Developing an Internet Based Communication Strategy

An Evaluation of a Decision Support System

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Abstract

The objective with this thesis is to investigate how Hands should develop an Internet based communication strategy for its decision support system Atlantic™. This investigation was conducted through a case study and the methods we used were theory search and interviews.

The results of the study show that the customers do not use the website regularly; therefore, we do not recommend Hands to use the Internet as a single communication tool. Instead, we give Hands a recommendation to develop its classic marketing in form of participation in trades, advertising in technical magazines and sponsor itself on the Internet.

Additionally, the interviews show that the customers’ opinion of the product is overall positive regarding the user interface, the usability, and the user friendliness.
Preface

This master thesis is degrees project of 20 points and it is the last assignment of our studies at Luleå University of Technology. The thesis touches areas of marketing, system science and The Internet and has been written at the division of Industrial Marketing and System Science. Our assigner has been Hands AB in Skellefteå.

We would like to thank our supervisors, Lennart Persson and Dan Harnesk for their support when we needed to discuss. We also indeed want to thank our contact persons at Hands: Pär Lundberg, Leif Lindgren, and Göte Andersson. As well we want to send a thought to all people we interviewed for their cooperativeness.

Finally, yet importantly, we want to thank our friends and families for their support during this time.

Luleå 11 December 2002

Maria Perzon

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APPENDIX A
1. Problem Area

In this chapter, the reader will be introduced to the subject of the thesis. The company that this thesis was conducted on will also be presented. Finally, the purpose will be brought up together with the research questions as well as the delimitations.

1.1 Introduction

Today communication is the transmission and receipt of a message. In order to create communication it requires that two parts are involved; the sender and the audience. If the audience does not take up the message, no communication has taken place, and all the effort and expense have been for nothing. This is a huge problem in marketing; the sender who wants to communicate to an audience starts the communication process. The sender can be several different persons, for example a salesperson calling on a potential customer or a company sending a message to a huge amount of people through advertisement. To make it possible to send the message the sender has to put the intended message into words, pictures, or symbols that can be transmitted (Doyle, 1998).

Communication can be seen as a very simple process that human beings do all the time and take for granted. However, the receiver is not a passive subordinate in communication process, but is a dynamic influence and partner. Delivering the message to the receiver’s eyes or ears is not enough; he or she has to understand and interpret it. The receiver interprets the message according to his or her own personality and mood (Brassington and Pettitt, 2000). It is therefore of importance to develop a communication strategy in such way that it cannot be misunderstood in any way (Irwin, 1999).

The development of a successful communication strategy is highly specialized or technical, and therefore most companies use outside agencies specialized in advertising, promotion, and public relations policies to help them implement these policies. However, the managers must still have their responsibility for communications, which means that they are involved in the development of the communication strategy. They are responsible to several tasks and to be able to undertake these it is imperative that the managers understand how communications work and what the alternatives are (Doyle 1998). Marketing communication must serve the buyer. If it only serves the need of the market, the buyer will ignore it (Dwyer and Tanner, 2001).

It is extremely important with effective communication in order to be able to communicate with the customers (Irwin, 1999). Information is one of many competitive means to increase the sale. Customers rather buy from the well-known company than from the unknown or notorious (Erikson, 1992). The company has to invest in communications to make potential customers aware of the product. It has to communicate the advantages of the product to persuade customers of its competitive capability (Doyle, 2000).
The communication strategy is not a strategy that is launched and then function on its own. The communication strategy involves making adjustments by time and it has to be changes from measurements and feedback. When a company is developing a communication strategy, it has to ask itself two questions. How will we communicate with our customers and how do our customers want to communicate with us? (Dwyer and Tanner, 2001)

When the customers enter the market, they have preconceived ideas based on experience, education, competitor’s communication, and other factors. Hence, the company has to design the communication strategy from what the buyers already think and how they purchase. At the same time, it is important that the company is aware of what the competitors are doing (Dwyer and Tanner, 2001).

The communication strategy can take many forms (Promotional mix); these include advertising, sales promotion, public relations, personal selling and direct marketing (Doyle, 2000, Brassington and Pettitt, 2000). Depending upon media availability and local regulations the relative importance of these items varies from country to country.

Advertising is a one-way communication, but the buyer can respond to the advertising by calling or faxing a respond card. Business advertising can be found in trade publications or magazines adjusted to a specific profession, industry, or trade. Furthermore, business advertising can also be found on the Web, television, radio, billboards, and other media. Advertising reaches large number of potential customers that are inaccessible or unknown to a low cost. It is advertising that makes the companies known and therefore mostly used to create awareness. It is not so often used to generate sales (Dwyer and Tanner, 2001).

Sales promotion shall function as value adder for the product or the service. It is increasingly being recognized as a valid strategic tool, working alongside and supporting other promotional elements (Brassington and Pettitt, 2000).

Public relations or PR focuses on the relationship and communication with individuals and groups in order to create goodwill and inform the audience about the company and its products. PR is creating good relationships with important constituencies as well as with the media to make it easier to get good news presented, and thus not only used as a crisis management. Since the information is written, or appears to be written by someone else, the audience tends to give it more credence. The drawback of PR is that it is hard for the companies to control what is said, where it is said, and to whom (Dwyer and Tanner, 2001).

Personal selling is an interpersonal communication in which the seller tries to secure a purchase from another person. The advantage of personal selling is that the communication can be adjusted to the customer’s needs and personality. It is possible to change the order as well in order to fit the customer’s requirements. However, there are big costs related to personal selling.
Personal selling requires investments in management structures and training, and the sales force has to be maintained as well (Dwyer and Tanner, 2001). Doyle (2000) claims that personal selling costs are the largest element, followed by sales promotion and media advertisement.

Over the past decade, direct marketing has grown to become a very important part of the promotional mix. The changing of nature of the customer, the marketing environment and the technological development are all contributing to the rapid growth of direct marketing. Direct marketing can offer the customers to shop by phone, mail or the Internet. Direct marketing has an ability of making it possible to bring specialist goods within reach and this makes it increasingly accepted by customers. People with special interest can find their special or desired products on the Internet and in the same time save money when they do not have to travel to get it. (Brassington and Pettitt, 2000).

When using direct marketing to build an on-going relationship with an individual customer trust and confidence are growing during time, and that is the biggest benefit. It is important to consider the customer’s self-confidence, some people wants a discreet direct relationship and make their purchase by mail order, because they may not want anyone to see them buying the product. The competition are increasing with direct marketing because the customers have entered into dialogue with the organization and have had their needs met through a series of personalized offerings (et al, 2000).

Direct marketing encompassed a wide range of techniques; direct mail, telemarketing, direct response mechanisms, mail order and Internet marketing. One of the most promising techniques is Internet marketing seeing that the potential audience for Internet usage is very large, hence, more and more businesses develop their websites (Brassington and Pettitt, 2000). Internet makes it possible to maintain and establish personal contacts with the customer. The company can communicate with its clients when it wants to and it is possible to communicate with many customers at the same time (Höij et al 1996). The Internet consists of millions of interconnected computers located in countries throughout the world – all linked by phone lines and high-speed cables to form a gigantic computer network system (Gonyes, 1996). The standardization created by the web has enabled computers to access other computers through fixed links that appear as a screen display of text (Ström 1998).

The most familiar tools on the Internet are E-mail and World Wide Web (WWW). This can be explain by the facts that E-mail is often the first contact for many users and World Wide Web is the easiest part of the Internet to reach with its graphic, links and sounds. There exist two types of www homepages: the net store and the information page. The net store is used to sell products or services and the information page will entice the customers to contact the company through information about the company and its products (Ström 1998). However, Internet contains other tools as well, for example FTP (File Transfer Protocol) and newsgroups (Höij et al 1996). Internet is therefore an excellent tool to reach to customers. Even the smaller company can compete on the same condition because they get in contact with a bigger market (Wigblad & Åhlgren, 1998).
The potential for Internet as a marketing tool emerged in a significant and dynamic way in 1990’s and is still developing further (Brassington and Pettitt, 2000). The Internet also has become a symbol of the ultimate customer relationship for business-to-business marketers. The information technology and in particular Internet opens new possibilities to companies to market, sell and distribute its services and products, reach new customers and communicate with the existing (Sandén, 1998). The Internet makes it possible to build an important relationship with customers in a new, cost effective, and lasting way (Silverstein 2000).

Today many companies want to create or improve their Internet-based marketing. One of these companies is Hands AB in Skellefteå.

1.2 Background

Hands has its origin in a company, Närdata, established in 1976. During the following years, other companies have bought this company. In 1981 a company called Sedab did so, and the new name became Sedab Närdna. The following purchase took place in 1984 when a Norwegian company, Teamco, bought the company and the new name became Teamco Närdna. In 1994 the IT-group Merkantildata bought Teamco Närdna in the purpose of establishment in Sweden, and hence, made a strategic acquisition. The company has operated as a freestanding part within Merkantildata with the name Merkantildata Application (Lindgren, 2002). In 2000, Hands was founded after it had broke out from Merkantildata, and now it has grown to an independent, stock listed company with business companies in Sweden, Norway, Denmark, and Finland (Lundberg, 2002). Hands delivers standard solutions that help industries, organizations and companies to use its resources in a better way within areas that are critical for the activity. Hands has about 200 employees in Sweden (64 in Skellefteå) and 850 in Sweden, Norway, Denmark, and Finland. The staff on Hands has more than 20 years of experience within the area of helping industrial companies to create competitive power and increased profitability (Hands).

These days it becomes more and more valuable to discover possibilities and deviations to be able to make the right decision for the company in the right time. The decision-maker has to have access to all necessary information no matter where it is located in the company. The impression of information may differ depending on who is watching. Much of what is seen daily are the same things but in different combinations, depending on the visual angle. Different people see the same thing in a different way, as figure 1 depicts (Olve, 1985).

![Figure 1: Is the symbol in the middle a B or 13? (Olve, 1985).](image)
The decision-makers’ problem is that information often occurs in large volumes and hence, forces them to put much effort in searching for information instead of analyzing it (Hands).

This gave Hands the idea of decision-administration and that idea led to the concept of Atlantic™. Atlantic™ is a decision support system that simplifies the access of data and the analyzing of the organization’s problems and possibilities. Atlantic™ makes it possible for the organization to react fast, which leads to better services and more satisfied customers, lower costs, and better results. However, these features are common for all decision support systems. The simplified picture below depicts how a decision support system functions (Gray, 1994).

![Figure 2: The sequence of work when using a common decision support system (Gray, 1994).](image)

To be more competitive against other decision support systems Atlantic™ also considers the user interface, which means that employees who do not use the system frequently, i.e. the seldom users, can understand the data easier. This means that it is possible not only for the directors but also for the employees lower in the organization to be able to react if a deviation occurs in the company and this will save valuable time (see figure 3) and may increase the degree of participation for the employees lower in the organization as well. According to Lundberg (2000) this is a powerful idea of Atlantic™ (Lundberg 2002).

![Figure 3: The sequence of work when using Atlantic (Hands).](image)

Atlantic™ consists of four parts: Datalayer, Media, xlReport, and xlForecast (Hands). The most commonly used parts are xlReport and xlForecast (Lindgren, 2002).
When using xlReport the users cannot update the data. Instead, the data is updated from other departments, for example the department of economy. The customers use xlReport to get prognoses in an easier manner. When the customer uses xlForecast, the user can update data by for example put in prognoses. If the customer uses xlForecast it is also using xlReport (Lindgren, 2002).

In correlation with the selling of the system, or parts of the system, in some cases, Hands instructs an employee at the company that has bought the system to design the user interface. In other words, in this case the customer designs and constructs the user interface itself. During the education of the employee, recommendations and moulds are given to ease the construction. However, the result depends on how much time and effort the designer uses during the construction. If the customer does not want to spend time and effort designing the system itself, Hands makes all the development and implementation for the customer (Andersson, 2002).

The concept of decision support system was first articulated in the early 1970’s. It was defined as “interactive computer-based systems, which help decision makers utilize data and models to solve unstructured problems” (Turban and Aronson, 2001). The real purpose of using a DSS is to provide support to the decision maker during the process of making a decision. This means that studying a DSS includes studying of people, decisions, and how those decisions are made (Marakas, 1998). In order to be able to understand the communicating information from the machine to the user and vice versa a good user interface is important (Carey 1990, Brown 1995).

Decision Support Systems help the organizations with market planning, research, operation, and strategic planning. It helps the organization to extract the data required to understand the market better and compete successfully on price, quality, timeliness, and customer service (Marakas, 1998).

Today the decision support system (DSS) is often used in the information-rich environment of organizations, where it performs much of its work. The DSS is used in managerial control as well. It is the manager that has the ultimate responsibility and accountability for the outcomes associated with decisions. The DSS provides support to the selection process, but it is important to remember that there are the managers that take the decisions and that it is they who are directly responsible and accountable for the outcomes, not the system (Marakas, 1998).

The weakness of AtlanticTM is that there have been few investigations about how the customers value the system. Knowing about this and how they use Atlantic™ will make it easier to improve the system. This knowledge will be valuable when improving the Internet based communication strategy of Atlantic™ (Lundberg 2002). Atlantic™ has been on the market since 2001, but it is still unknown for most companies within all branches. Ever since Hands introduced Atlantic™ on the market, no effort has been done to market the system in a wider range whatsoever. Today Hands wants to increase the knowledge about Atlantic™ among its customers, and hence the company is in need of an improved Internet based communication strategy adjusted for Atlantic™ (Lundberg, 2002). The different parts of Atlantic™ have, however, been on the market during some years (Andersson, 2002).
1.3 Developed Problem Area

Thanks to the World Wide Web, it has become common with private persons connected to the Internet. This has lead to a new market for companies on which the number of customers is frequently increasing (Hedman 1999).

On the Internet, one can communicate with voice, image and text at the same time in difference of other communication methods, i.e. the Internet binds together all the communication possibilities that all other methods can offer. These possibilities open new ways for companies that want to market themselves. Internet makes it possible to communicate in an interactive marketing way (Höij et al 1996).

By using the Internet, it is possible to bring down physical barriers to commerce and almost immediately give a business access to new markets around the world. To be able to market the company on the Internet a website is required. The visitors at a website shall be able to find information and contact the company in many different ways. In case a visitor has troubles, there should be tools for navigation available to help the visitor, no matter where on the website the visitor is located (Höij et al 1996).

It is in most cases the website itself that markets the company, but many companies have not fundamentally discussed how to create a web site. Furthermore, it is often discussed what kind of services and information that can be distributed by the web site, but it is very rare to discuss how to use the web site to market the company itself (Wen, 2001). To be able to market the company and its products in the best way on the Internet it is imperative to have knowledge about the customers’ opinion about the product (Doyle, 2000).

The starting point for successful marketing is to understand the needs of customers (Doyle, 2000). A business that fails to do this will not survive because customers will go elsewhere. Businesses that are good at fulfilling customer needs have the best chance to grow and prosper. (Doyle, 1998).

As mentioned in chapter 1.2 Hands tries to make Atlantic™ more competitive by considering the user interface. This feature does the company want to highlight in the marketing of this system. Therefore, there is a need to conduct an investigation regarding how the customers of Atlantic™ use and value the system. To highlight the special feature of Atlantic™ the investigation will concentrate on the usability, the user friendliness, and the user interface.

Logically, systems’ success is usually measured from how satisfied the users are with it and how the users will view the DSS as favorable (Marakas, 1998). To make the DSS successful and efficient it is also important that it is user friendly, that it provides good usability, and that it has a good user interface. A system with a speedy performance and few errors are not a guarantee that the system has a high satisfaction; the system has to satisfy the worker (Bailey, 1996).
Usability is a conception that is used to ease the task that a user must accomplish by using a computer. When a system has good usability, the user only has to concentrate on the task and not on problems related to the system or the computer, and hence, the quality on the task is often increased, i.e. the productivity is increased. Gradually, the insight that the systems must have good usability in order to increase the productivity has increased. If the user cannot use the system in an efficient manner, it does not matter how good the functionality is (Allwood, 1998).

User friendliness consists of four parts; accessibility, mental support, individualization, and help resources. Accessibility is an elementary component since the user has to have access to the system in order to be able to use it. Mental support means that the system shall not have more requirements on the user than the user can handle. Hence, the system developers have to be aware of that all users have different mental processes. Individualization is an important component as it is important that the system allow different kinds of users to adjust it to their individual conditions, for example to change the language in which the system is presented. The last component is help resources that help the users in problematic situations. These resources should thus be available when the users have trouble (Allwood, 1998).

