that the offered services are visible. When a customer clicks on a link the “path” is shown on the top of the page:



Figure 5.

This helps the customer to find the way, and also makes it also easy to return to the start.

The organisations have chosen different structures to show the content. They are both easy to understand and access. It is a disadvantage, though, that the customer needs to click on more buttons to find the information on Telia's homepage. This has been done in a better way on *bank on the Internet*.

#### 4.2.4 The services available

##### 4.2.4.1 The SEB

The SEB offers different self-care services on *bank on the Internet*. Customers can pay bills, perform transactions between their own accounts or to another account in another bank, and apply for different kinds of loans. It is also possible to handle the stock exchange. There is frequent information about shares, funds, bonds, and options. The customer can buy, sell, change, and watch previous business. There is also an analysis service for the stock exchange, which gives the customer investment advice. Another service is coverage, which helps the customer to be aware of changes in a certain share, fund, or option.

Advice, or guidance, is a service in progress and not available today. In the future, the customer will on demand receive information on how to invest his money. This will be done via mail, chat, or telephone.

SEB also offers e-shopping. Only companies with good references, solid economy, and long tradition are accepted. Last year (2000), approximately ten companies lost their contract due to unstable finances.<sup>17</sup> When customers shop on the web pages of the companies they are able to pay via *bank on the Internet*.

Other services are a help function, a guide on how to use *bank on the Internet*, and a possibility to watch your WAP account. Another option under the flap *Övriga tjänster* is to cancel the account, survey which is sent to each customer every month. The customer can instead see all the transactions on the *bank on the Internet*. Further

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<sup>17</sup> Telephone call with employee at the SEB.

possibilities are moving the accounts and/or a share portfolio to another bank, finishing an account, and there is a register over all the services.

#### 4.2.4.2 Telia

At Telia's *Mina Sidor*, customers are able to watch the balance of their subscriptions. They can also see how many telephone calls have been made, to which number, and the length and the cost of the phone calls. Another service is the possibility to watch previous bills. It is also possible to order the service *Nummerpresentation* (the incoming number will be shown on a display), *Telesvar* (answering machine), and transfer of the fixed subscription to a new address. One can see how long time the connection to the Internet has lasted, as well as the cost for the connection. Customers with mobile subscriptions can order different additional services, such as a lower price when dialling certain numbers. Mobile subscribers can see the balance, the bills, change their address, and if the customer uses refill cards for his cellular telephone he can reload his card. All customers, no matter what subscription they have, can send 10 SMS for free.

Other services at *Mina Sidor* are the possibility to order a new subscription, to use the yellow pages and the white pages (search for private persons), to use *Mitt Komcenter* for making a personal telephone book, to change the password and to buy products offered by Telia.

*Mina Sidor* has a search engine for articles, which have been published earlier on *Mina Sidor*. Customers can also read the weekly cartoon, tip a friend about the site, or read about how to write a proper e-mail, and use the cellular telephone in an ethical way.

#### 4.2.4.3 Assessment of the services available

The *bank on the Internet* offers different services to their customers, but the service seems to be directed towards customers of the stock exchange. The *Bank on the Internet* gives the customer freedom to perform necessary actions, such as paying the bills, making transactions, and changing funds.

Telia's *Mina Sidor* has another image, since its target group is different. Telia can therefore have a more informal approach. The possibility to order and to cancel certain services on your own is positive and relevant. Telia has many different customers and one problem is that the company seems to wish to satisfy too many needs at the same time. The services are there, but they are difficult to find, and sometimes also hard to understand. That makes the structure vague and sometimes confusing.

The impression is that SEB has a more clear structure and a more logical survey. The corporation seems to know what they want with the service. This is not the impression one gets from Telia, where the structure is not always clear and the user sometimes gets confused.

### 4.2.5 Getting in touch with the company

#### 4.2.5.1 SEB

When customers need to get in touch with the bank they can do it in different ways. The service available looks like this:

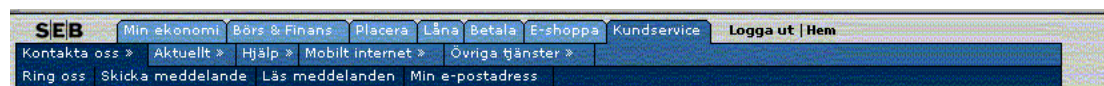


Figure 6.

Behind the flap *Kundservice* the customer finds telephone numbers to five different areas, depending on the kind of problem. One may also send a message directly to the bank by writing the text directly on the web page. The answer will be sent to *Läsa meddelanden*. In order to be able to know when an answer has arrived, the customer states his e-mail address under the last flap. The customer then has to log in again to read the answer.

#### 4.2.5.2 Telia

When a customer needs to get in touch with Telia he has two options. He can click on *Kundtjänst* to the left, or he can choose the grey area to the right and click on *Kundtjänst*. Both ways are shown below.



Figure 7.



Figure 8.

When choosing the link to the left (figure 7) a new page will open with FAQ (Frequently asked questions). Here the customers can look for the question or relevant questions. On the same page there is a link to a search engine, where it is possible to search for information about a subject or for a certain word.

When a customer clicks on the grey button to the right (figure 8) he arrives to a different page. Here, information about the most frequently asked question is shown. The information is large and covers the screen. (Appendix E). To the left, under a couple of links, the customer can find information on telephone numbers, e-mail addresses, and shops.

#### 4.2.5.3 Assessment of getting in touch with the company

The information about how to get in touch with the customer service at the SEB is easy to find and appear under four different flaps. The customer finds telephone

numbers, and the possibility to send or receive a message. The information is structured and easy to follow. The negative aspect is that the answer to the message is not sent directly to the customer's mailbox, only a notification that an answer is available on the *bank on the Internet*. This means that the customer must log in again to read the answer. This is time consuming and should not be necessary. It would be more convenient to get the answer directly to the mailbox.

To get in touch with customer service at Telia is more problematic. There are two different links with the name *Kundtjänst*, but only one of them gives the correct information. This is confusing and not easy to know. The FAQ, found under the link to the left, might help the customer with other problems, since these questions are the most frequently asked. The search engine, available on the next page, works well, but if a customer search for the word *Kundtjänst*, no relevant information will be found. To get in touch with the real customer service, a customer has to use the grey button to the right on the top of the homepage (Figure 8). Here, he will find telephone numbers to customer service, e-mail addresses, and both telephone numbers and addresses to the shops. These two links make the information seem disarranged. The links with the same name should contain the same information.