All machines that are communicating with humans need a user interface. The user interface is the only instrument that users can use to communicate with the computer. It consists of input devices like a keyboard and a mouse, output devices, the information input by users, and the information output by the computer (Bailey, 1996). According to (Carey 1990), a good user interface is important. A user interface that is difficult to use may cause that the product itself becomes defective and therefore the customers avoid using it (Faulkner, 2000). To make the best user interface it is imperative to know what the customer value the product. Knowing the customer is a part of the communication strategy, if the company only focuses on profits and sales it only becomes aware of problems when sales and profits begin to fall away and then it is often too late. (Doyle 1998).

As mentioned in chapter 1.2 is the weakness of Atlantic™ that there have been few investigations about how the customers, i.e. the seldom users, value the system. Hands has to increase the knowledge about Atlantic™ among its customers, and therefore it needs an improved Internet based communication strategy adjusted for Atlantic™ (Lundberg, 2002).

Internet based communication strategy encompasses different techniques; E-mail, FTP, newsgroups, and the World Wide Web. The potential audience for Internet usage is very large, as more and more businesses develop their websites (Brassington and Pettitt, 2000). Internet makes it possible to maintain and establish personal contacts with the customer. The company can communicate with its clients when it wants to and it is possible to communicate with many customers at the same time (Höij et al 1996).
1.4 Research Problem and Research Questions

From the problem area above, a research problem has been formulated in order to make research easier.

The purpose with this study is to investigate how an Internet based communication strategy can be developed and designed with knowledge about how the seldom users value the decision support system.

The research problem can be broken down to the following research questions:

1. How can companies design a suitable Internet based communication strategy?

2. How do the customers value a decision support system with a user interface for seldom users, i.e. how does the system help the customers in their work?

3. How can Hands design an Internet based communication strategy?

1.5 Delimitations

This study will only focus on the usability, user friendliness, and user interface in the project Atlantic™ on the company Hands in Skellefteå, Sweden. Furthermore, the focus will only be on the company’s customers. The study of the communication strategy will only consider the external part and concentrate on Internet based marketing. Finally, we will only bring up suggestions on how this Internet based communications strategy could be implemented. Thus, we will not implement it ourselves.

1.6 Explanations

Communication strategy – the way the company advertises itself on the market.

Customer – companies that have bought the system from Hands.

Seldom users – a person who is dependent on the system to perform the acquisitions, but who use it too seldom to keep up the knowledge about the processes.

Value – the customer’s attitude and opinion about the product’s user interface, usability and user friendliness, and how it helps the customer with its work.
2. Theory

2.1 Communication

Most companies use outside agencies to help implement their advertising, promotion, and public relations policies, since the development of a successful communication strategy is highly specialized or technical. However, the managers must still have their responsibility for communications, which means that they are involved in the development of the communication strategy. Their responsibility is mainly to set communications objectives, determining the budget, allocating expenditures among alternative communications vehicles, agreeing strategy with their agencies, and evaluating the results of the campaign. To be able to undertake these tasks it is imperative that the managers understand how communications work and what the alternatives are (Doyle 1998).

There are several reasons why managers finds it important or useful to communicate with their markets or audiences, which are customers and trade, employees, shareholders, government bodies, and community groups that the organization may wish to influence favorably towards its activities (Doyle 1998):

- **Inform.** It is necessary to make the audience aware of that the company’s product exists, and explain exactly why it does. This task is very important for new products and services.

- **Persuade.** This step is a continuation of the information. Here the company is creating favorable attitudes to the company or its brands.

- **Image creation.** This step is important, as the image in some markets may be the sole or main differentiator among brands. In the markets where the products are simple and similar, communication-created images provide consumers with the only means to differentiate. “Effective communications becomes the key to market share”.

- **Reinforcement.** The main purpose with the communication is not to win new customers, but to reassuring existing ones that they have made the correct choice. The most important thing for most companies is to retaining existing customers to future sales then winning new ones. When making effective communication the existing customers get convinced that the company’s brand is still reliable, relevant, and good value.

Normally are personal selling, media advertising, direct response marketing, and public relations all included in marketing communications. Moreover, the most rapidly growing medium is direct response, with the Internet and on-line marketing likely to be particularly important in the future (Doyle 1998). Furthermore, the product’s appearance, its price, and how it is displayed are also communication to customers. This means that the whole marketing mix, and not just the communication mix, needs to be coordinated. Two other tools for good marketing are personal
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experience and word-of-mouth, which are free as well. However, a company cannot use these tools as the only marketing since they are too slow.

2.1.1 The Communication Process

With communication, one means the transmission and receipt of a message. Two parts has to be involved to create communication, the sender and the audience. No communication has taken place if the audience does not take up the message, and all the effort and expense have been for nothing. This is a huge problem in marketing. Below is the communication process presented (Doyle, 1998).

![Communication Process Diagram](image)

*Figure 4: The communication process (Doyle, 1998).*

The sender whom is the one who starts the communication (for example a salesperson calling on a potential customer or a company) is sending a message to a huge amount of people through advertisement. To make it possible to send the message the sender has to put the intended message into words, pictures, or symbols that can be transmitted. This section of the communication process is called encoding. If the audience receives the message, it is decoded. Then, the audience may respond in the same way. Additionally, the sender obtains information about the audience’s response, which is called feedback (Doyle, 1998).

The communication plan is formed by the construction and transmission of the message. However, there are two problems in the perceptual process when framing the communication plan; obtaining attention and achieving a correct interpretation of the message.
It is important that the advertisement or another communication message achieves first exposure and then attention in order to be effective. Therefore, it is crucial to select the right media of the exposure problem (Doyle, 1998)

2.1.2 Aida Model

The main purpose for people that work with communication must be to influence or change the behavior of people with promotion and information. A model that describes the behavior of people when they are exposed to promotion and information is the AIDA-model (see figure 5). The behavior is developed in four steps, and the individual that is exposed to the promotion or information has to begin on the first step to be able to reach the next step (Dahlqvist and Westerståhl, 1988). The AIDA-model helps the marketing communications planners to recognize different types of communication goals that must be set. The company can have two different kinds of goals; strategic goals and tactical goals. Strategic goals are what the company wants the overall strategy to accomplish. These goals should be set to drive the planning of messages and media selection. Tactical goals are desired outcomes for specific communications.

![AIDA-model](image)

*Figure 5: The AIDA-model (Dahlqvist and Westerståhl, 1988).*

However, this model is not enough to explain the whole reality; it only represents a very rational reality. Moreover, the whole idea with the Aida-model is that people search for information and is rational in their behavior (Dahlqvist and Westerståhl, 1988).

When working with promotion and information it is of high importance to be aware of that people do not always act in a rational manner. The human acting is divided in three parts; knowledge, attitude (feelings), and action. From these parts, humans can act in a rational, subconscious, learned, or social manner (Dahlqvist and Westerståhl, 1988).
All target groups have different degree of sensitiveness for information depending on what it is interested in. This means that all products and companies do not have the same possibility to succeed in the communication with their target group. It is the target group’s knowledge and interest that can be concluded in the conception motivation, and the motivation is affecting the target group’s behavior. This means that the company must have knowledge about the target group’s motivation. If the target group has high motivation it means that it search for information actively, meanwhile a target group with low motivation means that the company has to find new ways to affect the target group’s behavior (Dahlqvist and Westerståhl, 1988).

From the target group’s perspective, the motivation develops from three factors; the image of the advertiser, the interest of the product, and the product life cycle (Dahlqvist and Westerståhl, 1988).

### 2.1.3 Business to Business Communication

An important question for communication is, how will the company communicate with their customer? Since this integrated communication is a two-way communication, the question – how does the customers want to communicate with the company is likely important. Communication strategy involves making adjustments during the time. If the company receive feedback they can improve the communication and in turn get the relationship strengthened (Dwyer and Tanner, 2001).

The basic premise for integrating marketing communication (IMC) has probably been around since the beginning of marketing. IMC is a two-way communication with its focus on special customers and their needs, without feedback marketers may never know if anyone is listening. Business marketers are more likely to capitalize on the power of integrated marketing communications than consumer marketers (Dwyer and Tanner, 2001).

The first step in the integrated marketing communications strategy process (see figure 6) is setting the goals. Understanding marketing goals helps communications planners determine the audience for marketing communications. The audience depends a lot on how the market has been defined, as well as how the buying center operates (Dwyer and Tanner, 2001).

```
1. Set communication goals. Who is the audience? What do you want them to do with the information?
2. Determine roles for each medium.
3. Create message
4. Place message in appropriate media
5. Measure result
6. Make adjustments in messages and/or media
```

*Figure 6: IMC Strategic Planning Process (Dwyer and Tanner, 2001).*
An understanding of the role for each medium is required to be able to set the integrated goals. To understand the role of a particular medium, it is important to understand the strength and weakness of each medium (Dwyer and Tanner, 2001).

It is important to recall what communications plan is trying to say, in order to create specific message. The marketer must understand what buyers think and do, what information buyers need and what competitive actions are currently taken, at the same time. Communication, particularly marketing communication, must serve the buyer. If it only serves the need of the marketer, the buyer will ignore it. It is of importance to consider the information needs of the buyer, when developing a marketing communication strategy (Dwyer and Tanner, 2001).

A classic mistake a company does is to believe that a satisfied customer will buy again, and hence focuses only on acquiring new customer. However, to be a successful company it has to communicate regularly and proactively with its customer base. If there is a strategic partnership existing, communication is a necessary element to maintain the partnership. A good communication between the company and the customers is also important in order to prevent the competitors to sympathize with the customers’ complaints. It must be easy for the customers to respond, not only with complaints but also with orders and reorders (Dwyer and Tanner, 2001).

### 2.1.4 The Internet as a Marketing Communication Tool

The first step marketers have to do when they have an Internet based marketing strategy on their mind is that they have to look over their existing marketing. Is that marketing lasting? Almost any traditional marketing resource can be in good use to make the customer aware of the companies venture on the Internet. It is very important to know the firms strengths so that one can emphasize them in the marketing strategy. It is also important to be familiar with its weaknesses, as they have to be managed through different methods. Knowing how the company differs from others can be very useful as well. If the marketer says that the company have a fast delivering time the company have to live up to that (Smith, 1998).

As mention earlier, it is important to form an opinion of the company’s already existing marketing strategy. The manager has to collect all the material, logotypes, TV and radio commerce basic data, reports, existing websites, printed advertisements, product information sheets, pens and all that kind of material one can use. Then the managers are able to compare this material with other companies. What do other companies do with for example their logotypes? What is the impression? Usually a vine manufactory wants to appear as luxury and therefore they are using an old font. However, a bank wants to appear as reliable and safe and therefore they instead using a formal and simple layout. Now the managers have to look on their own important logotype, and see if it corresponds with the marketing’s efforts. If it does, this can be used in the Internet marketing. However, it is of importance that the changes on the Internet walk hand in hand with the reality. Another significant factor, when dealing with how extensive the Internet marketing shall be, is to estimate what the company’s competitors do on the net (Smith 1998).
More and more people become aware of the advantages of the Internet, private people as well as commercial business (Gonyes, 1996). The Internet is developing further and further and companies that are not a part of it may have trouble to compete. Communication and marketing in the Internet can take place globally and locally. The company that markets itself on the Internet today make the company visible all over the world (Hedman 1999). One can compare Internet and telecommunication, with help of telecommunication, the individuals have created a global community and with help of Internet, they have created a virtual community. On the Internet, one can communicate with voice, image and text at the same time in difference of other communication methods, i.e. the Internet binds together all the communication-possibilities that all other methods can offer. These possibilities open new ways for companies that want to markets themselves. Internet makes it possible to communicate in an interactive marketing way (Höij et al 1996).

Interactive marketing means providing and responding information by the computer or television. A big advantage is that people can shop from their home 24 hours a day, and for companies the power lies in its ability to generate a direct response from consumers. The recipients can search for details they want in their own pace, and ignore the information they dislike (Doyle, 1998). Other advantages are the very low costs, the flexibility and the more rapid way to exchanging information (Chaston, 2001). Small companies do not need to invest in stores and TV advertising and interactive marketing can break down industry entry barriers for small firms (Doyle, 1998).

Internet makes it possible to maintain and establish personal contacts with the customer. The company can communicate with their clients when they want to and it is possible to communicate with many customers at the same time. The difference between Internet and other channels is that the Internet-user search for the information him-/herself (Höij et al 1996). Internet is a great tool for companies to reach the customers. Partners can due to the Internet, in a simple manner, get access to all the information they need. This is possible since it easy for the company to spread its information to the external interested parties. The smaller company has therefore the same possibility to compete as the bigger companies, when they easily can reach a large market in a simple way (Wigblad and Åhlgren, 1998). The arguments of why a company shall market itself on the Internet are many. Here are some of them presented (Höij et al 1996):

- The company wants reduce the distribution costs and sell products and services directly over the Internet.
- The company wants to offer their customers better services.
- The company wants to make the communication with their clients, suppliers and others more effective and with help of that reduce their communications costs.
- The company wants to create a better image and increase the respect of the company.
- The company wants to be more visible.
- The company wants to get new customers and make the market wider.
- The company wants to reach to global market.
Developing an internet based communication strategy -
- An evaluation of a decision support system

Lundquist (1998) have brought up some more advantages about selling on the Internet.

- The market is no longer geographical limited and there is a possibility to reach a global market at the same time one keeps the costs down.
- The customer can order 24 hours a day, year around.
- The customer can get information about products and services themselves if the homepage is designed in the right way. Less time can be put on selling and marketing.

There are also some disadvantages that Lundquist (1998) brings up.

- The fixed costs can be very high. It takes a lot of money to buy hardware and software. The connection to Internet can also be expensive.
- The homepage has to be updated often because the Internet develops in a fast way.

The possibility to be able to offer the customers Internet communication may be the strongest argument for many companies. However, how will a company know that Internet is the right channel to use? It is an advantage to investigate if the customers or the potential customers use the Internet.

Höij (1996) writes that a company’s present and marketing on the Internet can amplify the company’s sales number and give the marketing a better result. However, everything depends on how the company will go throw with its Internet venture. The company has to investigate the possibilities before they decide to use the Internet as a marketing channel. It has to put up goals for its venture on the Internet and therefrom choose the right way to market, i.e. the right strategy.

2.1.5 Strategies

Companies can use the web in different marketing ways in order to reach existing and potential customers:

Here follows seven proven Internet marketing strategies written by Silverstein (2000).

1. *Generating and qualifying leads with the Internet.* Lead generation and qualification is the heart of most business-to-business marketing programs. The Internet can be integrated with direct mail and telemarketing, and use e-mail, Web response forms, Web sites, and Web advertising to enhance companies’ lead generation and qualification efforts.

2. *Using Internet events to promote products and services.* The Internet offers business-to-business marketers a remarkably cost-effective alternative to live conferences, seminars, and similar promotional events. In addition, the Internet can be used to promote and enhance traditional marketing events.
3. **Executing instant fulfillment on the Internet.** Companies can use the Internet to qualify prospects and instantly fulfill their requests for information via “pull” and “push” technologies.

4. **Generating orders through the Internet.** Every business-to-business selling model-retail or mail order, reseller, and direct selling can be adapted to Internet order generation.

5. **Enhancing customer relationships with the Internet.** Discover the power of the Internet in developing one-to-one relationships with customers and providing customers with superior service around the clock.

6. **Establishing a business community on the Internet.** Successful business-to-business marketers take the concept of the Web community and apply it to their own marketing program.

7. **Using the Internet to create and manage partner programs.** Discover the power of affiliate marketing programs, partner links, and partner service sites.

Below are different communications strategies on the Internet presented.

**E-mail**

More and more companies use electronic email within the company. In addition, many of them have an Internet connection that makes it possible for them to communicate with other businesses and private persons. E-mail can be very effective in the marketing communication. It offers the company a new possibility for its clients to contact them, an excellence alternative to the telephone. However, it is very important to know whom in the company the customer is to communicate via email. Sending email to whoever can be very risky. The company can send email direct to the receiver or it can mail them to different discussion forums. To be able to send email directly to the receivers the company has to have a website or other where the customers can register there addresses. It is very important to give credits to the customers that register (Höij 1996). Email is more personal than printed direct advertisement and can even be more personal than a personal addressed mail. Smith (1998) writes in his book about some rules for email marketing.

- **KISS (Keep It Short, Silly):** It is mush easier to reed a short mail and the advertising message will better appear.

- **Do not write email with capital letters:** This will only make the marketer appear as a net-newbie.

- **Avoid emoticons:** Smiles can look unserious in an important mail. Let the language amuse instead.

- **Learn all kind of shortenings:** It is very usual that shortening for example lol (Laughing Out Loud), btw (By The Way), brb (Be Right Back) appear in emails.
Newsgroups

Newsgroups can be resembled with a common notice board. Many different topics are discussed in a large number of groups. However, few of the Internet users read the newsgroups so the companies should not put too much effort in this kind of marketing (Höij, 1996).

FTP

FTP stands for File Transfer Protocol and has been on the Internet for a long time. FTP is great when one wants to transfer a file from the own computer to a server on the Internet. However, FTP is a relative unimportant part of the marketing communication (Höij, 1996).

World Wide Web

World Wide Web (WWW) has a central role in the marketing and has with its graphical interface and its hyperlinks made Internet popular. WWW is the most important media for marketing and it consists of a net of documents and uses Internet to transport the information. It uses a language called HTML (Hypertext Markup Language) to build up a website. On a website, one can have both sound and pictures. One of the biggest advantages with websites instead of an ordinary Word document is that it is possible to have links to other web sites, which can help the reader to find further information (Höij, 1996).

It is possible to create marketing advantages through using the WWW. It takes a new shape of marketing where the information expansion is more important than graphics and images (Odegaard, 1997). It is furthermore important to know that the web sites may differ with different web-readers. (Höij, 1996).

The Company’s Website

The main objective with a website is to capture the viewer’s attention and remain it. (Sterne 1998). An elemental website is the base of all marketing on the Internet. Through developing and take care of a commercial website the clients and media can take part of the companies offers and learn more about its products, services and the company itself (Smith 1998). According to Ström (1998), marketing and advertising have fundamentally changed in many ways due to the digitalization. To create loyal customers the company has to have a personal contact with each customer, gain knowledge about its customers and learn from the customers as well (Ström, 1998).

The following paragraphs bring up things to consider when creating a website.

➢ Keep it updated and well-laid

To be updated it is important that the company keeps its web site modernized and updates it regularly. It is not enough to update it for normal maintenance and daily operation only, as the technique on the Internet is changing rapidly (Lundquist, 1998).
It is very important to make the website satisfying for the customer or else he or she will get a bad impression of the company. Imagine a customer arrive to a traditional company and when he went through the front door, it fell of and when the customer took the elevator to floor two there was no such floor just a wall. The customers trust for the company would sink; probably would he even tell his friends this occurrence and that will only cause bad effects. The situation on the web can be even worst for the company. The net makes it very easy for the customer to spread bad information about the company quickly (Hedman, 1998).

➢ **Design and function**

However, to entice customer to the website it is not only important that they function. It is also necessary to think about the design and layout - a company’s website underlies a medium for the marketing of the company it is the first impression (Hedman, 1998). Graphical interfaces have made websites friendlier for the user. (Brassington and Pettitt 2000). It is therefore a time demanding task to build and maintain a website.

➢ **Two types of websites**

There are two types of websites: the net store and the information website. The first website is used to sell products and services, and the latter web site entices the customers to the traditional store by giving information about the company and its products and services (Ström, 1998). If a company chooses to launch a net store on the Internet, it has to be aware of that the website is based on information. In an ordinary store, the customers can see and touch the product, but this is impossible on a website. Therefore, it is necessary with excellent descriptions about the products and services. The customers in a net store shall be able to find information and contact the company in many different ways. If a customer has trouble, there should be navigation means no matter where on the website the customer is located. By having this service, the customer feels safe, which makes it more possible that the customer will conduct a purchase. When the customer is ready to purchase a product or service, it should be possible to conduct the purchase quickly and easily. The most critical moment is when the customer completes the purchase. Hence, the routine for the order shall be almost impossible to misunderstand and nothing in the transaction should be lost due to that the customer is frustrated (Lundquist, 1998).

➢ **Presentation of text**

Hedman (1998) talks about some unwritten rules for how a text shall be introduced.

- Do not use rows that are too long – the text will only be hard to read.
- Break the text in paragraphs – this is even more important on the web than in printed texts because text on the web is harder to read and navigate on.
- Avoid background colors that are strong or odd – white is the best background color because other colors can make the links disappear depending on the users adjusting.
• Headlines – too big headlines can make a text hard to read and often it is only necessary with two different headline sizes.
• Cursive text – should not be used longer than a row.
• Fat text – function to mark words in a text that are of importance.
• Flashing text – many people think flashing text is very annoying to look at. The human being is sensitive to movements and the eye will fast look at the flashing and forget about the other information.

➢ Presentation of pictures

It is a good idea to use as small pictures as possible because large pictures will take too long time to load, unless the clients have enough fast connections (Hedman, 1998).

To summarize these requirements on a company’s website; on the Internet the seller only gets one chance, if the customer is dissatisfied with the contents of the homepage it is a small chance that he or she will return (Odegaard, 1997)

Banners

Advertising via banners is today the main form of Internet advertising. The banners normally appear on different organizations’ websites when the user enters the page. However, users ignore banners advertisements as wallpaper or background clutter, which implies that their effect is wearing of (Brassington and Pettitt, 2000). These days’ people are unfortunately increasingly unlikely to click on banner advertisements as they become more experienced in using the Internet. However, alternatives ways are being found to make banners more interesting (Chaston, 2001).

Sponsors

Sponsors are another increasingly popular trend to use. The company enters a sponsorship agreement whereby their brands become a permanent feature on Internet site. The advertiser’s objective in sponsoring a site is to build positive associations for its brand (Chaston, 2001).

2.2 Decision Support System

Decisions are the primary mechanism used by management to reach the organization’s strategic objectives and to fuel its successes in its chosen field of endeavor. A decision manifests itself as an activity that culminates in the selection of, and commitment to, one of multiple alternatives, no matter if it is thought of as a choice, a course of action, or a strategy (Marakas, 1998).

Companies use decision support systems to ease the market planning, research-, operation-, and strategic planning. By using the system it is easier for the company to extract the data required to understand the market better and compete successfully on price, quality, timeliness, and customer service (Marakas, 1998).
Decision situations can be structured, unstructured, or semi-structured (Turban and Aronson, 2001). When a decision situation is highly structured it means that objectives of the decision are easily determined without conflict. The alternative courses of action are few or clearly defined, and the decision-maker is certain of the effects of the decision. If the decision is highly unstructured the objectives of the situation are often conflicting, the alternative courses of action are difficult to isolate, and it is uncertain how the effect of a particular course of action or selection of an alternative carries (Marakas, 1998).

When handling unstructured decisions the human intuition is often the basis for the decision-making. When the decisions are semi-structured the decision-maker has some structured elements and some unstructured elements. When solving these kinds of problems a combination of both standard solution procedures and human judgment are involved (Turban and Aronson, 2001), and it is in these situations that a decision support system is needed. It provides support to the decision-maker, and frees the decision-maker to focus on the truly unstructured portions of the problem (Turban and Aronson, 2001).

Decision support systems are also frequently used in information-rich environments, in which many companies are. Companies are using decision support systems in managerial control as well. However, it is the manager that is responsible and accountable for the decisions’ outcome (Turban and Aronson, 2001).

According to Marakas (1998), a DSS can be defined as:

“... a system under the control of one or more decision makers that assists in the activity of decision making by providing an organized set of tools intended to impart structure to portions of the decision-making situation and to improve the ultimate effectiveness of the decision outcome”.

Another definition made by Scott Morton comes from the early 70’s:

“Interactive computer-based systems, which help decision-makers utilize data and models to solve unstructured problems”

(Turban and Aronson, 2001)

It is not guaranteed that the benefits from using a DSS will be realizable in all decision situations or by all decision makers. The realization depends on the degree of fit between the decision maker, the context of the decision, and the DSS itself. The purpose of the DSS is that it shall serve the decision-maker by extending his or her capacity to process the mountain of information encountered during the course of making a decision (Marakas, 1998).

By using a decision support system, the decision process can become more effective and bring it within the capabilities of the human decision-maker. However, the DSS cannot protect the organization from decisions made by poor decision-makers, as the user controls the process. Hence, the user must understand when to use a DSS, what
DSS(s) to use, and to what degree to depend on the output and information obtained from using the system (Marakas, 1998).

### 2.2.1 Advantages of DSS

When using a DSS the senses of innovation and creativity are strengthened, which means that the decision-maker can explore avenues that otherwise would pass unnoticed or be deemed to complex and difficult to pursue. The decision-maker can be stimulated to reach innovative insights regarding the solutions and their associated outcomes. The DSS may also help the organization to advance past its competitors or at least help it to stay abreast of the marketplace. However, in order to achieve some or all of these potential benefits it is important that the decision-maker does not only understand the appropriate application of a particular decision support tool, but also its limits (Marakas, 1998).

### 2.2.2 Limits of DSS

All DSSs have some limits, no matter how well-design they are. First, it is important to keep in mind that a DSS is a computer-based system, which means that it contains only the “knowledge” that it has received by designers and possesses only the “skills” associated with its tool set. Furthermore, since a DSS is a computer-based system it has no ability at all to perform reasoning processes that require distinctly human characteristics such as creativity, intuition, or imagination (Marakas, 1998).

Since the DSS is supposed to work in interaction with its users it is of high importance that it is designed in a manner that is readily understood and useful within the context of the decision situation. Additionally, and according to Marakas (1998), maybe the most important is the understanding that there does not exist any universal DSS today, and it probably never will.

### 2.2.3 Components of a DSS

The components of which a DSS consists of are the data management system, the model managements system, the knowledge engine, the user interface, and the DSS user (Marakas, 1998). In the Data Management System the various activities associated with retrieval, storage, and organization of the relevant data for the particular decision context are managed. This system also provides for the various security functions, data integrity procedures, and general data administration duties associated with using the DSS (Marakas, 1998). The Data Management Systems consists of a decision support system database, a database management system, a data directory, and a query facility.

The Model Management System is very similar to the Data Management System, and performs the retrieval, storage, and organizational activities associated with the various quantitative models that provide the analytical capabilities for the DSS (Marakas, 1998). This system contains a model base, a model base management system, a modeling language, a model directory, and a model execution, integration, and command processor. The model base controls what rights each user has.
There are four categories in the model base: strategic, tactical, operational, and analytical. In order to support top management’s strategic planning responsibilities strategic models are used. Middle management to assist in allocating and controlling the company’s recourses mainly uses the tactical models. To support day-to-day working activities lower in the organization of the company operational models are used. Finally, analytical models are used to perform some analysis of the data (Turban and Aronson, 2001).

In The Knowledge Engine are activities related to problem recognition and generation of interim or final solutions, as well as other functions related the management of the problem-solving process performed (Marakas, 1998).

It is imperative that the user can communicate with the DSS to make it successful. Moreover, it is required that the data, model, and processing components of a DSS are easily accessed and manipulated if the DSS is to provide the necessary support to the decision context without getting in the way of the task at hand. Finally, the DSS is dependent of the user to be successful, i.e. the user has to have skill set, motivation, knowledge, patterns of use, and a role within the organization. It is important to remember that the DSS is in the control of the user (Marakas, 1998).
2.2.4 Characteristics

A DSS has a number of characteristics and capabilities that allow the decision makers to make better and more consistent decisions in a timely manner (Turban and Aronson, 2001). Figure 7 below depicts the ideal characteristics and capabilities of a DSS.

1. By bringing together human judgement and computerized information the DSS provides support for decision makers mainly in semistructured and unstructured situations.

2. The DSS also provides support for various managerial levels, ranging from executives to line managers.

3. Both groups and individuals are supported.

4. Support is provided to several interdependent and/or sequential decisions, no matter if the decisions are made once, several times, or repeatedly.

5. All phases of the decision-making process are supported by the DSS.

Figure 7: The ideal characteristics and capabilities of a DSS (Turban and Aronson, 2001).
6. The DSS supports a variety of decision-making processes and styles, as humans different cognitive styles must be considered.

7. Since the decision maker should be reactive, able to confront changing conditions quickly, and able to adapt the DSS to meet these changes the DSS is adaptive over time. The DSS is flexible as well, as it shall be possible for users to add, delete, combine, change, or rearrange basic elements.

8. When using the DSS the user must feel at home, i.e. it must be user friendly and have strong graphical capabilities.

9. The DSS helps the user to improve the effectiveness, i.e. the accuracy, timeliness, and quality. It has not attempt to improve the efficiency, i.e. the cost of making decisions.

10. The purpose with the DSS is to support, and not replace the decision maker. Therefore has the decision maker complete control over all steps of the decision-making process.

11. There should be a possibility for the end users to construct and modify simple systems by themselves. Larger systems can be built with assistance from experts.

12. Thanks to the DSS’s capability to analyzing decision-making situations, the user is able to experiment with different strategies under different configurations.

13 & 14. The users should have access to a variety of data sources, formats, and types ranging from geographic information system to object-oriented ones, since a DSS can serve as a stand-alone tool for only one decision maker, or it can be distributed internally in the organization or externally using networking and Web technologies.

### 2.3 Interaction Design

Interaction design means the design of a very efficient system that allows the users to be highly productive in their work. In interaction design the artifact’s use and target domain is investigated by looking at the problem from a user-centered approach to development, i.e. the users’ concerns direct the development rather than the technical concerns. Moreover, it is hardly possible that only one person will be involved in the development and use of the system, and hence the plan must be communicated. This requires that it is captured and expressed in some suitable form that allows review, revision, and improvement. Shortly, interaction design involves developing a plan, which is informed by the product’s use, target domain, and relevant practical considerations. It is needed that the users generate, capture, and evaluate alternative designs (Preece, 2002).

There are four basic activities for interaction design: identifying needs and establishing requirements, developing alternative designs that meet those requirements, building interactive versions so that they can be communicated and assessed, and measuring their acceptability.
During the time when these four activities are carried out, prototypes may be built or perspectives may be drawn to give clients a better indication of the design being developed.

Furthermore, there are three key characteristics of interaction design, which form a key part of the interaction design process. First, there must be a focus on the users. Moreover, an identification of specific usability and user experience goals is required. Additionally, by using iteration designs can be refined based on feedback (Preece, 2002).

The driving force behind the design is in which way the users interact with the product. In most cases is prototyping used in order to overcome potential client misunderstandings and to test the technical feasibility of a suggested design and its production. The advantage of prototyping is that it gives a better impression of the user experience than simple descriptions do. There are different kinds of prototyping that are suitable for different stages of development and for eliciting different kinds of information. To get a simplified version of reality and ease the general view of a system it is recommended to use a lifecycle model. In the figure below a simple interaction design model is presented (Preece, 2002).

![Figure 8: A simple interaction design model (Preece, 2002)](image)

### 2.3.1 Identifying the Users

Identifying users is a difficult task, as there are many interpretations of “user”. According to Preece (2002) is the most obvious definition of users:

“...those people who interact directly with the product to achieve a task”
In case the product is a new invention, it may be difficult to identify the users. Therefore, it is imperative that representative users from the target group are consulted in the design process (Preece, 2002).

There are three categories of users: primary users, secondary users, and tertiary users. The primary users are those who are frequently hands-on users of the system. The secondary users are seldom users or those who use the system through an intermediary. Finally, the tertiary users are those affected by the introduction of the system or who will influence its purchase (Preece, 2002).

2.3.2 Identifying Needs and Establishing Requirements

No matter how the initial situation looked like and whatever the aim is with the project, the users’ needs, requirements, desires, and expectations have to be discussed, refined, clarified, and probably re-scoped. To be able to carry through this an understanding of the users and their capabilities, their current tasks and goals, the conditions under which the product will be used, and constrints on the product’s performance is required (Preece, 2002).

When designing a system it is imperative to understand as much as possible about the users, their work, and the context of that work in order to make the system helpful and able to support the users in achieving their goals. Thus, the users’ needs are identified. Next step is to set stable requirements that form a sound basis to be able to move forward into thinking about design (Preece, 2002).

According to Preece (2002), a requirement is a statement about an intended product that specifies what it should do or how it should be performed. The system designers must make sure that the requirements are as clear as possible, even though they can take many forms. The system designers must make sure that they understand how to tell when the requirements are fulfilled as well. There are three different types of requirements: functional requirements, data requirements, and user requirements. Functional requirements implies what the system should do. Data requirements implies the type, volatility, amount, persistence, accuracy, and value of the amounts of the required data. Finally, user requirements implies the characteristics of the intended user group. An important factor of the user requirements are the users’ abilities and skills. However, the designers must also have knowledge about whether the users are novice, experts, casual users, or frequent users (Preece, 2002).