This service shows the difference between the companies: the SEB has collected all information in one place, while the information at Telia is scattered. The SEB also gives better information, since it only consists of telephone numbers and a mail function. The impression that one gets from Telia is that the company does not want the customer to contact them. It also gives the impression that Telia is tired of the customer. Telia seems to try to make the customer find the answer on his own. This is understandable, since customer care at Telia receives many telephone-calls, but it also makes the customer feel unwelcome.

## **4.2.6 Mobile services**

### **4.2.6.1 WAP**

The Wireless Application Protocol (WAP) is an open, global specification that gives the mobile users with wireless devices an option to easily access and interact with information and services instantly. WAP is an attempt to define the standard for how content from the Internet is filtered for mobile communications. Content is now readily available on the Internet and WAP was designed as a way of making it easily available on mobile terminals.

There are three main reasons why wireless Internet needs a different protocol: transfer speed, size, readability and navigation. Most cellular telephones and web enabled PDA's have data transfer rates at 14,4 Kbps or less; compare this to a typical modem of 56 Kbps. Most web pages today are full of graphics that would take an unbearably long time to download at 14,4 Kbps. Wireless Internet content is text-based in order to solve this problem. The relatively small size of a cellular telephone is another challenge. Most web pages are designed for a rather large screen, which creates problems for WAP because the pages do not fit the display. Therefore wireless devices use something called monochrome screens. Pages accordingly become harder to read, because font and background colour has a similar shade of grey. Another issue is navigation: on a PC you use a mouse, but on wireless

devices you often use one hand to scroll.<sup>18</sup> To be able to show the information on cellular telephone, the Internet pages must convert to a certain programming language, Wireless Markup Language, VML. All pages on the Internet are not available in VML.

#### 4.2.6.2 The SEB

The SEB assumes that in the year 2002 there will be at least 1 billion mobile subscriptions all over the world. SEB believes that the mobile Internet will change our every-day behaviour and has therefore developed a bank-service for cellular telephones. They want to offer the customer the possibility to get in touch with the bank and its service wherever the customer is. This service gives the customer access to the *bank on Internet* and the financial market 24 hours a day, no matter where they are. In order to use the service the customer needs an account at the SEB, and also access to *bank on the Internet*. The customer needs a “digipass” to log in, just as needed to log in on the wired Internet.<sup>19</sup>

This first version of mobile bank-service requires an Ericsson WAP-telephone R380. The telephone needs a service called WTLS, Wireless Transfer Layer Security and is a security system for wireless communication. If a telephone does not have the service it is possible to upgrade it. The graphical interface and the big screen make it easy to navigate (see Appendix C). All communication is in Swedish.<sup>20</sup>



Figure 9.

The services offered are:

- A survey of your accounts
- Possibility to transfer money between your own accounts, as well as to others in another bank-/or post giro.
- Survey of the client portfolio
- Information about the stock exchange.
- Possibility to sell and buy shares
- News from the stock exchange

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<sup>18</sup> www.howstuffworks.com.

<sup>19</sup> www.seb.se

<sup>20</sup> Ibid.

This service is free of charge until the end of June 2001. Then it will cost approximately 50 SKr per quarter. To this sum the costs for the subscription and the calls must be added.

#### 4.2.6.3 Teliamobile

Teliamobile says that the Internet is an important and obvious element in everyday life, both professionally and privately, because it contains all the information we could ever dream of, accessible whenever we need it. Telia believes that the next revolution will occur where the information society and the wireless technology meet. Telia call this the mobile Internet.

The reason behind the development of a subscription that contains more services than ever before, was the fact that the users in the mobile market were no longer increasing. Telia needed to focus on something else and started to develop mobile data in order to attract new customers.<sup>21</sup> Telia launched the WAP-portal MyDOF in order to increase the availability of information to the customer. This was done when WAP was developed in Europe and USA. The WAP-portal works on every device that has a WAP function. Telia offers different subscriptions and MyDOF is included in three of them. MyDOF offers e-mail, the Yellow Pages, checking the balance of your subscription, etc. Telia also offers other services that are of interest. In this thesis only a few of them are considered relevant. Apart from MyDOF they are:

- *Nära Dig*
- *Info Direkt*
- *Mobilt ePostgiro*
- *Unified Messaging*

#### *MyDOF*

In September 1999, Teliamobile unveiled their first WAP portal - MyDOF. MyDOF contains of information and transaction services on the Internet. A customer is able to read and write e-mail, search for a company at the Yellow Pages, and order tickets at SAS and SJ. It is also possible to read news from different newspapers and the Swedish television, as well as the news from the stock exchange. One can also find links to different banks where the customer, provided that he has an account in that bank, can perform the bank's services.

The charge for this service depends on what kind of subscription the customer chooses. An extra cost will be added, since the customer must pay for the connection time. That cost differs depending on when the connection is done. Every connection charges 0,40 SKr.

#### *Nära Dig*

*Nära Dig* gives the customer a possibility to search for information wherever he is. The GSM network positions him and sends relevant information within that geographical area. In order to use this service the customer searches for companies in the Yellow Pages. Today, more than 25 000 companies are connected to this service.

The cost is, with SMS, 4,50 SKr for each search and, with WAP, 3 SKr. When using the WAP the customer must also pay for the telephone call and for the connection.

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<sup>21</sup> Interview with Östen Mäkitalo, Teliamobile.



### *Info Direkt*

This is a function where customers can make subscriptions on different services. The services are: the news, weather reports, the stock exchange, the exchange rate, and gambling information. The customer can also choose other information from the Internet to subscribe on, but the information must be available in VML.

The service is not available for all subscriptions, but in the future this service will be available for all mobile subscriptions. Today, it is only available in one subscription and is free of charge.

### *Mobilt ePostgiro*

This is a service where one can pay the bills over the mobile telephone. The customer can also watch the four latest transactions and the balance of the account. In order to use this service the customer must have a certain mobile subscription called DOF, and have an ePostgiro, or apply for an ePostgiro, at Postgirot.

The cost for performing a payment, checking the balance and the latest transactions, are the same as for sending a text message, SMS.

This service is free of charge in one subscription, and is to order in another. The charge is then 30 SKr/month.