When designing the system it is of high importance to understand what the system, when it is finished, should do. If the requirements are wrong the system will at the best be ignored or at worst be despised by the users, which in its turn will cause anxiety, frustration, and lost productivity. There is, however, very difficult to identify requirements. The users may not always know about their requirements, as they have not explored them in sufficient detail until the development begins. By collecting information and analyzing it, the requirements arise. After this process, the requirements can be justified by and related back to the information collected (Preece, 2002).
2.4 User Interface

As mentioned in chapter 1.3 the user interface is the only instrument with which the users can communicate with the computer. It consists of input devices like a keyboard and a mouse, output devices, the information input by users, and the information output by the computer (Bailey, 1996).

Communication via the user interface covers all aspects of communication between a user and the decision support system. It includes not only the hardware and software of the system. It also covers factors that deal with ease of use, accessibility, and human-machine interactions. One of the major reasons why managers have not used the system to the extent that it has been available is an inconvenient user interface (Turban and Aronson, 2001).

The term "User Interface" refers to the methods and devices that are used to accommodate interaction between machines and the human beings who use them, the users. User interfaces can take on many forms, but always accomplish two fundamental tasks: communicating information from the machine to the user, and communicating information from the user to the machine (Brown, 1995).

According to Bailey (1996) is the user interface:

“…the sum total of all design decisions made to enable people (humans or users) to use a computer product.”

Programmers, system analysts, user interface specialists, or the users themselves can perform the design of the user interface. There are, however, mostly the programmers that usually design and develop user interfaces (Bailey, 1996).

Below the major capabilities of a user interface are presented (Turban and Aronson, 2001):

- Provides the user with a variety of input devices
- Presents data with various formats and output devices
- Provides help capabilities, prompting, or other flexible support to the users
- Interacts with the database
- Stores output and input data
- Provides color graphics, data plotting, and three-dimensional graphics
- Has windows in order to allow multiple functions to be displayed concurrently

Depending on how an interface is designed, in terms of the shapes, fonts, colors, and graphical elements that are used and the way they are combined the users apprehend it as more or less pleasurable to interact with. Recent research have shown that the aesthetics of an interface may have positive effects on the users’ perception of the system’s usability, i.e. if the users are satisfied with the user interface they tend to be more tolerant of the system’s usability. It all depends on the balance between the usability and other design concerns, like aesthetics (Preece, 2002).
Löwgren (1993) writes about two levels of an interactive system, seen from the users’ point of view: the system services and the user interface. The system services are offered to the users by the system. These services determine what the users can do with the system, and the user interface determines how the user can do it. Shortly, the user interface is what makes the services of the computer available for the users. This means that the services are crucial in determining how well a system meets the users’ requirements. Thus, if system services are wrong, they are always wrong. However, a user interface can be used even though it is bad and thereof is annoying and time-consuming. Hence, if the system services are right, the user interface must be designed to enable the users to use them optimally. The revised figure below depicts the correlation between system services and the user interface.

![Figure 9: Through the user interface the user gets access to the system services (Löwgren, 1993).](image)

The user interface is one of several components of a system, which task is to allow the user to access the internal components of the system in a relatively easy manner. It shall not be required to know how everything is put together or how it works together. If it is easy for a user to access the system it is a good user interface. Additionally, if the interface is common the user does not have to put much effort in learning how to use the system (Marakas, 1998). The user get influenced by the interface on which objects and subjects that he/she shall focus the actions on. According to Bödker (1990), a good user interface allows the user to focus on the objects or subjects that the user intends to work with. The aims with a user interface are to support the intended or operationalized shifts in relation to the use activity and to prevent those that are not intended.

Many issues can cause a bad user interface. To short development schedules, other design issues that are more important than the user interface, attempts to have as little changes as possible, and management that does not recognize or reward good user interfaces. Moreover, a good user interface may be blocked if the developers are not motivated to spend more effort on user interfaces, if the appropriate users are not identified, or if the user interface specialist is involved to late.

Another problem can be that the market pulls products into more complexity, which means that the product gets many features. Often the situation evolves to the extent that the more features that a system has, the more difficult can it become to learn, use, and design a high-quality user interface.
When the number of features increases, the cognitive load increases as well, and users become progressively less likely to use the product effectively (Bailey, 1996).

Many things can cause a user’s frustration when working with a computer. The frustration can range from feeling mildly amused to extremely angry (Preece, 2002). These factors are:

- An application that does not work properly or crashes
- A system, which does not what the user wants it to do
- When the system does not meet the user’s expectations
- When the user does not know what to do due to that the system does not provide sufficient information
- Error messages that pop up with vague, obtuse, or condemning information
- When the interface is too noisy, garish, gimmicky, or patronizing
- When the user is forced to carry out many steps to perform a task, only to discover a mistake was made somewhere along the line and he/she has to start all over again

Preece (2002) stresses that to avoid some frustration, error messages should state the cause of the problem and what the user has to do in order to fix it, instead of explicating what has happened.

2.5 Usability

People are using computers to make it easier to work with a specific task and to get as high quality on the result as possible. Thus, we are using the computer in order to increase our productivity. The awareness of that usability is required to increase the productivity is growing more and more. If there is no usability, the users may not want to use the system and than it does not matter how good functionality the system has (Allwood, 1998). Generally, usability is regarded as ensuring that interactive products are easy to learn, effective to use, and enjoyable from the users’ perspective (Preece, 2002).

Usability as a concept was born out of the desire and need to make things easier and more efficient for the user. Today users are no longer willing to tolerate products that are difficult to use (Jordan, 1996). According to Faulkner (2000), the International Organization for Standardization defines usability as:

“…the effectiveness, efficiency and satisfaction with which specified users can achieve specified goals in particular environments…”

Effectiveness means that the user is able to carry out the intended task. There is no limit for how long the accomplishment of the task may take, and there is no requirement for the ease of use either. The only requirement is that the task has to be accomplished. However, if the system is supposed to be considered as efficient the task has to be accomplished within a certain time limit (Faulkner, 2000). If comparing two systems and the task is accomplished faster in the first system that system is
efficient and the other is not. Satisfaction means how acceptable the system is to the users, how comfortable the users feel with it or whether they prefer the system to another (Faulkner, 2000).

Löwgren (1993) claims that usability is a result of relevance, efficiency, attitude, and learnability. The relevance of a system means how well the system serves the users’ needs. The efficiency means how efficiently the users can accomplish their tasks when using the system. The attitude is the users’ feelings towards the system, and finally, the learnability of the system means how easy it is to learn for initial use and how well the users remember the skills over time. There is however a difference between usability goals and users’ experience goals. Usability goals are concerned with meeting specific usability criteria, and users’ experience goals are concerned with explicating the quality of the user experience (Preece, 2002). User experience goals are more difficult to define than usability goals, which are central to interaction design and operationalized through specific criteria. In order to make a system successful it is imperative to identify usability and the users’ experience goals. Figure 10 depicts the difference between the two concepts.

![Figure 10: Usability and user experience goals (Preece, 2002)](image)

When designing a system the designers have to make sure that the finished system is what the users really want and need. This is one of the biggest problems that the designers face (Faulkner, 2000). According to Rubin (1994) the system designers must consider three principles of a user-centered design in order to accomplish usability. First, the designers have to focus on users and tasks.
A systematic and structured approach to the collection of information from and about the users is required. Second, an empirical measurement of the product usage has to be done. The last thing that has to be accomplished is to use an iterative design whereby a product is designed, modified, and tested repeatedly.

Löwgren (1993) gives some advice to the designers what to think of when designing a system.

- The users should get feedback. The users should know when they do a major or unusual action.
- Give control to the users. It should be the users that control the dialogue, not the computer, i.e. the users shall feel that they are in charge and the system responds to their actions. It is important that the system behaves in a way that the users understand, otherwise the users’ sense of control will be reduced.
- Undo functions should be provided. It is easier for the users to explore the system if they feel that they can take back the effects of their actions. Moreover, the users get very quickly to undo functions. Therefore, it is important to inform the users if there are functions that cannot be undone.
- As the users get more used to the system they try to work faster and decrease the interaction. For that reason, it is recommended to provide shortcuts. When the users master the shortcuts, they will feel more skilled and hence they may become more motivated.
- There should be almost impossible for the users to do any serious errors.
- Menus shall be used to remind the users of available actions, commands, or attribute values. Even though users that are novice use the system, they become irritated as their skills increases.

When studying the usability of a system the process is called or usability evaluation (Löwgren, 1993). The studying of a system has two purposes: to find out whether the usability goals are fulfilled or not, and to understand what needs that have to be changed in order to improve the system. According to Preece (2002), usability testing is to measure the performance of typical users on typical tasks.

According to Nielsen et al (1994), usability includes the following things:

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, diagnose, and recover from errors
- Help and documentation


2.5.1 Usability Engineering

Usability engineering was formulated in order to clarify the roles of the developer and the user (Löwgren, 1993). It has emerged during many years, and is a process where a measurable usability criterion is written down (Preece, 2002). Preece (2002) states that usability engineering involves:

“…specifying quantifiable measures of product performance, documenting them in a usability specification, and assessing the product against them”

According to Faulkner (2000) is usability engineering:

“…the entire process of producing usable products and a usability engineer is the person who facilitates that.”

A usability specialist is an important member of the design team. As mentioned earlier in this thesis, the usability specialist’s primary responsibility is to ensure an acceptable level of performance for potential users. However, a usability specialist is often the most difficult member to find to the design team (Bailey, 1996).

If no usability specialist is involved in the development of a system it occurs somewhat often that the developers have no idea whether the system will be acceptable to the user and appropriate to the task. In other words, there is a risk that the system does not do what the users want it to do. There are five reasons to why a system is hard to use Rubin (1994):

1. During the development of the system, the focus has been on system, not on the persons who are the ultimate end user. Since the development of a system or product is an attempt to improve human performance, the designers have to consider three components during the design process; the human, the context, and the activity.

The designers have forgotten to consider these three components because of many reasons. The first reason is that there has been an assumption that it is easier to let the users adapt themselves to the machine instead of vice versa, since humans are flexible and adaptable. Moreover, developers have traditionally been more comfortable working with scientific and concrete issues associated with the system, than with more diffuse issues associated with human beings. Another reason is that developers have never been hired because of their interpersonal skills, but for their technical skills. The most important to the neglect of users needs is that designers historically were developing products for end users who where somewhat equal knowledge as themselves.

2. The target audience has changed and continues to change dramatically, as technology has penetrated the mainstream consumer market. Development-organizations have been slow to react at this evolution.
3. Many organizations treat the design of usable system as “common sense” even though it is a difficult and unpredictable endeavor.

4. Specialized teams that approach to product and system development are employed by the organization, however, the organization fail to integrate them with each other.

5. The design of the user interface and the technical implementation of the user interface are different activities, and hence, require very different skills. Many engineers possess the mindset and skill set for technical implementation, while the emphasis and need are on the design aspect.

When the system is developed, it is far more difficult and expensive to correct mistakes than if it would have been made already before the system was developed. When adding a usability specialist to the system development team three options can be used. The first option is to include a well-trained usability specialist into the team, the second option is to have a usability specialist working as a consultant to the team, and the third and last option is that one or more of the other specialists get familiar with the usability technology (Faulkner, 2000).

2.6 User Friendliness

User friendliness contains four parts, which are accessibility, mental support, individualization, and help resources (Allwood, 1998). Below, figure 11 depicts the different parts included in user friendliness.

![User friendliness diagram](image)

*Figure 11: The different parts of user friendliness (revised from Allwood, 1998).*

*Accessibility* is an elementary part of user friendliness – if the user does not have access to the system, he/she cannot use it. In most cases, the user has to conduct a certain task within a certain timeframe. This requires that the user have access to the system when he/she needs it. If the user is neglected accessibility the user has to conduct the task in another way, which he/she probably is not familiar with (Allwood, 1998).
Mental support means that the system shall have requirements on the user that are comparable with the way the user conducts his/her work. All users are different and therefore it is imperative that the system developers have knowledge about the users’ mental processes, which in its turn requires knowledge about users’ psychology of memory and thinking (Allwood, 1998). Since users are different, it is important that the system supports different kinds of users when they are interacting with it, for example allows the users to change the language in which the system is presented.

Thus, individualization is an important part of user friendliness in order to achieve a flexible and user-friendly system. However, individualization in too great extent is not good either, as the users choices sometimes can lead to a worse interaction environment, for example if the user can chose whatever colors on the monitor that they want (Allwood, 1998).

Help resources are the resources that can help the user in problematic situations. It should be help resources available at the time when the user has trouble. The most important of these resources are other people, documentation, and the help function of the system (Allwood, 1998).

2.7 Costumer Value

In this chapter theories about customer value and how to create value will be presented. The concept of customer value will be defined as well.

2.7.1 Definition of Customer Value

Delivering customer value has become more and more important these days, doing things well in order to win and keep the customer’s business. Customer value is the optimal test of business success. It is not the product or service itself, nor a feature of the product or service that is customer value. It is rather what the product/service does for the customer, which represents the value (Albrecht, 1995). According to Kotler (2000) the customers estimate which offer that will deliver the most value. Within the boundaries of search cost and limited knowledge, mobility, and income, customers try to maximize the value. Based on their expectations of value, they search for products. In addition, depending on the products’ ability to attain the values, the customers’ degree of satisfaction and repurchase probability is settled.

“Customer delivered value is the difference between total customer value and total customer cost. Total customer value is the bundle of benefits customers expect from a given product or service. Total customer cost is the bundle of costs customers expect to incur in evaluating, obtaining, using, and disposing of the product or service” (Kotler, 2000)

“Customer value is the ultimate benefit, as defined by the customer, of the product or service you provide” (Albrecht, 1995)
The picture below depicts the reasoning on which Kotler’s (2000) definition is based:

Customer delivered value

- Total customer value
  - Product value
  - Services value
    - Personnel value
      - Image value
  - Monetary cost
    - Time cost
    - Energy cost
      - Psychic cost

- Total customer cost

*Figure 12: Description of customer delivered value (Kotler, 2000)*

Customer value as a concept has existed for some decades, but it did not attract much explicit attention until the 1990’s (Egbert and Ulaga, 2002). It is subjectively perceived, which means that different customer segments perceive different values within the same product. Customer value is an important concept; however, it should not be addressed in isolation. The best circumstances are when it is addressed as one important factor in a coherent, multifactor approach, which also involves other performance measures (Evans, 2002).
2.7.2 Creating Value

A key function in marketing communications is setting expectations for value. A customer is more likely to be satisfied when expectations are set appropriately. It is however, imperative that the company does not set the expectations too high, as it can result in an unhappy customer. On the other hand, the company must not set the expectations too low either, because then the customer does not feel that any value is there. The ideal situation is when the expectations are set appropriate, the customer is willing to pay the right price. If there is value too, the customer is willing to pay more (Dwyer and Tanner, 2001).

According to (Albrecht, 1995) there are three keys to customer value:

- Customer-focused business strategy
- Customer-oriented employees
- Customer-friendly systems

If something provides incremental value compared to other things, it is a competitive advantage for the company. The company can gain this advantage through any of the four basic values of the P’s in the promotional mix, i.e. price, product, place, or promotion, either alone or in combination (Dwyer and Tanner, 2001).
3. **Frame of Reference**

In the first chapter, the reader was introduced in the subject of the thesis. He or she could also read a discussion about the problem that finally ended up in the research problem and the research questions. In the second chapter, the reader receive acquaint him/herself with the theories that are building the basis in this project. In this chapter, the theories of relevance to answer the research questions will be presented, as in figure 13. The conceptualization and the operationalization will be presented as well.

### 3.1 Research Questions

1. *How can companies design a suitable Internet based communication strategy?*

2. *How do the customers value a decision support system with a user interface for seldom users, i.e. how does the system help the customers in their work?*

3. *How can Hands design an Internet based communication strategy?*

### 3.2 Conceptualization

The only research question that is necessary to conceptualize second research question. This because the fact that there cannot be any misunderstanding with the concepts in the other questions.

In the theory, value has been defined as following:

> “Customer delivered value is the difference between total customer value and total customer cost. Total customer value is the bundle of benefits customers expect from a given product or service. Total customer cost is the bundle of costs customers expect to incur in evaluating, obtaining, using, and disposing of the product or service” (Kotler, 2000).

In this thesis, we have defined customer value as:

> “The customer’s attitude and opinion about the product’s user interface, usability and user friendliness, and how these characteristics help the customer with its work. The concept also considers the product’s contribution to participation.”
3.3 Operationalization

Operationalization of a variable means a description of how you are going to proceed, which operations you have to do, to be able to measure it.

The first research question will only be theoretical and therefore there is no need to operationalize it, as no measurement will take place. The theories of relevance of this question are presented in chapter 2.1.4 and 2.1.5. Research question one will be discussed further in chapter 7.

To be able to conduct the evaluation of research question two, an operationalization of the concepts that are included in our definition of customer value has to be made. The first concept that has to be operationalized in the concept “value” is “attitude”. With attitude the authors mean the users’ overall impression of the system. The next concept to be operationalized is “opinion”, which means how the users think the system helps them in their work, their possible expectations of the system, and how it has simplified their work.

To be able to measure the “user interface” measurable questions will be constructed with starting-point from the theory\(^1\). The expression user interface will be divided into questions regarding the esthetic and learnability. To be able to measure the “usability” we will construct measurable questions with starting-point from the theory\(^2\). The expression usability will be divided into questions regarding the productivity, need fulfillment, learnability, users’ goals, and motivation. To be able to measure the “user friendliness” we will construct measurable questions with starting-point from the theory\(^3\). The expression user friendliness will be divided into questions regarding the accessibility, mental support, help resources, and individualization.

As mentioned earlier Hands is in need of an improved Internet based communication strategy adjusted for Atlantic\(^\text{TM}\) (Lundberg, 2002). Therefore, the theory of relevance for research question three is the Internet based communication strategy\(^4\). There is no need to operationalize the concepts in this questions due to that there cannot be any misunderstandings.

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\(^1\) For further reading, see chapter 2.4. The authors used in this theory are Bailey (1996), Turban and Aronson (2001), Brown (1995), Preece (2002), Löwgren (1993), Marakas (1998), and Bödker (1990).


\(^3\) For further reading, see chapter 2.6. In this theory we have used the author Allwood (1998).

In figure 13 below, we show how all variables in the frame of reference are connected.

![Diagram showing connections between User Interface, Customer Value, Usability, and Internet Based Communication strategy]

*Figure 13: Frame of Reference. From investigation to research questions.*
4. Method

In this chapter, we explain how we carried out our examination. First we describe the different sources we used to get more knowledge about the subject before we begun the examination. Then we discuss reliability and validity, which are important factors in all examination. Furthermore, we discuss whether this thesis is deductive or inductive. Additionally, we discuss the factors we have found that might have influence the result of our examination, and hence, that we have to consider when making our conclusions. In the beginning of each chapter a summary is given as an explanation and than the chosen option is presented and motivated.

4.1 Research Purpose

According to Zikmund (2000) there are three different strategies to choose among when conducting a research, depending on how well the problem is defined. The strategies are exploratory studies, descriptive research, and explanatory research.

When investigating some phenomenon, with the aim being to develop suggestive ideas, the exploratory research is used (Reynolds, 1971). It is common that the exploratory research is used to clarify ambiguous problems, or the available knowledge is not absolute. (Patel and Tebelius, 1987). These kinds of studies are usually conducted during the initial stage of the research process. The purpose of the exploratory research process is a progressive narrowing of the scope of the research topic and a transformation of the discovered problems into defined ones, incorporating the specific research topic (Zikmund, 2000). The conclusion of the above is that exploratory research is good to use when the problem is not very well defined; the researcher might not even be clear of what the problem is.

The descriptive research is used when describing various phenomena connected to individuals, situations or events that occur (Patel & Tebelius, 1987). The descriptive research may also be used when developing empirical generalizations. Once such generalizations begins to appear, they entitle an explanation, which leads to theory development (Reynolds, 1971). Additionally, descriptive research is often used when a problem is well structured and there is no intention to undertake case/effect relations (Wiedersheim-Paul and Eriksson, 1999).

The objective with explanatory research is to develop a precise theory that can be used to explain the empirical generalization that evolved from the second stage (Reynolds, 1971). The researcher will formulate hypotheses which are tested empirically by having these generalizations as a foundation (Patel and Tebelius, 1987). If the focus is on cause-effect relationships, explaining what causes produced what effect, the study is explanatory (Yin, 1994).

According to this thesis research purpose and research questions, this thesis is both exploratory and descriptive. The thesis is exploratory as a not well known problem is examined, i.e. Hands has no knowledge about the customers’ opinion regarding the user interface, the usability, or the user friendliness and because no one has ever
carried out any research about the customers’ opinion of Atlantic™, no research has been done on this area. Moreover, the study is descriptive as it describes phenomena connected to individuals. Furthermore, it is descriptive since empirical generalizations are developed. Additionally, as we explain the characteristics of the system, its user interface, usability, and user friendliness by answering our research questions at the end of this report, this thesis is a bit explanatory as well.

4.2 Research Approach

Patel & Davidson (1994) write that the qualitative and quantitative approach refers to how the data is treated and analyzed. As the two approaches both towards a better understanding of the society, there is just a small difference between them. The difference lays in that the quantitative approach converts the collected information into figures and numbers on which a following statically analysis is based. In using this approach, a large number of respondents must be selected. In a qualitative approach a fewer number of objects are studied deeply. The purpose is to gain a deeper knowledge of the studied objects. The qualitative approach is used when the researcher wants to obtain more detailed data and when it includes feelings, values and attitudes (Yin, 1994).

Our research has a qualitative approach because we aim to describe and gain a deeper understanding about the consumers’ valuation of the system. Moreover, it was impossible to convert the data that we collected into numbers and figures because it included feelings and attitudes. Thus, a quantitative approach would have been incongruous with this type of research.

4.3 Inductive or Deductive Research

An inductive approach means that the researcher draws conclusions from empirical findings in difference to the deductive approach. The inductive approach is usually used when there are few established theories existing in the area of research, and when the researcher aims to create new theories (Yin, 1994). Thus, the deductive approach is used when the researcher uses already established theories and literature as a foundation for the research. When the researcher is finished with the observations they are compared with the literature and the already existing theories.

We have written this thesis with a deductive-inductive approach. We started our research by studying existing theories and literature in order to get a foundation to this research. The research question one was only theoretical and therefore this thesis is indeed deductive. However, we have also been able to add our own theories based on the findings from our analysis. Hence, this thesis’ approach is a little bit inductive as well.
4.4 Research Strategy

According to Yin (1994), the selection depends on the research strategy on three conditions: the type of the research questions asked, the extent of control that a researcher has over actual behavioral events, and the degree of focus on contemporary events compared to behavioral events. Experiments, surveys, archival analysis, histories, and case studies are five research strategies that are possible to conduct.

Since the entity was supposed to be investigated in depth with careful attention to detail, four different case studies were made. As we conducted the studies with scrupulous attention, we were able to concentrate on identifying the relationships among the studied events. According to Eriksson & Wiedersheim-Paul (1997), case studies are suitable when the research is focusing on a few objects. We also thought that case studies were the best way to help us answering the research questions of this thesis, especially as the thesis is made on an extensive area. However, it is imperative to have in mind that generalizing from a few case studies may be dangerous, as a few situations may not necessarily be representative of the whole.

In this thesis, experiments are excluded since it did not require control over behavioral events. Surveys are excluded as well because they are most common in quantitative research and do not investigate aspects of a study as deeply as case studies do. An archival study would not have been appropriate either since it tends to answer questions of how much and how many. Finally, we excluded history too, as it focuses on past events.

4.5 Data Collection Methods

According to Yin (1989), there are six different ways to collect data for case studies: documentation, archival records, interviews, direct observations, participant-observation, and physical artifacts. The primary sources of evidence used for this thesis was telephone interviews. Documentation was served as a secondary source of evidence.

The interview is one of the most important sources of case study information (Yin 1994). Advantages with interviews are that they are targeted and focus directly on the case study topic, thus giving a deeper insight into a topic. If the research requires an extremely extensive questionnaire, personal interviews may be the only alternative (Zikmund, 2000). To avoid bias from the interviewer and interviewee one has to take consideration to structure of the interview. The personal interview has several advantages; they are fast to carry out, it is easy to follow up questions, and the interviewer is able to interpret the body language. Furthermore, the interviewer may also provide feedback in clarifying questions that the respondents see as indistinct in order to avoid misunderstandings, and the interviewer has the possibility to ask follow-up questions in the same purpose. However, there are also several disadvantages: the costs can be high if the interviewer has to travel far to get to the respondent, the respondent has additionally no possibilities to be anonymous (Wiedersheim-Paul and Eriksson, 1999).
The telephone interviews have almost the same advantages as personal interviews except that the interviewer in this form of interviews cannot interpret the body language of the interviewee. He or she can neither show pictures nor ask to complicated questions. Finally, telephone interviews can be conducted without high costs (Wiedersheim-Paul and Eriksson, 1999).

Before we conducted the telephone interviews, the respondents received the questions we intended to ask a few days before the interview took place, as we believe that the respondents were given more time to think through the questions and hence, could give more analyzed answers. We conducted the interviews with open questions regarding the user interface, usability, and user friendliness or the marketing of the system depending in who the interviewee was. The reason to our choice of telephone interviews together with questionnaires with open questions was that some of the questions in the questionnaires might need further explanation. We felt that telephone interviews would provide us with a deeper understanding of the customers’ valuation of the system as well.

During the creation of the questionnaires, we have tried to avoid questions that only give yes or no answers, and in those cases we have been forced to use these kind of questions, we always follow up the answer with a following question. We believe that by doing this we obtained good facts from the question, even though it was a yes or no question.

Besides the interviews, we have used sources of different kinds. The literature used was found in the library of Luleå University of Technology, scientific articles that are used were found in the database Ebsco that is provided by the library mentioned above. The words that we used were GUI (graphical user interface), usability, user friendliness, and Internet marketing. Moreover have materials from Hands been used, which were found both on the company and on the company’s website on the Internet. Additionally have oral sources from Hands been used. This data served as a useful means for building a foundation for the research as well as a theoretical review.

4.5.1 Choice of Companies

In our selection of suitable companies, we took benefit from Hands’ knowledge about its customers. We had also own criterions that we thought were important to fulfill in order to make this research reliable and valid. A prerequisite for the companies selected was that they have used the system, or one or several parts of the system, during a significant time, at least one year. We thought that it was important that the companies are familiar. Another prerequisite was that the companies had spread out the usage of the system so that there were at least four seldom users within the company. After a discussion with our contact persons at Hands, we decided that Apoteket, Samhall, ATG, Vasakronan, and Metso Minerals were customers of interest for our investigation.
4.5.2 Choice of Respondents

In this study, we have selected respondents from Hands’ customers that are familiar with the system as we find it important in order to get as objective interviews as possible, from the respondents’ point of view. We have chosen to interview both the buyer of the system and at least two seldom users in each company since we need information of the earlier marketing of the system, the user interface, usability, and user friendliness in order to optimize the Internet based communication strategy.

4.6 Data Analysis of Interviews

The most important thing to know about data is that it has to be interpreted (Wiedersheim-Paul and Eriksson, 1989). Blaxter et al (1996) are talking about an example of analyzing interviews. It is about an approach that was first developed in 1960s by two American sociologists. They claim that data collection and data analysis taking place in close conjunction, and feeding into each other. They bring up three phases of data collection and analysis. Open coding that is the preliminary phase of analysis, axial coding that is seeking of the connections between the categories identified and finally the theoretical coding that is the evolution of a paradigm and a conditional matrix.

In our thesis, we did as the example above. First, we did a preliminary analysis from the interviews. Second, we tried to see if there were any connections between the interviewees’ answers and how those connections could be explained. To make it easier to overview the connections we made three tables with the relevant answers. Finally, we compared our analysis with the theory to verify, or reject it.

4.7 Quality Standards

In this chapter we discuss the source criticism, reliability, and validity. We discuss in which ways we have strengthened the reliability and validity as well.

4.7.1 Source Criticism

The purpose with source criticism is to state if the source is valid, relevant and reliable. It is furthermore important to control whether the sources are dependent on each other for example if two interviewees reproduce answers taken from the same source (Wiedersheim-Paul and Eriksson, 1989). To make sure that the interviewee were as objective as possible we conducted the telephone interviews on their respective offices, and hence, not be affected by anyone or anything during the interview. By asking questions about how long they had been employed at the company and if they felt that they could contribute to the organizations results a bigger understanding about the interviewee’s validity, relevance, and reliability was gained.
4.7.2 Reliability

Reliability means that an instrument for measurement shall give reliable and stable manifestations (Eriksson and Wiedersheim-Paul, 1997). Furthermore, reliability means how well an examination produces the same results on separate occasions under the same circumstances. Thus, if another researchers follow exactly the same procedure as we have done shall that person come to a similar conclusion in the end. Informal and unstructured interviews have low reliability since it is hard, or impossible, to repeat exactly the same discussion (Preece, 2002).

To have high reliability, a method or approach should be independent of researchers and of examined units (Eriksson and Wiedersheim-Paul, 1997). In order to enhance the reliability, we have documented all of the steps of the study so that the research may be conducted again. Moreover, the interviews were booked in advanced and we also sent the questions to the interviewees a few days before the interviews took place, which made it possible for the interviewees to be prepared. Additionally, we recorded the interviews to make it possible for us to ensure that the data collected was accurate.

4.7.3 Validity

It defines whether the evaluation technique measures what it is supposed to measure. Validity is the most important requirement on a measurement instrument. If the instrument does not measure what it is supposed to measure it does not matter that the measurement itself is good (Eriksson and Wiedersheim-Paul, 1997). According to Yin (1994) there are three means of increasing the validity: the use of multiple sources of evidence, establishing a chain of evidence, and to have key informants review the draft case study report. To increase the validity we have used different sources during the data collection: telephone interviews, and documentation. The validity was also strengthened as we had the possibility to ask follow-up questions during the interview and, as mentioned in chapter 4.7.1, we conducted the interviews in the interviewees respective offices. Thus, it was impossible that the interviewee could be affected during the interview.

4.8 Method Problems

During the investigation some issues have come up that might have affected the thesis’ validity. One issue is the last interview we conducted with Metso Minerals. The respondents did not want to conduct telephone interviews; instead, we went to the company and interviewed the respondents all at once. Thus, the buyer and the seldom users were gathered and answered the questions together. However, this was not the only problem. During the interview we realized that the respondents who we thought were seldom users, in reality were using the system frequently. We also realized that two of the respondents did not dare to answer honestly, as their manager was sitting next to them. Because of this interview’s lack of validity and reliability, we have decided not to include it in the empirical data, nor in the analysis.
5. Empirical Data

In this chapter, the answers from the interviews are presented. The companies are briefly presented as well. The users are not mentioned by name, instead they have the first letter in their respective company and a number. This is due to that no one should be identified. The documentation of the interviews follow the same order as the questions in the questionnaire. Finally, in the end of this chapter the data is summarized in three tables in order to get an overview and make it easier to answer research question two. Thus, this tables do not follow the questionnaires, instead it presents the user interface, usability and the user friendliness.

5.1 Apoteket

Apoteket AB is a Swedish company that is own by the Swedish government. It was established in 1970 and has today 11 000 employees. The company has 900 drugstores all over the country, which have more than 85 million visits by customers each year. Apoteket AB has sole right to sell medicine and satisfy the public’s need of medicine in the country. It is the company’s obligation to provide all medicines that are available on the Swedish market. Apoteket AB’s customers are both private individuals, municipalities, and county councils. Apoteket AB has bought the system xlReport from Hands AB 2000. Hands stood for all the designing of the system and had a 2-days course with the users at Apoteket. However, the system is only used by one of five result units; Apoteket Produktion & Laboratorier (APL). APL is suited in Stockholm, Malmö, Gothenburg, and Umeå and has circa 520 employees. The unit produces the medicines that are needed in Swedish medical care, and that is not provided by the industry of medicines. It also offers services in production and laboratories within Apoteket AB and, if there are resources available, to external customers. APL is also working with securing the quality of Apoteket AB’s assortment of merchandizes.

Figure 15 on the next page is a screen-shot from the user interface when printing reports in xlReport⁵ at Apoteket.

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⁵ xlReport is a subproduct in Atlantic™.
Below a summary of the different seldom-users’ answers will be presented and the answer from the single question to the buyer as well.

### 5.1.1 User A1

This user is 37 years old and works as an administrative director. He/She has been working at Apoteket for 10 years. He/She has an education in Bachelor’s economics and has been using computer for 15 years and is using computer 20 hours a week. The user has been taking courses in ordinary Excel, a special-course for the business-data system of Apoteket and a 2 days course in xlReport.

The user is familiar to take own initiatives because it is a part of his/her job. He/She is well agreed with the comprehensive goals for Apoteket. Before Apoteket implemented the system, he/she felt that it was difficult to receive reports that were up to date. After Apoteket implement the xlReport, he/she felt more involved in the decision-making but he/she did not felt any difference in his/her participation. He/She thinks that the biggest advantage with xlReport is that he/she is able to receive reports any time he/she likes. His/Her first contact with the system was on the 2 days course
that Hands arranged, and he/she learned all that he/she has to know about the system on the two days course.