### *Unified Messaging*

Unified Messaging, UM, means that users can gather all their incoming mails, faxes, and voice mail messages in one place. The service is created in order to make access to important information faster. As soon as you have received a message to the mailbox, a fax, or a voicemail you receive an announcement to your cellular telephone. Customers with a WAP telephone can then read the fax or the mail on the display. If the customer does not have a WAP telephone, he can read the mail or the fax-message as a SMS. In addition, all messages can be read on the Internet. There is no extra charge for this service

#### 4.2.6.4 Assessment of the WAP services

It was problematic to assess these services. It would have required an opportunity to use the devices and the services during a couple of days. This was, unfortunately, not possible, but I was able to see a demonstration of some of the services. The assessment will therefore be rather brief.

The use of the SEB's service *bank on the mobile* is limited, since it only works on one cellular telephone, Ericsson R380. This device has been chosen, because it has a big display, which makes it easier to navigate.<sup>22</sup> The service *bank on the mobile* is easy to understand, since it works almost as *bank on the Internet*. The customer can see the function of *bank on the mobile* on the Internet. He can also get a demonstration on a CD to use at home on a PC. This is a very good initiative, since the customer can get used to the service, and learn what he is paying for. In order to log in to the service the customer uses his social security number and the "digipass". The different services are to be found under each flap. As mentioned above, the service is very similar to the *bank on the Internet*. Customer used to the service *bank on the Internet* should therefore have no problems to navigate in and understand the service. There are also fewer graphics and fewer services, which should make it even easier.

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<sup>22</sup> [www.seb.se](http://www.seb.se).

Teliamobile's WAP-service MyDOF is available on every device that has WAP, which makes the accessibility high. The service can be ordered on the Internet ([wap.teliamobile.se](http://wap.teliamobile.se)) where the customer with a mobile subscription at Telia makes a registration. Here, the customer can also read about the service. The information is presented in the form of a homepage. There exists no demonstration of the service as at the SEB, but only a written description. The customer can thus not try or have a look at the service until he decides to order it. According to the shop assistant at Telia shop, Nordstan, most customers know what they want without any further demonstration. The shop does not offer a demonstration to the customer. This is not good, since only the "early adapters" will then be interested in the service. An ordinary person with little technological knowledge will not be interested in the service, since it is not familiar to him. The SEB has marketed the service *bank on the mobile* to every customer; they have made it available with a demo, both on the Internet and on a CD. This makes the customers used to the service, which is a first step towards a greater use of the service *bank on the mobile*.

The service MyDOF was introduced in September 1999, but neither the shop assistant in the shop nor the people at the customer service are yet used to it. They have problems both to explain and to show the functions. Telia has chosen to launch the services since they wish to be in the frontline of mobile services,<sup>23</sup> but in order to really be in the frontline they need not only the technology, they also need the customers. Ordinary customers, not only "early adapters", willing both to pay and to try new services and new technology.

#### **4.3 Summary of self-care today**

Telia and the SEB are two large Swedish companies in different branches. They both offer customer service on the Internet in order to give the customers more and better service, more responsibility, and of course to cut costs for customer service. Both companies also provide a WAP service and strive to be in the technology frontline of their business.

During my work with the assessment it became obvious that Telia consist of more than one company. Teliamobile, not Telia, offers the WAP services, which was not obvious in the beginning. Teliamobile has also its own homepage with information on different services. That page was hard to find, since there is no link from "telia.se" to "teliamobile.se".

The services at *bank on the Internet* are easy to understand and use. The structure of the services is logic and makes it easy to navigate and find what you need. This is the impression both of the reference group and myself. The simple structure is a big advantage, and also the logical presentation of the information. The information is consequent, and does not change from one flap to the other.

The most frequently requested services at the *bank on the Internet* in the reference group are paying the bills, checking the balance, and making transactions. It is also possible to become a customer at the bank, or to subscribe to *bank on the Internet* via the Internet. This is a, however, a service that none of the questioned persons knew of. Nor where they aware of the possibility to get in touch with the customer service when they had logged in. When they want to get in touch with the bank, they use the telephone. The disadvantages with *bank on the Internet*, according to the group, are the need of the "digipass", the irritating fact that the customer has to wait until the

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<sup>23</sup> Interview with Anders Konradsson, Teliamobile.

whole page is downloaded, and the inconvenience of the scrollbar. The customer is not able to see to whom he pays the money unless he scrolls down and check.

Unfortunately, none of the persons of the reference group use *bank on the mobile*.

In my opinion, the service *bank on the mobile* is easy to use, since it is very similar to *bank on the Internet*. It is also a big advantage that the SEB offers a demonstration of the service both on the Internet and on a CD.

According to Sifo R&C, there are between 500 000 to 600 000 visitors to "telia.se" every month,<sup>24</sup> but information about how many people who log in to *Mina Sidor* is not available to the public. The project *Mina Sidor* started in May 1998 and was an attempt to co-ordinate the homepages of Telia. The service *Mina Sidor* has no effect on the customer service i.e. it does not decrease telephone calls, although that is the intention.<sup>25</sup>

The most frequently used services are the search service "White Pages" (i.e. searching for private persons) and checking the balance.<sup>26</sup> This is also what the people in the reference group use the service *Mina Sidor* for. Another advantage is the possibility to see the balance of different subscriptions.

The reference group thinks that it is easy to use *Mina Sidor*, even if it takes time to get used to it. They experience the structure as confusing, and not logical, which I agree with. There are many possibilities and much information, but the user gets disoriented because there are too many services available. The fact that different information is found under links with the same name, i.e. the link to the customer service *Kundtjänst*, is irritating.

The reference group said that they would in case of problems make a telephone-call to get in touch with Telia. When they were asked to try the service *Kundtjänst* they got the impression that the information is rich, but that it is hard to find a specific answer. Therefore is it easier to make a telephone call and talk to somebody. The impression that I personally got from the service was that Telia is not interested in the customers. The customer has to go through many pages before he gets to the right information. One of the interviewee of the reference group also said that there are too many menus to choose among, and suggested flaps instead of the current system. Another interviewee suggested fewer possibilities and fewer functions in order to make the site easier to navigate. I agree; Telia should make the structure more obvious and more logical. It is better to give up some of the functions in order to make the service better.