His/Her general impression of xlReport is very good and he/she did not have any large expectations but the ones he/she had has been pleased. He/She thinks that xlReport are playing a large role in his/her job with the economical follow-up this because the system fast to receive results. In addition, this fact helps him/her to be more productive in his/her work.

He/She does not need any help from other users. He/She feel that, because of the similarity with Excel, the menus of xlReport are easy to work with if you are familiar with Excel. However, he/she feels that it was a little bit complex to learn xlReport because there were so many parameters that are connected. He/She feels that it can be frustrating to keep apart the different parameters, but he/she explains this with the fact that he/she does not build reports that often.

The user thinks that the system motivates him/her and that it is effective and safe to use. He/She thinks that the systems ability to adjust to his/her needs is very good. If he/she faces problems, there is a stab at Apoteket that are able to help him/her.

5.1.2 User A2

This user is 30 years old and works with accounts and budget. He/She uses xlReport when he/she builds and takes out reports. He/She has been working at Apoteket since march 1998.

He/She has a high school education and some university courses and has been using computer sense he/she was young and is using computer 25 hours a week at work and after work at home too. The user has been taking courses in Dream waver, internal courses for the economic system of Apoteket and a course in xlReport.

The user does not take any own initiatives that contribute to the result of Apoteket. He/She is not so familiar with the comprehensive goals for Apoteket. Before Apoteket implemented the system, he/she thinks that his/her work was more supervised and that it was hard to receive any sensible reports at all. They had to put in the numbers in manual labor in ordinary Excel to receive reports that look good.

He/She thinks that his/her involvement in the decision-making is about the same as before Apoteket implement the system, but he/she feel an overall improvement in his/her participation in the organization. He/She thinks that it was easy to learn about the system. After the 2-days course he/she thought that he/she learned a lot so he/she is pleased with the course. However, he/she wants to learn more about the systems possibilities regarding statistics.

His/Her general impression of xlReport is that it is very good, simple to work with, easy to understand and a clever idea. He/She did have high expectations because his/her director did talk warmly about the system and its advantages and his/her expectations have been pleased. He/She does not think that it was tough to learn the
system. He/She thinks that xlReport has made his/her job much easier but he/she cannot say if it has made him/her more productive.

He/She thinks that she/he cannot get hold of the information he/she need without some help from other users. His/Her proposal to improvement of the system is about statistics that he/she want to receive. He/She experiences the menus as good and he/she has a positive attitude. Her attitude about the aesthetic of the user interfaces is good because it reminding of ordinary Excel. She thinks the appearance of the system is good and that the understand ness is very good.

The user thinks that the system motivates him/her in his/her work because it a well function system, easy to use and its rapid, these facts make it more fun to work with it. He/She thinks is satisfying, rewarding, creative supporting, helpful, pleasant, effective to use, safe to use, useful and easy to learn. He/She also think that the system is very easy to remember. He/She thinks the accessibility of the system is good in all ways, that the mental support is good and systems ability to adjust also. He/She is in no need of help resources because he/she is the one who knows the system best.

5.1.3 User A3

This user is 52 years old and works as a local manager at the production building. His/Her work tasks are working with budget, economy, planning, work-conversations and personal-conversations. He/She has been working at Apoteket for eight years. He/She has a civil engineer education in electronic and has been using computer for 28 years and is using computer 25-30 hours a week.

The user has been taking courses in office, internal courses for Apoteket and a two days course in xlReport but he/she wants to learn more.

The user likes to take own initiatives. He/She is agreed with the comprehensive goals for Apoteket. Before Apoteket implemented the system, he/she received mail from the economic-department and he/she did the report on basis of that information.

He/She thinks that there is an insignificant difference in his/her involvement in the decision-making after Apoteket implemented xlReport and he/she did not felt any difference in his/her participation either. He/She thinks that the biggest advantage with xlReport is that he/she is able to receive reports any time he/she likes instead of one time a month. His/Her first contact with the system was when he/she received a mail with the xlReport file. He/She do not think that there was hard to learn the things that he/she had to learn about the system.

His/Her general impression of xlReport is that it is an excellent system he/she did have the expectation that he/she should be able to make reports whenever he/she wanted and that expectation has been pleased.

He/She thinks that xlReport has a role as an aid in steering the activity. However, he/she do not think that xlReport has made his/her job very easier nor made him/her more productive.
He/She does not need any help from other users but he/she wants to learn more about the systems abilities. He/She thinks that he/she work so little with the system that he/she cannot mention any lacks in xlReport. He/She experience the menus as complicated, he/she thinks that if the users do not take a course about the system it can be hard to receive the reports they want. His/Her attitude about the aesthetic of the user interfaces that it is okay. He/she cannot mention anything that he/she thinks is frustrating when working with the system.

The user thinks that the system is satisfying, rewarding, helpful, pleasant, effective to use, useful. He/she also think that the system is easy to remember because there are menus that help the users. Sometimes he/she face problems with the safety of the system forces him/her to restart the system. He/She thinks that there are no problems with the accessibility of the system. However, he/she hesitates the ability of the systems to adjust to his/her needs. He/She is in no need of help resources.

5.1.4 The Buyer

The buyer has visited the website; however, it is very long time ago. Hence, he/she has no opinion about it.
5.2 ATG

ATG was established in 1974 from the trot and gallop sport as the horse industry in general was in a crisis in the beginning of the 1970’s. It has circa 300 employees is own by the Swedish Trotting Association (90%) and the Swedish Gallop Association (10%). Its business concept is to give the Swedish people a richer spare time through making playing on horses more easily accessible. During 2001 ATG’s turnover was SEK 10,7 billions. ATG has thirty-one different trot-tracks located from Boden in the north of Sweden to Malmö in the south (see figure 16).

Figure 16: ATG’s gallop and trot-tracks in Sweden.

All over Sweden, ATG has 2050 agents that provide people to stake on horses. The agents also provides other services like selling tickets to travels and events, which give ATG additional incomes. In this thesis the authors has been in contact with Botniatravet that has its units in Umeå (Umarkt) and in Örnsköldsvik (Solängets), and Dalatravet. ATG started to use xiReport in 1999. ATG stood for mostly of the design and education themselves. Solängets trot-track has been in business since 1952. Unfortunately, there was impossible to present the user interface of ATG’s system since no screen-shot was available.

Below a summary of the different seldom-users’ answers will be presented and the answer from the single question to the buyer as well.

5.2.1 User AT1

AT1 is 51 years old and has a three and a half years long education at the school of social studies. Before he/she started working at ATG he/she has worked with banking administration, school administration, and at a nursing institution. AT1 got his/her employment at ATG in 1981.
The interviewee’s tasks include everything that are connected to economy. He/she explains that since his/her place of work is so small, he/she does everything from the budget to balancing of the books. The working routines are very varying. He/she is handling everything himself/herself, except for the daily verification, which his/her assistant handles. AT1 collaborates with at least seven individuals each day. He/she thinks that he/she knows her work very well. According to AT1, he/she uses the system two or three times each month. The interviewee has participated in a one-day course adjusted for xlReport arranged by ATG, in which he/she learned the fundamental functions. AT1 has used computers since 1970. Today he/she uses computers twenty hours per week.

AT1 tries to take own initiatives since it is a part of his/her work. However, he/she feels that his/her initiatives only affect his/her own association (Dalatravet) as it is, as he/she expresses it, a long way to contribute to the result of ATG.

AT1 has never heard about Hands, but he/she has caught a glimpse of it when he/she logs in. However, he/she has heard about Merkantildata.

The interviewee understands partly the objectives that ATG gives priority to; however, he/she adds that it is not ATG that directs the daily work at Dalatravet. He/She does not feel that he/she can contribute in a greater extent thanks to xlReport, but he/she thinks that he/she gets better reports by using the system. Neither, he/she feels more participant since the system was implemented.

He/She states that the participation with ATG has always functioned well; hence, the system has not improved it. Before xlReport was implemented they had all economical transactions in a computersystem, but all they could get out from it was balance reports. The other reports they needed had to be done by hand, which was a reason that the reports were very rarely done.

AT1’s first contact with xlReport was in 1999 when ATG introduced a new economic system and xlReport. He/She thinks that it was somewhat easy to learn the system. As mentioned before he/she participated in a course arranged by ATG to learn how to use xlReport. Furthermore, he/she claims that he/she has also learned about the system himself/herself. The overall impression is that it is a somewhat good system. AT1 had rather low expectations on the system, he/she thought that everything that could improve the situation was good. He/She thinks that his/her expectations have been attained, even though he/she thought it was hard to adjust the reports to his/her conditions. The users at ATG have not been involved in the development of the system at all, instead they got models for reports as they use. Moreover, he/she thinks that it is not hard to use system, one only has to learn how the reports work and how to control what information is presented in the report. It is possible to adjust the report, however, it is hard to create own reports. When he/she creates his/her own reports, he/she has to ask for help from somebody else who has more knowledge about it.

AT1 claims that he/she has had big use of the course regarding xlReport that he/she participated in. Besides that course, he/she has participated in an additional course, in which he/she learned how to create his/her own reports. However, he/she would like
that more education were given more frequently, since new employees show up all the
time, who need education about xlReport.

The system is helpful as AT1 gets reports quicker and that he/she can use the
fundamental reports to create his/her own reports and only pick out the most
important information. He/She also feels that it is easy to adjust the reports by only
control some parameters, which is easier than before. However, he/she does not feel
that xlReport makes his/her work easier.

AT1 has not been in contact with any other decision support system. He/She is
somewhat satisfied with the amount of information he/she has access to. He/She has
access to the fundamental reports, but ATG is trying to find a solution so that the
users can get reports, which they can use directly in the balancing of the books.
He/She thinks that when he/she has access to these reports it will be perfect. However,
he/she is dependent on his/her coworkers at ATG since it is hard for him/her to
correct failures caused by himself/herself.

The interviewee thinks that the system’s appearance is a little boring. He/She neither
thinks that the system is easy to understand and comprehend. Many of the new
employees do not understand how the report is built up and that the report does not
have all features, but he/she states that this is a lack in the education. His/Her
proposals to improvements of xlReport is that it should be easier to change how the
report is built up and adjust the appearance of the report to one’s own needs. He/She
adds however that these functions may be possible to conduct, but he/she does not
know about them. Additionally, he/she does not think that the system is lacking

AT1 thinks that the menus are well done and that they are easy to understand. He/She
also likes the user interface’s esthetics somewhat well. AT1 feels that he/she had too
little time to learn the system. He/She never fully understood how the reports were
built up. Furthermore, he/she states that when the knowledge lacks about the reports it
is hard to learn how the system works. However, he/she adds that those who need
rehearsal do get it in form of another course. There is nothing in the system that
makes him/her frustrated and he/she feels that the system motivates him/her in his/her
work. He/She gets reports about the current condition first and then he/she can show
them to other coworkers and receive response from them.

The interviewee claims that xlReport helps him/her to be productive since he/she gets
the reports somewhat fast, which helps him/her to receive more support. He/She feels
that he/she can trust his/her managers in a greater extent when everything is
functioning, and that he/she becomes more productive only by having the papers more
quickly. AT1 also thinks that the system fulfills his/her needs rather well. He/She
does not miss anything that is necessary to make everything function as it is supposed
to. However, he/she would like to be able to get reports about the balancing of the
books. He/She is sure that the system can handle it, but there is no one from ATG
who has helped him/her to build the reports, which is necessary since there are
nobody at Dalatravet that have the required knowledge. Furthermore, AT1 thinks that
the system is creatively supportive, motivating, and helpful. He/She also claims that
the system is secure to use if the user has knowledge about how the report is built up.
Once he/she happened to give the filename an incorrect name in the economy system
and he/she could not do anything, which forced him/her to call to ATG for help. The system is additionally easy to remember how to use. When AT1 prints reports he/she looks at a note to see how to do, however, he/she claims that he/she has done the note himself/herself.

AT1 does feel that he/she is dependent on other, i.e. the access to necessary resources is not that good. The system also lacks in the mental support. The interviewee thinks that he/she is the one that has to adjust to the system. Additionally, he/she thinks that the individualization of the system is relatively good, and he/she has good help from his/her coworkers.

### 5.2.2 User AT2

AT2 is 46 years old and has a Bachelor of Science. Before he/she started working at Solänget trot association, he/she worked in the branch of food and the branch of shoes. Furthermore, he/she has also been a self-employed person. AT2 got his/her employment on September 1st 2002, although he/she has been responsible for the economy for the last ten years. Today AT2 is responsible for giving reports and the account. He/She has the operative responsibility. His/Her working routines are to make the business function as the board and management wish. Today, he/she administrates accounting, salaries, and questions regarding the personnel. His/Her main task is to make sure that the business functions and that it follows and manages the economical frames. AT2 collaborates with three to four individuals each day. He/She thinks that since he/she has worked at the association for ten years he/she has a good experience and, hence, he/she knows his work well. According to AT2, he/she uses the system twice, or approximately 4 hours, each month.

He/She has participated in a course that dealt with Excel, but he/she has not taken any course adjusted for xIReport. AT2 has used computers for approximately 20 years and today he/she uses computers ten hours per week.

AT2 feels that it is very important to take own initiatives in order to make the necessary changes possible. He/She has never heard about Hands, however he/she has noticed the name when he/she has logged on the program. The interviewee fully understands the objectives that ATG gives priority to, as he/she is active in formulating them. He/She does not feel that he/she can contribute in a greater extent thanks to xIReport; neither does he/she feel more participating. He/She thinks that it is possible for him/her to put forward ideas and propose improvements; however, this does not lie in his/her interests.

AT2’s first contact with xIReport was for about four to five years ago. He/She does not think that it was hard to learn. Moreover, he/she states that the only thing he/she does is to fill in numbers and then the system makes all the calculation. The overall impression is that is a somewhat good system. He/She thinks that it is functional and useful. AT2’s expectation on xIReport was that it would be an aid to facilitate for budget, balance of the books, and reports, which he/she thinks has been attained. Since AT2 did not participate in any course about xIReport. He/She feels that he might have been able to use the system to a greater extent than he/she can today if he/she had taken a course. AT2 claims that he/she has not much use of the system.
It may help him/her to save a couple of hours each month, but it is not crucial in any way. The system is helpful as AT2 can make the reports faster today than before he/she used the system.

AT2 has been in contact with other decision support system, mostly during his/her work in the branch of shoes. However, he/she has not worked with a decision support system directly before xlReport. He/She is somewhat satisfied with the amount of information he/she has access to, however, sometimes he/she has to contact ATG to get all information he/she needs.

The interviewee thinks that the system’s appearance is relatively good. Moreover, he/she thinks that the system is easy to understand and comprehend. His/Her proposal to improve xlReport is that it should be more education and an introduction above all. Additionally, he/she does not think that the system is lacking as he/she is using to little and have no interest in enter deeply in it.

AT2 thinks that the menus are not very easy to understand, but not difficult either. Furthermore, he/she like the user interface’s esthetics somewhat well. The interviewee does not think that it was especially hard to learn the system, he/she thinks he/she knows everything he/she has to know. However, he/she gets frustrated when it takes long time to carry through operations. He/She does, additionally, not feel that the system motivates him/her in his/her work.

The interviewee claims that xlReport helps him/her to be productive since he/she has more time to look at the reports and determine whether the numbers are relevant or not. Shortly, he/she gets more productive as the system helps him/her to work faster. AT2 also thinks that the system fulfills his/her needs very well.

Furthermore, AT2 thinks that the system is helpful and satisfying, since it can handle everything all expectations he/she has on it. He/She also claims that the system is effective and secure to use.

AT2 feels that he/she has access to all resources he/she needs and that the system has good mental support. Additionally, he/she thinks that the individualization of the system is relatively good, and that he/she has relatively good help from his/her coworkers if he/she is doing an operation in the system that is new for him/her.

5.2.3 The Buyer

The buyer has not visited the website and has thus no opinion about it.

5.3 Samhall

Samhall is situated in entire Sweden, at 300 places with about 800 places to work. The company is dealing with different kind of tasks and is known as Swedens’ widest under-supplier that delivers general solutions to its customers. It is also producing its own products and services.
Samhall is unique because most of their employees have one or more handicap. Through Samhall they are guaranteed a work with developing tasks. Samhall bought xReport, xForecast\(^6\) (and Media\(^7\)) from Hands in 1997. In some cases, Hands help the customer to design the user interface of the system, but Samhall decided to take care of the design themselves.

The figures 17 and 18 below are examples of how the different user interfaces that appears when the user works with the system.