The interviewees did not know whether they could apply for a subscription on the Internet or not. They thought that it should be possible, but one person said that he would prefer to make a telephone call in order to be able to choose the telephone number. Today, the customer cannot apply for a subscription on the Internet. In my view, it should be possible. Now, it is possible if the customer has registered to *Mina Sidor*, but not otherwise. There is an option to order a new mobile subscription on another page, on "teliamobile.se". The only problem is that most people do not know that this site exists. There is no link from "telia.se" or from *Mina Sidor* to this page. One of the interviewees has a mobile subscription at Telia, but he did not know of the site.

No one of the reference group has used WAP, but believed that they would use it in the future. They would like to pay bills over the mobile telephone provided that the security is high. They would also like to use the mobile telephone in order to book

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<sup>24</sup> Lipschütz & Nyström, 2000

<sup>25</sup> Telephone call with Maria Lund, Telia

<sup>26</sup> Ibid.

tickets to concerts, cinema, and theatre. The younger interviewee is thrilled about the possibility to send and receive mail over the cellular telephone. He is also positive towards a positioning service, which would make him able to know where his friends are, and get in touch with them immediately.

My opinion is that the services available on WAP are interesting and has a potential. The problem is the marketing as well as the lack of a demo. Telia has marketed these services in the ordinary way, i.e. by advertising in newspapers, and on the television. When marketing completely new services to the public they should do as the SEB has done; create a demo on a CD and create a test demo on the web. What is needed is a change of people's behaviour, and in order to do that people must visualise the positive features of the service.

WAP has been criticised for being difficult to use, expensive, and boring. The disappointment comes from high expectations. Commercials have showed a young man surfing on the Internet with his mobile telephone while sitting in a café - all in full colour. Reality is different, as shown in Appendix F. The graphics and the information on the mobile device is simpler than on the Internet. Today, the branch has realised the mistakes and is focusing on the user. The services must be easier to use, says Anders Larsson at Netlight. Staffan Pehrson, Ericsson Internet Application and Solutions AB, agrees and adds that it is not the technique that has created problems, but it is the expectations, and the way in which WAP has been launched.<sup>27</sup>

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<sup>27</sup> Dunås, 2000.

## 5. The future

We all remember the New Years eve 2000. How we desperately tried to get in touch with your family and your friends to say “happy new year”. Not many of us succeeded, you were lucky if you did. The traffic on the network was so heavy that it could not handle all the telephone calls. Normally, this is not a problem unless you live in a big city like Stockholm. Today, people have problems during lunchtime making telephone calls to or from mobile telephones. This is one reason why the technique must be developed and make more traffic possible.

This thesis has a focus on self-service. To consider only what kind of self-care there will be in the future is not a good idea, since we do not know what kind of services there will be. Therefore the following discussion will concern different future scenarios regarding mobile services. A short list of abbreviations is included at the end of this paper.

### 5.1 The new technology

The first-generation systems are analogue cellular systems and the second-generation systems are digital systems currently in use, such as GSM and TDMA. The third-generation systems, 3G, are designed for multimedia communication, and the higher data rates and the new flexible communication capabilities will enhance the access to information and to services.<sup>28</sup> 3G is a collective name for a range of radio technologies for radio-based networks.

The major wireless networks of today are GSM, D-AMPS, and CDMAOne. These second-generation wireless networks are digital and can be used for mobile data-communication as modems. The bandwidths for these networks are very low, between 9.6 Kbps and 19.2 Kbps, and they are also circuit switched. In order to provide better data communication services, network vendors have been working on increasing the bandwidth. There are technologies that use the old network in order to provide higher bandwidth. For the GSM network there are three different technologies: HSCSD, GPRS and EDGE. In order to get even higher bandwidth new technologies using the CDMA technology will be used in the third generation of wireless networks.<sup>29</sup>

In order to get an understanding of the mobile communication, a brief explanation of the most important terms will follow. For this study they are General Packet Radio Service and Universal Mobile Telecommunication Systems.

#### 5.1.1 General Packet Radio Service

The implementation of General Packet Radio Service, GPRS, will bring many benefits to GSM network operators. It brings Internet Protocol (IP) capability to the GSM network for the first time and enables connection to a wide range of public and private data networks using industry standard data protocols such as TCP/IP and X.25. GPRS is extremely efficient in its use of scarce spectrum resources and enables GSM operators to introduce a wide range of services for market differentiation. GPRS is ideal for ‘bursty’ type data applications such as email or Internet access. GPRS is a standardised extension of the GSM network intended to provide both packet switching and circuit services. With GPRS the traditional GSM radio interface resources can be shared dynamically between speech and data services as a function of service load and operator preference. GPRS is designed to support everything from irregular data

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<sup>28</sup> Holma, 2000.

<sup>29</sup> Rosell, 1999.

transfers to occasional transmission of large volumes of data. Several qualities of service profiles are supported<sup>30</sup>. Rather than sending a continuous stream of data over a permanent connection, packet switching only utilises the network when there is data to be sent. Using GPRS will enable users to send and receive data at speeds up to 115 Kb/s.

GPRS coverage is established quickly and efficiently by adding additional packet switching nodes to the existing GSM infrastructure; the GPRS architecture is simply an extension of the GSM architecture. Two new elements will be added in order to keep packet data traffic separated from traditional GSM speech and data traffic. These elements are two nodes: one that handles packet data traffic of users in a geographical area and one, connected to the first one, connected to outside data network and to other GPRS networks. Both of these nodes are connected via an IP backbone network<sup>31</sup>.

By upgrading their networks to GPRS, existing GSM operators will have third generation capable networks, as UMTS will use packet switching technology. An early move to GPRS can reduce the eventual investment needed to make the transition to the third generation<sup>32</sup>.

### **5.1.2 Universal Mobile Telecommunication System**

Universal Mobile Telecommunication System, UMTS, has been designed in order to meet the requirements of the increasing number of mobile users. The UMTS presents extended capabilities and more flexibility compared to the second generation, GPRS and GSM. UMTS is based on the W-CDMA technology (Wideband Code Division Multiple Access) and is a completely new technology targeting true 3G requirements. W-CDMA support both circuit-switched and packet-switched communication, such as Internet browsing and traditional landline telephones services respectively.<sup>33</sup>

One of the new features of UMTS is higher user bit rates: on circuit-switched connections 384 Kbps and on packet-switched connections up to 2 Mbps. Higher bit rates facilitate some new services, such as video, voice, and quick download of data. Often the requested information is on the Internet, which calls for effective handling of TCP/IP traffic in the UMTS network.

## **5.2 The trends in the new technology**

The telecom business stands before one of the biggest challenge ever. The transition from a voice-dominated mobile market to one characterised by wireless Internet and enhanced value-added services will be dramatic. We are moving into new territory, which is uncertain and hard both to navigate and predict. The result may not be a wireless Internet nirvana, but a rich landscape of competition and collaboration.<sup>34</sup>

The high level of Internet penetration and the high use of cellular telephones are believed to make big changes. The possibility to access information on demand and the freedom that the Internet gives is assumed to be required on the mobile telephone. The use of the Internet increase the expectations on speed, and services and these expectations are assumed to be transferred to the cellular market. People growing up with the Internet as an integral part of their lives use the Internet in a different way; they use the Internet as a social medium and are also used to receive information in

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<sup>30</sup> Filippini, 1999.

<sup>31</sup> Ibid.

<sup>32</sup> www.gsmworld.com.

<sup>33</sup> Rosell, 1999.

<sup>34</sup> Gardiner & Garner, 1999.

form of multimedia presentation.<sup>35</sup> Today, almost every teenager has a mobile phone and those who use the Internet also use mobile services to a great extent.<sup>36</sup> Customers are therefore assumed to have different demands in the future and these are presumed to grow.

The use of the Internet will make people used to have as much information as they need when, for instance, making a shopping decision. Most of the information-searching and-digestion will be done at home on a large screen device, but people will also be able to access more information outside the home. In that way there will be two different Internets, one with high capacity which is doing the heavy part of the work, maybe on a PC, and another Internet where the position of the situation is the one governing. This last Internet will require another type of service.<sup>37 38</sup>

The technology GPRS is assumed to fully enables mobile Internet functionality. Any service that is used over the fixed Internet today, FTP, web browsing, chat, email, and telnet, will be available over the mobile network. The WWW is supposed to become the primary communications interface. People will access the Internet for entertainment and information collection, the Intranet for accessing company information and connection with colleagues, and the Extranet for accessing customers and suppliers.<sup>39</sup> The development of 3G will bring a possibility of sophisticated data and multimedia applications. The biggest difference between GPRS and 3G is the speed, which is supposed to be very high in 3G. The services that are assumed to be available are, among many, video on demand, high-speed multimedia, and multiple services for the companies.<sup>40</sup>

New technology is initially expensive, and therefore financially strong markets are in focus when it is to be launched. The release of the cellular phones aimed at the business market and it will probably be the same with the next generation of devices and services.

The world is changing rapidly and therefore is it important to know which trends will influence the companies' business in the future. In order to sustain the general discussion and to have it further illustrated, interviews with experts within the two branches have been made. The interviewees know their respective business very well and here will some of the most relevant questions from the interviews be summarised.

### **5.2.1 Will GPRS influence the offering of mobile services?**

The introduction of GPRS is assumed to make changes in the communication. The technology enables an introduction of many new services for the market, and is an important step towards the 3G.<sup>41</sup> The interviewees assume that when the terminals are launched, the market will expand. The possibility to always be connected will change the requirement of the services, and the alteration of the payment system is also supposed to make a change in the use of the mobile Internet.

The technique is already installed, and Telia is now waiting for the terminals, says Mäkitalo, Teliamobile. He is of the opinion that we have to start with GPRS before we reach 3G. First the customers must get used to the new technology, and Mäkitalo supposes that the top of the use of GPRS will be in the year 2004.

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<sup>35</sup> Gardiner & Garner, 1999.

<sup>36</sup> Ritzén & Svensson, 2001.

<sup>37</sup> Interview with Östen Mäkitalo, Teliamobile.

<sup>38</sup> Gardiner & Garner, 1999.

<sup>39</sup> www.gsmworld.com.

<sup>40</sup> Ibid.

<sup>41</sup> Interview with Östen Mäkitalo, Teliamobile.

There will be services in the beginning of the use of the network GPRS, but the speed will be slow and the ability to use the services will be limited, says Sven Lindmark.

### **5.2.2 Are WAP, GPRS, and 3G driven by the technology or by customer need?**

The development of the WAP, GPRS, and 3G is driven by the technology. 3G is also presumed to be the biggest technology driven technique ever, since tremendous sums of money have been invested in an unknown area.<sup>42</sup>

The development of products before the customers have expressed a wish for them may not by necessity be wrong, since customers are not always able to specify what they want. The companies have to develop the products and introduce them to the customers. Sometimes, the technique needs to make customers aware of the possibilities, and this is a way to create needs. The telecom market has discovered that there are possibilities on the market, but neither the telecom market nor the customers do yet know which they are. The technique of today is highly developed, but the customers are yet not at the same level.<sup>43</sup>

Today, there are web-based customer care and customers are used to the self-care service. Many customers find it timesaving to use the service on the Internet instead of, for instance, queuing in a bank. These are some of the requirements that bring the technique forward; people wants to be able to book tickets to concerts, cinema, and theatre on the Internet. The important issue when developing new technique is that the new item must be easier to use, cheaper, and time saving.<sup>44</sup>

The technique is searching for possibilities and they are not easy to find. One example is the use of the cash dispenser, which is accepted by most customers today. In the beginning people were suspicious towards the new technique, and it took long time before it was accepted completely.<sup>45</sup>

### **5.2.3 Who will be the first user of the mobile services?**

The first users will be the companies, because it will initially be expensive to use both the terminals and the services. They are also assumed to have more use of the services, since the business' services will have a different content. Of course, there will also be "early adopters" who are prepared to pay a high price for the latest technique.<sup>46</sup>

The business' services will, as mentioned, have a different content compared to services to the mass market. Organisations such as caretaking, geriatric care, and taxi service, are assumed to use 3G network services.<sup>47</sup>

The possibility to create a mass market is huge, but there are also some concerns regarding the attitude towards the mobile services. Today, the use of WAP is still considered as complicated, difficult, and expensive. The launch of WAP has not been as successful as expected. This is assumed to depend on the attitude of people, but also on the expectations on the service. Another reason was the marketing of the product, which promised something it did not keep. The interviewees assume that the biggest challenge is not the technique, it is the change people's attitude. Shu, SEB,

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<sup>42</sup> Interview with Sven Lindmark, CTH.

<sup>43</sup> Interview with Östen Mäkitalo, Teliamobile, Sven Lindmark, CTH and Anders Konradsson, Teliamobile.