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**Figure 17: The user interface when printing reports in xReport (Samhall)**

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\(^6\) xForecast is a subproduct in Atlantic\(^\text{TM}\).  
\(^7\) Media is a subproduct in Atlantic\(^\text{TM}\).
Below a summary of the different seldom-users’ answers will be presented and the answer from the single question to the buyer as well.

5.3.1 User S1

S1 is 53 years old and has an education of technical senior high school. He/She has been employed at Samhall for 12 years, and before that he/she worked as a technician. The interviewee works as a local manager in Boden, which means that he/she is maintaining the business there. His/Her working routines consist of production meetings in which he/she makes sure that all functions are working. He/She claims that he/she has more to do than just being a manager; he/she is also responsible for marketing and the results. Finally, he/she is working through his coworkers. There are seven employees and managers within the concern that he/she is collaborating with daily. He/She thinks that he/she knows his work very well. According to S1, he/she uses the system about two hours per week. The interviewee has not participated in any course adjusted for xlReport, but he/she has participated in courses about Word and Excel. He/She has used computers since he/she started working at Samhall, i.e. for 12 years. Today he/she uses computers at work for around 25 hours each week. S1 states that the seven employees that manage the unit in Boden decides almost everything on their own.
S1 has not heard about Hands, however, he/she has heard of Markantildata. The interviewee does fully understand the objectives that Samhall gives priority to. He/She does not really feel participant as the system does not affect the results in the machine shop. On the other hand, he/she feels that he/she gets a more quickly overview of the result than before. Before xlReport was implemented, it took longer time to get a proper overview of the reservation and the invoicing and now it is possible for him/her to access the information himself, without asking anybody else.

S1’s first contact with the system took place for about one and a half years ago. He/She thinks that it took about ten minutes to learn what he/she had to in order to be able to use the system. The overall impression is that he/she gets the results fast and in a good manner. However, he/she claims that the results are not complete, which means that he/she gets other support than he/she had in mind. He/She presented this lack a year ago, but still nothing has happened. Apart from that everything else is working. The expectation on the system was that it would be an instrument with which he/she would get fast information of how things are going, which has been attained; however, there is a lack of some functions. S1 had heard about the system before it was implemented, but he/she had not red anything about it. S1 has participated in an introduction of xlReport.

The system is helpful as S1 gets a quick response about the business’ result. Moreover, he/she has not been in contact with any other decision support system. Sometimes S1 does not have access to all information that he/she needs, but he/she has no help from the other users since the information is inaccessible for all users. Furthermore, it is only one user at the time that can use the system in Boden.

The interviewee thinks that the system’s appearance is good. He/She also thinks that the system is easy to understand and comprehend. He/She suggest that to improve the system it should be possible to see all articles in the result. It is supposed to be possible, but today it is not. He/She would also like to be able to in more detail look at the result. Additionally, he/she cannot go back historically and look at earlier results, which is something he/she misses.

S1 thinks that the menus’ are quick, clear and simple, but he/she has not thought about the system’s esthetics. Moreover, the only thing that makes him/her frustrated is that not all systems work. He/She also feels that the system motivates him/her.

The interviewee claims that xlReport helps him/her to be productive since it gives him/her a fast overview of the business. Furthermore, S1 thinks that the system is easy to handle, rewarding, helpful, entertaining, and pleasant. He/She also claims that the system is secure to use and easy to remember how to use.

S1 does feel that he/she has access to all resources that he/she needs in order to accomplish his/her work. It takes only a couple of seconds and than he/she is in the system. However, he/she claims that the system lacks somewhat in the mental support. If he/she wants to search in a certain way it is impossible since the system is adjusted in advance, which forces him to click on certain choices.
Moreover, he/she does not know how well the individualization of the system works, which he/she states shows that he/she got a defective education regarding xlReport. Additionally, he/she does not think he/she has good help from his coworkers. This fact is because he/she is the one who uses the system most often.

5.3.2 User S2

S2 is 49 years old and has a six to seven years long education as officer. Since 1982 he/she is major. Before he/she started working at Samhall he/she has spent 30 years in the Swedish army and he/she has been employed at Asyd in Piteå as well. S2 got his employment at Samhall in 2001.

The interviewee works as a unit manager and is a part of the direction of the unit in Luleå. He/She has no specific routines in his work and collaborating with approximately 20 persons daily. He/She thinks that he/she knows his work somewhat well. According to S2, he/she uses the system too little, more specifically two or three times per month when he/she controls the result. Although, he/she has a deputy that uses the system much more when creating budgets and controlling results. He/She has not participated in any course adjusted for xlReport, however, he/she claims that he/she has worked a lot with other system and, hence, learned the system himself/herself. He/She has used computers since 1990. Today he/she uses computers two hours each day both at work and at home.

S2 takes own initiatives when he/she does something about conditions that failure. Thanks to xlReport, he/she can control values and information and if necessary take steps in order to correct them. He/She states that by using the system he/she can do something about failures both in short-term and long-term.

S2 has never heard about Hands.

The interviewee does fully understand the objectives that Samhall gives priority to. He/She does feel participant as he/she has access to the result somewhat fast and that he/she can get control the results himself instead of asking for them from the controller. He/She claims that it feels more personal that he/she can get the results himself. He/She cannot describe how the routines in Samhall looked like before xlReport was implemented since his time as an employee is to short, however, he/she knows that lists came from the head office and everything related to the system took longer time to carry through.

S2 thinks that it took almost no time at all to learn the main functions of the system, although he/she does not have knowledge about all refinements. The overall impression is that is it a well-functioning system. He/She thinks that it has been some failures, but that xlReport is not to blame. The expectation on the system was that it would be an instrument with which he/she would see the outturn in the results in real time, which he/she thinks has been attained. According to S2, he/she had heard the economists talked about the system before he/she got access to use it, but there was no activity that strived to make the employees use the system.
As mentioned earlier, S2 has not participated in any course adjusted for xlReport, which is something that he/she misses as it could have helped him to learn how to use the system fully.

The system is helpful as S2 get reports on how well the unit is doing, even though he/she has a feeling he/she gets the result confirmed. It also helps him/her to correct failures and make good presentations on the personnel meetings. His/Her work has been simplified, this because everything is faster and sharper.

During his/her time in the Swedish army, he/she was in contact with another decision support system, which was a system that supported planning of personnel and remuneration.

S2 has not always access to all information he/she needs, and is hence forced to contact the controller to get information that is more detailed. He/she thinks that the system’s appearance is okay, however, he/she adds that there are things to improve. Additionally, he/she thinks that the system is easy to understand and comprehend. He/She suggest that to improve the system it should be less numbers to keep in good order and easier to enter different posts of costs. So far, he/she has not succeeded in entering all posts of costs that he/she wishes to enter. S2 also mentions a shortcoming of the system, which is that if he/she pushes the wrong button, the system starts printing and there is no way he can stop it.

S2 has not made any reflections on the menus’ appearance, but he/she does not like the esthetics of the user interface. Moreover, there is nothing in the system that makes him frustrated. He/She also feels that the system motivates him as he/she receives a result quickly.

The interviewee claims that xlReport helps him/her to be productive since it is on his terms he/she gets what he/she wants from the system. He/She also claims that the system fulfils his needs. Furthermore, S2 thinks that the system is satisfying, emotionally satisfying, rewarding, creatively supportive, motivating, entertaining, and pleasant. He/She also claims that the system is effective to use, secure, useful, easy to learn, and easy to remember how to use it. One feature that he/she would like to add to the system is to be able to render numbers and statistics in diagrams. He/She adds, however, that it might be possible, but he/she does not know about it because of his lacking knowledge.

S2 do feel that he/she has access to all resources that he/she needs in order to accomplish his work. However, he/she claims that the system lacks somewhat in the mental support. Additionally, he/she does not know how well the individualization of the system works, and he/she has good help from his coworkers as his manager uses the system frequently.

### 5.3.3 User S3

S3 is 35 years old and has an education as civil engineer in ergonomic design and production. S3 started the career as a doctoral student and has since than had different positions within Samhall. Today, S3 works as a unit manager.
The interviewee has been employed at Samhall for seven years. S3 is responsible for both personnel and production. The working routines consist of meetings, follow-ups, reports, economy, problem solving, contact with customers, and submit tenders. S3 is cooperating with six persons daily, who are all members of the managerial body.

The interview thinks that he/she knows his/her work well as he/she has been working at the company for some time. However, there are always new tasks to consider.

S3 is using xlReport ones every month when the reports are printed. That is the only thing the system is used for. The interviewee has not participated in any specific course adjusted for xlReport. However, he/she has participated in a course adjusted for Excel. Moreover, S3 thinks that xlReport is very similar to Excel.

The interviewee has used computers since 1986 in connection to the start of the studies on the university. S3 uses the computers 25 hours per week.

S3 states that it feels necessary to take own initiatives in the capacity of a manager, and have a positive attitude toward taking initiatives. He/She has not heard about Hands, however, he/she has noticed that it says “Hands” on the display when logging in to xlReport. S3 believes that he/she understands all objectives that Samhall has. He/She does not really know whether he/she can contribute more with decisions or not after xlReport was implemented. He/She does neither feel that he/she participates more thanks to the system.

Before xlReport was implemented, the work looked the same except for that there was an administrator who printed the reports and gave them to S3. Now he/she can decide when he/she wants to look at a report and print it in that very moment.

S3 is not sure when his/her first contact with xlReport took place, but he/she thinks that it was in 2001. It was by this time he/she started to print out the reports by himself/herself. However, he/she thinks that the administrator who printed the reports for him/her before than also used xlReport.

S3 does not think that the system was hard to learn. The only thing he/she does is to push “update reports” and than it beeps and the report is printed. His/Her expectations on the system were that it would be a tool that would help him/her to get the reports rapidly. However, his/her expectations have not been fulfilled. Furthermore, he/she thinks that it is because of that Samhall has changed the whole computer system. Before he/she used the system for the first time he/she had not read anything about it. Neither had he/she participated in any course about xlReport, something that he/she feels would have been.

The system does not really help him/her, but he/she feels that it is good that he/she can print the reports whenever he/she wants to. The accomplishments have been more simple thanks to xlReport as he/she is no longer forced to call someone else to print reports for him/her. S3 has also used another decision support system; Samhall’s MTF system, in which it is possible to print statistics. Furthermore, S3 feels that not all the information he/she need is always available. Before xlReport was implemented, he/she did not have to do more in the system.
Then he/she had a more detailed result report with information regarding each account. In the information that is presented today is several accounts merged and hence, not all information he/she needs is always available. He/She adds however, that xlReport cannot totally be blamed for this problem. Additionally, he/she feels that all other information is available.

S3 thinks that xlReport’s appearance is good, and it is very easy to understand and comprehend the system. He/She cannot see any lacks of the system; more than those lacks that depending on Samhall’s computer system.

The interviewee feels that the menus are good. Since xlReport is built on Excel and everything is very similar to that program it is very easy for him/her to understand as he/she is used to work in Excel.

### 5.3.4 The Buyer

The buyer has visited the website two or three times since the company became Hands AB from Merkantildata, in purpose of finding information about a product that Hands AB marketed that Samhall did not know about. He/She states that Samhall has a webservice, however, it is only used through e-mail and telephones, and as long as this service is unavailable on the website, there is not necessary for him/her to visit the website. Furthermore, he/she is questioning to why Hands does not use the Internet in a greater extent.

### 5.4 Vasakronan

In 1993, the Swedish board of public building was closed down, which meant that authorities and agencies were no longer forces to rent premises from a state proprietor. This year Vasakronan AB was established and acquired real estate from the government for a total of SEK 17.2 billion including entry to the land register. Vasakronan AB has totally 186 real estates and is today one of leading real estate companies in Sweden. The company has 313 employees and during 2001 the turnover was SEK15 billions. Vasakronan focuses on commercial premises, mostly offices in and around big cities. The real estates are mostly located in Stockholm/Uppsala, Malmö/Lund, Gothenburg, and Linköping. The Swedish government owns the company. As Vasakronan focuses on having a strong position around big cities it has some real estates with stores. The company is decentralized and is operated via four regional offices, 17 market areas, and two subsidiaries; Vasakronan Service Partner and Vasakronan Fastighetsutveckling.

The figures 19, 20, and 21 below are examples of how the different user interfaces that appears when the user works with the system.
Developing an internet based communication strategy -
- An evaluation of a decision support system

Picture 19: This picture depicts the interface, when the user chooses what kind of report he/she wants to print (Vasakronan).

Picture 20: This picture is an example of a report (Vasakronan).
5.4.1 User V1

This user is 48 years old and works with economic and tuning of different accounts, rent-announcements and closing. He/She has been working at Vasakronan in nine years. He/She has a high school education in economic and he/she has been a student at the Sjöbefälskolan in Härnösand. He/She has been using in 15 years and he/she is using computer 40-50 hours a week. The user has been taking internal courses at Vasakronan and a course in Word and Excel. He/She works with the system 1-1/2 day a month.

The user takes own initiatives within its work-frame, that contribute to the result of Vasakronan. He/She is familiar with the comprehensive goals for Vasakronan. Before Vasakronan implemented the system they had another economic system that they worked with that was a little more unwieldy.

He/She don’t thinks that he/she can contribute in the decision-making more now than before Vasakronan implement the system, but he/she feel an improvement in the participation. This because he/she himself/herself is able to look in the system and see if there is something wrong.
His/Her first contact with the system was on Vasakronan when they did get the information about xlReport, but most of the systems abilities they had to learn themselves.

After some swearwords and wrong printouts that made him/her to try again, he/she learned the system. However, he/she did not think it was easy to learn. However, he/she did think it was easy to learn the fundamental thinks about the system. He/She do not think that there had been necessary with a course in xlReport but he/she feel that a small manual had been a benefit.

He/She does not have a general impression of because the cants compare with anything but he/she thinks that it is not so flexible. He/She did not have any expectations because he/she did not know what he/she should get out of the system. He/She thinks that xlReport are playing a very big role especially before closings because he/she are able to check the numbers and se if there are something wrong and compare with last year or quarter. He/She thinks that xlReport has made his/her job easier and made him/her more productive.

He/She thinks that he/she can get hold of the information he/she need without any help from other users. He/She does not have any concrete propose to improve the system. He/She assumes that it has to be so many alternatives in the menus. He/She experiences the menus as okay and he/she understands the aesthetic of the user interfaces. He/She thinks the appearance of the system is fairly good but there are some texts that are cryptic. He/She thinks that the understand ness is also fairly okay but sometimes he/she receive the report and sees that it was wrong and then he/she has to start all over again. He/She feels that he/she can manage the thinks about the system that he/she are familiar with, but when another user asks about something outside his/her frames he/she don’t know what to do. He/She do not like that a password is required to receive reports, this because Vasakronan has several companies and this fact makes that he/she has seven different passwords to remember.

The user thinks that the system motivates him/her in his/her work because he/she is able to receive reports that are up to date. He/She thinks is satisfying, effective to use, safe to use. He/She would like to have more selection functions. He/She thinks the accessibility of the system is okay, that the mental support is non-existents. He/She has no problems to adjust the system after his/her needs. He/She can ask them who receive reports more often than he/she, in case he/she needs help. If he/she has some ideas, he/she does not know who to present them to.

### 5.4.2 User V2

This user is 54 years old and works tenancy agreements, announcements and he/she takes cares of all bank transactions. He/She has been working at Vasakronan for nine years. He/She has a two-year upper secondary school education in economic. He/She has been using in 20 years and he/she is using computer 8-10 hours a week. The user has been taking some computer-courses but not any xlReport course. He/She works with the system a few times a month.
The user is positive to take own initiatives when it is something good. He/She is agrees with the comprehensive goals for Vasakronan.

He/She does not think that the system influences his/her works he/she does not contribute in the decision-making more now than before Vasakronan implement the system. He/She thinks that it was no time spending on learning the system. He/She does not remember if he/she was introduced in the system. But he/she thinks that it was easy to learn the system.

His/Her general impression of xlReport is okay but he/she does not think that he/she had any expectations because he/she was not aware that the system was implemented. He/She does not think that xlReport is playing any important role for his/her job. The most important thing is that he/she receives the reports he/she wants. He/She thinks that xlReport has made him/her more productive.

He/She does not have any concrete propose to improve the system. He/She experiences the menus as simple and he/she thinks the aesthetic of the user interfaces is clear, easy to order things with because he/she is able to order both operative and legal. He/She thinks the appearance of the system is very good but he/she does not know the difference between what is xlReport and what is ordinary Excel. He/She thinks that the understand ness is enormously good.