<sup>44</sup> Interview with Östen Mäkitalo, Teliamobile.

<sup>45</sup> Interview with Göran Ekeröth, SEB.

<sup>46</sup> Interview with Anders Konradsson, Teliamobile.

<sup>47</sup> Interview with Östen Mäkitalo, Teliamobile, Sven Lindmark, CTH.



says that the market is not ready for 3G yet, because there must be fundamental customer requirements first. There are many advantages with 3G, but if the users do not appreciate the technique, it does not matter what terminals or services that are available.

The development of the mobile telephones started almost 20 years ago and the market did not expand until the mid-nineties. This shows that it takes time to make people change their attitude and their use of new technique. By then, in the beginning of 1980, people were used to wired telephones. Today, people are used both to the Internet and mobile telephones, but Mäkitalo, Teliamobile, assumes that it can be problematic to transform that behaviour to the cellular telephone.

#### **5.2.4 What trends do you see in mobile services?**

Today, there are problems making a mobile telephone call at noon in a big city like Stockholm. The telecommunication network will be improved with GPRS and 3G, and these kinds of problem will disappear. Shu, SEB, assumes that in three to four years everyone has to use the new technique. The question is not if the network will come, he says, because it will, but the question is what kind of services that will be available. Maybe the network will be used just for ordinary calls and for sending messages, as today, since the need to communicate will still be there.

Probably, the first users will be companies, and therefore applications will be created to suit their needs. Each of these applications may not be of big use, none of them will be a “killer application”, but together they will make big business. In Japan I-mode has been a success, and it is not only the Japanese who want to be entertained while waiting for the bus or the train. To play, to have fun and get entertained is human, so this is a service also assumed to be introduced.<sup>48</sup>

It is difficult to predict the future and to tell what kind of mobile services there will be, but three areas of services are presumed to be important. These areas are:

- *Services depending on the current situation.* The customers' role changes during their day, and so do the needs. The same person may have different needs depending on the situation; he can at varying times during the day be a student or an employee. Therefore is it important that the available services change depending on the situation.
- *Time critical services.* One wants the information now, there is no time to wait. Today the terminals are limited in speed, display, and memory; this will change in the future, and customer will be able to get the right information at the right time.
- *Individualised services.* In order to give the customer the right information in the right time, the information must also suit the customer. This is presumed to introduce more individualised services.<sup>49</sup>

In the future there will be a migration from wired telephones to mobile telephones. This is already happening; today there are approximately 6,5 millions mobile subscriptions and 6 millions wired ones. But of the total telephone traffic the mobile telephone calls make up only 10%. Here we see a change in behaviour; people make shorter telephone calls and only when it is necessary.<sup>50</sup>

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<sup>48</sup> Interview with Sven Lindmark, CTH

<sup>49</sup> Interview with Anders Konradsson, Teliamobile.

<sup>50</sup> Interview with Östen Mäkitalo, Teliamobile.

Another vision is that the terminals will converge. There will be less focus on which terminal the customer use: PC, PDA, cellular telephone, or TV. The services will be able to be used no matter where, when, or how.

### **5.2.5 What trends do you see in self-care?**

We do not know what kind of services 3G will offer, and since self-care is intimately connected with these services, we can only ponder on what will happen. Today, people do not feel welcome to visit the bank or the post office; they have made themselves unattractive to visit by means of high fees, and reduced personnel. When the network, the applications, and the terminals are more sophisticated, the self-service is assumed to increase. The requirement on faster service, easy access, and more independence will definitely make the self-care more interesting.<sup>51</sup>

By using the *bank on the Internet* or *bank on the mobile* the customer can do almost everything that can be done in a bank. The only thing that does not work is advice. In order to create confidence people need the physical contact, and the *bank on the Internet* and the *bank on the mobile* are both very impersonal. One way to create a more personal contact would be the possibility to see the bank-employee on the display or on the screen.<sup>52</sup>

### **5.3 Summary of the future aspects**

The technology for GPRS already exists and is assumed to provide a massive boost to mobile data usage and usefulness. The question is how to ensure that the technical and commercial features do not hinder its widespread use. Today, there are no terminals available at the market, and that is a problem. This is a problem when introducing new technology; it has to wait for other technology to be developed and launched. The terminal producers and the operators are both waiting for the others to act. None of them wants to have technology that is not useable.

The interviewees presume that GPRS will create changes in the mobile services. They also say that GPRS is an important step towards the third-generation technology.

The WAP, the GPRS, and 3G are driven mainly by the technology. To launch new technology the market has to generate the products and the services, and then ask the customers what they want. This is a way to introduce new technology, since customers do not always know what they want. This is not by necessity wrong, the market has to start somewhere. There is a risk in this behaviour, since the investments may be unsuccessful. Huge amounts of money have been invested in 3G even if it is a big risk, because nobody knows the future.

There are big expectations on the market concerning the mobile services. The trend in the area is that situation-dependent services, time-critical services, and also individualised services will be important. Another trend that is anticipated, are mobile services for the business market. The interviewees expect that market to be important, since the use of business services will be greater than that of services to the mass-market. It will also still be important to talk over the telephone, since there is a need of communication. None of the interviewees could or wanted to tell what kind of services they are developing at the moment. This is understandable, since these services are trade secrets.

The first users are assumed to be the companies, at least initially, since new technique is always expensive. Companies will also have a different use of the services because they will contain other things.

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<sup>51</sup> Interview with Östen Mäkitalo, Teliamobile

<sup>52</sup> Interview with Göran Ekeröth, SEB.

Self-care is intimately linked to mobile services, and as long as we do not know what kind of services that will be available, we cannot know what kind of self-services there will be. According to the interviewees these services will increase when better networks, better applications, and better terminals have been developed. The more the customer can do himself, the more he request, and companies expect a further development of the self-service.

It became obvious during the interviews that the technology is not the problem. The technique already exists, and is relatively easy to produce. The problem is people's attitude. The behaviour of people must change, otherwise 3G will not succeed. The customer must be aware of and understand the possibilities with the new technique in order to be able to ask for different services. Users' attitudes to cellular telephones need to change before a market can emerge. Technology integration is not good enough to create a mass market for 3G. Without customer interest in the non-voice mobile services there will be no market. If customers do not see a compelling requirement for a non-voice service, such as GPRS, there is little point in offering services and terminals or develop applications. In order to get a market for 3G services it is important to educate the market.

My opinion is that this is the most important conclusion of the future aspects. The interviewees stressed, that there will be no success unless there is a change in the customers' attitude towards the technology. There has been an overestimation of the possibilities of 3G, because the market has underestimated the problems with changing people's attitude.

I also assume that even if I-mode made success in Japan, it cannot automatically be translated into a success in other markets. In addition, many markets have tried WAP services and the result was, as we know today, not satisfactory. Although immature technology and services were, undoubtedly, in those cases important factors, the key quest still is how many people wants to do anything more with their mobile telephone than just talk and how much are people prepared to pay for wireless Internet services.

## 6. Conclusion

In this thesis an assessment of some of the current self-care services has been carried out. There has also been a consideration on the future, made with the help of five interviews. The aim of this study was to tell what kinds of self-care services that are expected in the future, when the next-generation network has been developed. The result is not the expected: it is not possible to tell what kind of devices, mobile services, or self-care there will be in the future. All we can do is to assume and try to anticipate what will happen.

Another result has however emerges. The focus should not be on the technology; it already exists and is relatively easy to produce. The main focus should be on changing people's attitude towards the use of cellular telephones. The integration of the technology is not good enough to create a mass market for 3G. If the customers do not understand and see the advantages with non-voice services there will be no market.

In this study some of the self-care services available on the Internet, and on the mobile telephones have been assessed. By performing a study of the current services we may consider whether or not those services are interesting enough to make people change their attitude. One question is whether those services are so important that people wish to be able to use them on the mobile telephone. Another matter is whether the services make life easier and more convenient, and according to Mäkitalo, Teliamobile, these matters are of great importance.

When the corporations develop new technology it must be easier to use, make life easier, and be cheaper than the previous technology. The reference group expressed a positive attitude towards the use of WAP in the future. The group also assumed they would use it when it is less complicated, and the interfaces are better. My opinion is that this shows that there exists an interest in the services. I believe that both the mobile services and self-care services will make life easier and more convenient; the problem is to make people aware of the convenience of the services. One first step can be to do as the SEB has done.

The SEB and Telia have different ways of marketing their respective WAP services. My opinion is that the SEB has done it in a better way. The SEB has made a demonstration product, which is available on a CD and on the Internet. Through that product customer has a possibility both to get use to the service and to understand it. This is an excellent first step towards a change of the people's attitude.

## 7. List of abbreviations

IP	Internet Protocol
3G	Third Generation Network
CDMAOne	A brand name that describes a complete wireless network system.
D-AMPS	Digital-Advanced Mobile Phone Service
EDGE	Enhanced Data rates for GSM Evolution
FTP	File Transfer Protocol
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communication
HSCSD	High Speed Circuit Switched Data
PDA	Personal Digital Assistant
TCP/IP	Transmission Control Protocol/Internet Protocol
TDMA	Time Division Multiple Access
UMTS	Universal Mobile Telecommunication System
WAP	Wireless Application Protocol
W-CDMA	Wideband Code Division Multiple Access
WWW	World Wide Web
X.25	A data-communication protocol

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[www.webproforum.com](http://www.webproforum.com) – *Customer Care tutorial*.

[www.howstuffworks.com](http://www.howstuffworks.com) – WAP.

[www.gsmworld.com](http://www.gsmworld.com) – GPRS, GSM.

## 8.4 Interviews

Östen Mäkitalo, Senior Vice President, Teliamobile AB.

Anders Konradsson, Product Manager of MyDOF, Teliamobile AB.

Chris Shu, Chief Technician manager Consult Mobile Services, SEB.

Göran Ekeröth, E-ambassador, E-banking, SEB.

Sven Lindmark, Researcher, Chalmers Technology University.

## 9. Appendix

### Appendix A

The homepage of the SEB.

SEB

Den 21 mars 2001

Logga in

Välj tjänst

Bli kund  
Kontakta SEB  
Sök på seb.se  
Övriga SEB-tjänster >  
Om oss  
About us

**Friluft, rörlighet. Lönsamhet.**

**SEB:s bolagsstämma 5 april 2001 Anmäl dig här!**

## Ekonomisk Analys: Fed sänker snart igen

Federal Reserve kommer att genomföra ytterligare en kraftig räntesänkning i april eller maj. Den amerikanska centralbanken bedömer att konjunkturbotten i USA inte är nådd än, skriver Mikael Johansson, Ekonomisk Analys.

Mikael Johansson [Läs mer](#) [Fler nyheter](#)

### Handelsunderskott oroar inte

Underskottet i USA:s handelsbalans blev något högre än väntat i januari. Robert Bergqvist på SEB Merchant Banking oroas dock inte av siffrorna. [Läs mer](#)

### Boräntor stilla efter USA-sänkning

Eftersom den amerikanska räntesänkningen var väntad så påverkas inte de svenska boräntorna, tror SEB:s privatekonom Gunilla Nyström. [Läs mer](#)

**Börsen just nu**

Vinnare A-listan	%	Senast	Tid	Rubrik
Volvo A	0.32	157.50	14:19	NIBE: KÖPER TILLGÅNGARNA I ROSLAGSSPISEN
AstraZeneca	0.11	474.50		

**Kurser från 2001-03-21 kl. 14:18**

Förlorare A-listan	%	Senast	Tid	Rubrik
Holmen B	-25.99	206.50	14:17	ERICSSON: SPÅR ATT 460-625 MLN MOBILTELEFONER SÄLJS 2001
Holmen A	-23.02	214.00	14:15	TMT ONE: MATS ÖVBERG ÖKAR INNEHAV
Ericsson B	-8.73	57.50		

**Nyheter**

- Börs & finans
- Fonder
- Privatekonomi
- Shopping
- Företag
- Produkter & tjänster



## Appendix B

The homepage of Telia.

The screenshot shows the Telia homepage with a red header. The Telia logo is on the left, and a banner on the right says "Nya priser varje vecka!". Below the header, there are two main promotional boxes. The left one is titled "Spara pengar!" and features an image of a telephone cord. The right one is titled "Färgstark chef" and features a photo of Indra Åsander. Below these are navigation menus for "Privat", "Företag", and "Om Telia". A "Mina Sidor" section contains login fields for "Privat" and "Småföretag" with "Logga in" buttons. A "Pressmeddelande" section lists recent news items. At the bottom, there is a navigation bar with links for "Samtalspriser", "Bredband", "Karriär", "Evenemang", "Rekommenderad webbläsare", and "Investor Relations".

**TELIA** Nya priser varje vecka!

### Spara pengar!

Miss inte våra kanonerbjudanden som hjälper dig att förbättra din internkommunikation. Prova Telia Instant Office utan kostnad i tre månader. Ett eget kontor på nätet som ger dig och dina medarbetare tillgång till all aktuell information.

[Läs mer >>](#)

### Färgstark chef

Nyutnämnd chef för Internet Services och medlem i Telias ledningsgrupp, Indra Åsander går en spännande framtid till mötes där fokus på framtiden är det som gäller.

- Vi ligger i framkant och presterar nya och spännande saker som är av största vikt för hela samhället. Det är häftigt!

[Läs mer >>](#)

- Privat
- Företag
- Om Telia
- Pressrum
- Kundtjänst
- Sök

#### Mina Sidor

Privat  Småföretag

Användarnamn  Lösenord  [Logga in](#)

[Läs mer och registrera dig!](#)

[Jag har glömt lösenordet](#)

Logga in som företags- eller organisationskund hos Telia Online eller Telia Partner.

[Läs mer och registrera dig!](#) [Logga in](#)

#### Pressmeddelande

2001-03-30  
**Telia motsätter sig att stat och kommun styr bredbandsutbyggnaden**

2001-03-29  
**Telia breder ut sej på bredbandsmarknaden**

#### Just nu

**Kvinnoserien fortsätter Färgstark chef I Fokus.**

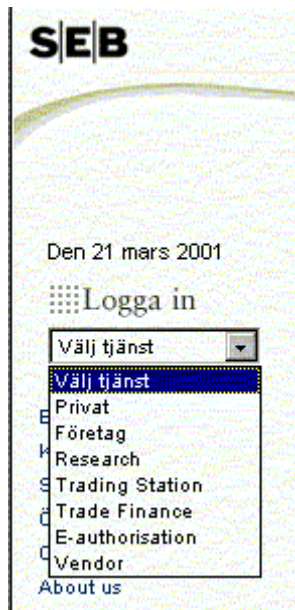
#### Genväg till

Välj i listan

Samtalspriser | Bredband | Karriär | Evenemang | Rekommenderad webbläsare | Investor Relations

## Appendix C

This picture shows the different services you can log in to.



## Appendix D

The start-page of *Mina Sidor*.

The screenshot shows the Telia Mina Sidor website interface. At the top, there is a red header with the Telia logo and navigation links for 'Privat', 'Företag', 'Mina Sidor', and 'Om Telia'. A search bar is located on the right side of the header. Below the header, the user is logged in as 'Charlotte Ljungblad' with a 'Logga ut' button. The main content area is titled 'Välkommen Charlotte Ljungblad' and features a 'PÅ MINA SIDOR' section with icons for 'Kommunikationsskolan', 'Artiklar', 'Tipsa en kompis', and 'Veckans serie'. A featured article titled 'NYHET! Nu kan hela familjen samla poäng tillsammans.' is displayed, accompanied by a photo of a family. Below this, there is a 'Tävla på Mina Sidor' section with a photo of a smiling man and woman. On the right side, there are several promotional boxes: 'Just nu' with a system update notice, 'Tips' with a contest announcement, 'Nyheter' with a contest announcement, and 'Erbjudande' with a 'Beställ biljetter på 020-275275' offer. A sidebar on the left lists various services like 'Telia Fördel', 'Mina Abonnement', and 'Mitt Koncenter'.

## Appendix E



The screenshot shows the Telia website's customer service page. At the top, there is a red header with the Telia logo and navigation links for 'Privat', 'Företag', 'Mina Sidor', and 'Om Telia'. Below the header, the page is titled '> Telia.se | Kundtjänst' and 'Kundtjänst'. A left-hand navigation menu lists options: '> ...via telefon', '> ...via e-post', '> ...via Internettelefon', '> ...via våra butiker & återförsäljare', and '> Frågor & Svar'. The main content area is titled 'Den vanligaste frågan?' and contains the following text:

V varje dag får vi tusentals samtal till vår Kundtjänst. Vet du vilken fråga som är vanligast kring fasta abonnemang?

Jo - vad kostar det att flytta telefonen?

Svaret på den och många andra frågor hittar du här på Internet under [frågor och svar](#).

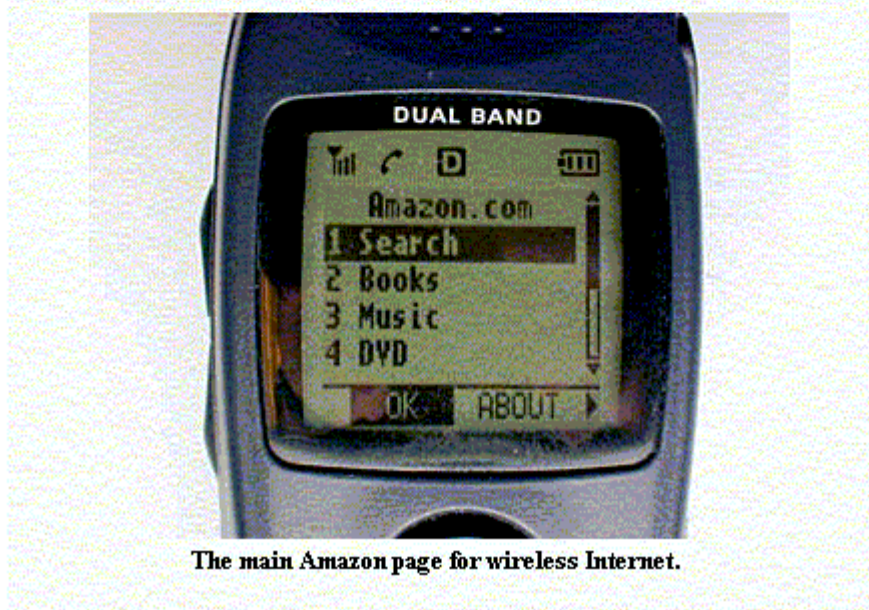
Börja med att klicka dig dit för att få svar på dina funderingar. Gå därefter gärna vidare med att ta kontakt med oss på Telia: [via telefon](#), [våra butiker](#) eller [e-post](#).

Vi svarar så fort det någonsin går.

## Appendix F



The main Amazon page for regular Internet.



The main Amazon page for wireless Internet.