The user thinks that the system motivates him/her in his/her work because it is a need in his/her work. He/She thinks is satisfying, effective to use, safe to use and comfortable. He/She also thinks that the system is helpful because he/she believes you cannot forget it, that you can see on the screen what to do. He/She does not think the system missing something. He/She thinks the accessibility of the system is good. He/She thinks that he/she can get hold of the information he/she need without any help from other users but if he/she would need help, there is.

5.4.3 The Buyer

The buyer has not visited the website recently and has thus no opinion about it.
5.5 Summary of the Empirical Data

**TABLE 1. Specification of the user interface**

<table>
<thead>
<tr>
<th></th>
<th>First contact</th>
<th>Learnability</th>
<th>Esthetics</th>
<th>Overall impression (attitude)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Fall 2000, took a two-days course and learned all she had to know</td>
<td>Somewhat complicated to learn, there are many parameters connected to each other.</td>
<td>No opinion</td>
<td>Very good system</td>
</tr>
<tr>
<td>A2</td>
<td>Fall 2000, took a two-days course and learned all she had to know</td>
<td>Very good. It was not difficult at all to learn</td>
<td>It is good. It resembles a lot of other Microsoft programs</td>
<td>Very good system, it is easy to understand and work with</td>
</tr>
<tr>
<td>A3</td>
<td>Fall 2000, took a two-days course but wants to learn more</td>
<td>Good. It was not hard to learn things about the system</td>
<td>No opinion</td>
<td>Excellent system</td>
</tr>
<tr>
<td>AT1</td>
<td>In 1999, took a course in which she learned the fundamental knowledges. Has learned some on her own as well</td>
<td>The introduction was lacking and to short. She wanted more time to learn about the system</td>
<td>It is somewhat good</td>
<td>Somewhat good system</td>
</tr>
<tr>
<td>AT2</td>
<td>1997 or 1998, has not taken part in any course</td>
<td>Good learnability. She has learned all there is for her to learn</td>
<td>It is good</td>
<td>Somewhat good system, functional and useful</td>
</tr>
<tr>
<td>S1</td>
<td>2001, no introduction</td>
<td>Easy to remember how to use. Misses an introduction</td>
<td>Good. Has not reflected about the esthetics</td>
<td>Fast system, however, the reports are not complete</td>
</tr>
<tr>
<td>S2</td>
<td>2001, no introduction</td>
<td>Very good. It took no time at all to learn the system</td>
<td>It is pleasing</td>
<td>Well functioning system</td>
</tr>
<tr>
<td>S3</td>
<td>2001, no introduction</td>
<td>Very good. It took two minutes to learn how to use the system</td>
<td>No opinion</td>
<td></td>
</tr>
<tr>
<td>V1</td>
<td>Does not remember, some kind of introduction - maybe</td>
<td>Very good!</td>
<td>Simple and sharp.</td>
<td>A somewhat good system</td>
</tr>
<tr>
<td>V2</td>
<td>When the users were informed about the system, no introduction</td>
<td>Somewhat bad. It was hard to learn how to use it.</td>
<td>Good</td>
<td>A little bit difficult to use, not especially flexible</td>
</tr>
</tbody>
</table>
TABLE 2. Specification of the usability

<table>
<thead>
<tr>
<th></th>
<th>Improved Productivity/Motivation</th>
<th>Fulfilled needs (relevance)?</th>
<th>Agreed that the system is effective, safe to use</th>
<th>Any addition?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Yes, the fastness of the system / Yes</td>
<td>Very good</td>
<td>satisfying, rewarding, creative supporting, helpful, comfortable, Effective, Safe to use, useful, easy to learn, easy to remember</td>
<td>No</td>
</tr>
<tr>
<td>A2</td>
<td>Yes /Yes</td>
<td>Very good</td>
<td>satisfying, rewarding, creative supporting, helpful, comfortable, Effective, Safe to use, useful, easy to learn, easy to remember</td>
<td>No</td>
</tr>
<tr>
<td>A3</td>
<td>No /Neither or</td>
<td>Good</td>
<td>satisfying, rewarding, creative supporting, helpful, comfortable, Effective, quite safe to use, useful, easy to learn, easy to remember</td>
<td>No</td>
</tr>
<tr>
<td>AT1</td>
<td>Yes, save time with the system / Yes</td>
<td>Very Good</td>
<td>Satisfying, helpful, effective, safe to use</td>
<td>No</td>
</tr>
<tr>
<td>AT2</td>
<td>Yes, receive reports fast. / No</td>
<td>Okay, do not miss any.</td>
<td>creative supporting, helpful, safe to use, useful,</td>
<td>No</td>
</tr>
<tr>
<td>S1</td>
<td>Yes, gets a fast overview / Yes</td>
<td>Yes</td>
<td>fun, rewarding, helpful, amusing, comfortable, safe to use, easy to remember</td>
<td>No, don’t know the capacity</td>
</tr>
<tr>
<td>S2</td>
<td>Yes, S2 can get what he wants whenever S2 wants / Yes</td>
<td>Okay</td>
<td>satisfying, emotional satisfying, rewarding, creative supporting, comfortable, Effective, Safe to use, useful, easy to learn, easy to remember</td>
<td>More choice functions</td>
</tr>
<tr>
<td>S3</td>
<td>Yes a little / Yes</td>
<td>Good</td>
<td>satisfying, helpful, easy to learn, easy to remember</td>
<td>No</td>
</tr>
<tr>
<td>V1</td>
<td>Yes /Yes</td>
<td>Very good</td>
<td>Satisfying, helpful, comfortable, effective, safe to use</td>
<td>No</td>
</tr>
<tr>
<td>V2</td>
<td>Yes /Yes</td>
<td>Okay</td>
<td>Satisfying, Effective, Safe to use</td>
<td>More choice functions</td>
</tr>
</tbody>
</table>
TABLE 3. Specification of the user friendliness

<table>
<thead>
<tr>
<th></th>
<th>Accessibility</th>
<th>Mental support</th>
<th>Individualization</th>
<th>Helping resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Good. It takes no time to activate the system</td>
<td>Has no opinion about it</td>
<td>Very good and simple to do</td>
<td>There is a staff, which the users can get help from</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>Very, very good</td>
<td>Somewhat good</td>
<td>Functions very good</td>
<td>Not that good, as she uses the system most of everyone at Apoteket</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>Good</td>
<td>Somewhat good</td>
<td>Hesitates the system’s ability to adjust to the user’s needs</td>
<td>Has no need of helping resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT1</td>
<td>Good</td>
<td>Bad. She has to adjust to the system instead of the reverse</td>
<td>Good</td>
<td>Very good</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT2</td>
<td>It is good</td>
<td>It is good</td>
<td>Does not really know, but thinks that there are much possibilities</td>
<td>He has somewhat good help if he does an operation that is new for him</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>Very good. To log in is a swift as a lightning</td>
<td>Not so good. He cannot not search for information in the way he wants to, he has to chose among alternatives that are already settled.</td>
<td>Does not know anything about the individualization. He points that his knowledge is lacking</td>
<td>Somewhat good, although it is he who uses the system mostly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>Very good</td>
<td>Not good. The system is not flexible at all</td>
<td>Did not know that it was possible with individualization</td>
<td>Very good. His assistant works a lot with the system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>Good</td>
<td>Very good</td>
<td>Did not know that it was possible with individualization</td>
<td>She can ask for help from co-workers in other departments</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1</td>
<td>It is good</td>
<td>Does not know</td>
<td>Has no idea</td>
<td>If she needs help she can get it</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td>No problem</td>
<td>That does not exist</td>
<td>It is good. She knows how to handle it</td>
<td>Very good. She can ask people who use the system much more than she does</td>
</tr>
</tbody>
</table>
6. **Analysis**

In this chapter, we will analyze the results from the interviews, which will be the answer to research question two. In next chapter, we will return to research question one and three.

6.1 **User Interface**

When the user interface was examined at the different companies, focus was on the seldom users’ opinion regarding the esthetics and the learnability. Then the answers were compared to how long they have used the system, whether they participated in any introduction, and their current overall impression about the system.

As mentioned earlier in this chapter, there is one company, Apoteket, in which the seldom users have participated in an introduction organized by Hands. All three users are very satisfied with the system. The users at the other companies are overall satisfied as well, however, not to the great extent that the users at Apoteket. From the interviews the conclusion can be drawn that the users who have taken part in an introduction organized by their employer are not as satisfied. One of the users at Apoteket thought that it was somewhat difficult to learn how to use xlReport, however, after the two-day course organized by Hands the user felt confident.

The answers from the interviews also point out that some of the negative opinions regarding the system do not come from the system itself, but from how it has been implemented. This is also a fact that many of the users are aware of. No obvious relationship to how often the users use the system and their opinions about it can be seen. However, there is a small tendency that the users, who use it more often, approximately once a week, have a little bit more positive view of the system.

The spreading of the system within the organization does not affect the users’ opinion. However, the users tend to have a more positive opinion if they are not alone in using the system at their place of work. An example is ATG, where the users are spread out on trot tracks all over the country and where many users are alone in using the system, and if they need help they have to call ATG’s head office for help.

It does not seem to be any relation to the users’ level of education and their view of the system. The results of the interviews imply however, that all users have used computers for at least 10 years. The examination seems to show that the users are able to use the system, even though they have deficient knowledge about how to use it. This agrees with the theory\(^8\), which states that it is easier for the users to access the system if it has a good user interface. The theory also claims that it is easier for the user to learn how to use the system if the user interface is common. Furthermore, the examination degrees partly with the theory\(^9\), which states that the users’ opinion about a system may be affected by how the user interface is designed. This is because the interviews have shown that there are factors that affect the users’ view of the system, which are impossible for the system supplier to influence. These are for example age

\(^8\) See chapter 2.7(User Interface) (Marakas, 2000)
\(^9\) See chapter 2.7 (Preece, 2002)
and gender of the user, and previous working experiences. It cannot be seen that the users’ dissatisfaction with the system agrees with the theory\textsuperscript{10}, which states that the more features a system has, the more difficult it is to use. The system, which is used by users that have a somewhat negative view of it, does not have many features. However, the users use it too seldom to be able to remember the operations.

### 6.2 Usability

The users think that the system helps them to be more productive. This agrees with the theory\textsuperscript{11}, which states that usability is required to increase the productivity of a system. Most of them thought that the fastness to receive reports and the easiness in the system was the reason to this fact, i.e. they saved time. However, one user did not think so but he could not motivate his answer further.

All the users were pleased in their needs; they did not seem to miss anything special in the usability of the system. The answers were differing between okay to very pleased.

The most popular alternatives that many of the users thought fit a description of the system were that the system is safe to use, satisfying and effective. Helpful, and easy to remember were quite ordinary choices as well. All the users from Samhall did think that the system was easy to remember. Two of three users at Apoteket also think that the system is easy to remember. It is remarkable that the user who did not thought that the system was easy to remember is the one who work with it the most. The users at ATG and Vasakronan do not agree that the system is easy to remember. Then the alternatives were very differing. One user from Samhall even thought the system was fun and amusing. The opinions if the system motivates the users in their work were shared. Eight of ten users thought that the system did motivate them in their work. The one who did not think that xlReport motivates the user in its work has not been able to take any course and may not see the capacity of the system. This agrees to some extent with the theory\textsuperscript{12}, which presents the usability goals and the users goals.

\textsuperscript{10} See chapter 2.7 (Bailey, 1996)
\textsuperscript{11} See chapter 2.5 (Preece, 2002)
\textsuperscript{12} See chapter 2.5 (Preece, 2002)
6.3 User Friendliness

The opinion regarding the mental support is very varying. The system’s user friendliness regarding the mental support has not been successful. Compared with the theory\(^{13}\), which states that the system shall have requirements on the user that are comparable with the way the user conducts his/her work, the mental support is only adjusted to some kinds of users. Moreover, there are two users working at the same company with operation problems in the network that are dissatisfied. However, these users’ dissatisfaction seems not to be connected to the mental support, but to the settings of the system and defectiveness in the network. Furthermore, the users’ opinions about the mental support do not relate to their overall opinion about the system or its features because of the considerable varying answers.

The answers regarding the accessibility confirm that all users have access to the system whenever they need it. This agrees with the theory\(^{14}\) that states that without accessibility the user cannot use the system. Thus, the system is user friendly on that point.

From the results of the interviews, the individualization of a system does not seem to be considered as interesting or necessary by the older users. However, the younger users seem to be aware of this feature and are satisfied with it as well. According to the theory\(^{15}\), which states that it is important that the system supports different kinds of users when they are interacting with it, the developers have been successful in this part of user friendliness. Like the mental support, the users’ opinions regarding the individualization are not related to their other satisfaction or dissatisfaction about the system.

The help resources function very well in that extent that it exists. The users are overall very satisfied with the help they can get from their co-workers. One user was, however, somewhat dissatisfied since he/she uses the system most at the company. There are, however, no documentation that the users can use to solve their problems on their own, and it does not seem like there is any help function available in the system. However, according to the theory\(^{16}\), which states that help resources should be available at the time when the user has trouble, the help resources are lacking, as it should be some kind of documentation available for the users to help themselves.

\(^{13}\) See chapter 2.6 (Allwood, 1998)
\(^{14}\) See chapter 2.6 (Allwood, 1998)
\(^{15}\) See chapter 2.6 (Allwood, 1998)
\(^{16}\) See chapter 2.6 (Allwood, 1998)
7. Conclusions and recommendations

In this chapter, we will give you our conclusions and recommendations to Hands AB. Thus, in this chapter we will answer the research questions. To give a better overview we will first, shortly, present the answer on research question one below.\textsuperscript{17}

7.1 Conclusions

How can companies design a suitable Internet based communication strategy?

Companies can construct a suitable Internet based communication strategy by using e-mail, newsgroups, FTP, World Wide Web, a website, banners, and sponsors. However, this rese

How do the customers value a decision support system with a user interface for seldom users, i.e. how does the system help the customers in their work?

Hands derives advantage from how the system is constructed, as it is very similar to Microsoft programs, and in particular Excel. Most of the users are familiar with these products and hence, it is easy for them to use the system offered by Hands, even though they have deficient knowledge about the system. Furthermore, many of the users are very satisfied with the fact that they get reports quickly and whenever they want to. That fact that the reports are up-to-date as well is also a big advantage when marketing the system.

Due to Hands’ awareness of the importance of a high usability, the users think that they have increased their productivity thanks to the system. This fact agrees with the theory\textsuperscript{18}, which states that there is a continuously increasing awareness of that usability is required in order to increase the productivity. The fact that all the users from Samhall did think that the system was easy to remember may be explained by the fact that Samhall either succeeded well with there internal course or the interviewees do not have access to equal much information as the other interviewees have. We have concluded from the analysis that we do not fully agree with the theory\textsuperscript{19} that claims that usability is a result of relevance, efficiency, attitude, and learnability. Some of the users we interviewed have not experienced all these parts; however, from their answers we have seen that their satisfaction regarding the usability is very high. Thus, we have concluded that a high usability can be attained even though not all four parts are attained. However, as mentioned in chapter 6.2, the users may have a positive attitude to the usability due to their satisfaction with the user interface. Furthermore, we believe that the system has facilitated the users’ work.

The users that consider the system somewhat difficult to use have often access to many parts of the system. This means that the system becomes more complex, which

\textsuperscript{17} For more detailed information, see chapters 2.1.4 and 2.1.5
\textsuperscript{18} See chapter 2.5 (Allwood, 1998)
\textsuperscript{19} See chapter 2.5 (Löwgren, 1993)
may affect their opinion about the user interface, the usability, and the user friendliness. Although, despite that the system might feel complex to use for some of the users, we have drawn the conclusion that Hands’ sell point is attained; to enable the users to begin to use the system quickly. Our overall impression from the interviews is that the accessibility of the system is very good; the users have access to the system whenever they need it. Because of the finding that the users’ dissatisfaction are not really connected to the mental support, and that it does not relate to their overall opinion about the system or its features, we consider that the opinions relate to the users’ individual qualifications. Another conclusion can be drawn that it is harder for users who do not have many coworkers to get help in working with the system, which can cause a more negative view of the system, as they become more ineffective.

**How can Hands design an Internet based communication strategy?**

Based on the statement in the theory\(^\text{20}\) that people are more unlikely to click on companies’ banners we have decided to not recommend Hands to use this kind of strategy.

Our conclusion is that in connection to the implementation of the system, all users should go through a fundamental course of the system, organized by Hands. However, if the customers do not want to finance a course, there should be a small and simple manual distributed to all users at any rate when implementing the system.

In chapter five, we presented the answers from the question asked to the buyers, whether they have visited the website or not. From the answers, we have concluded that the customers have no need in visiting the website. The theory\(^\text{21}\) claims that there are many advantages for a company having a website. This is however, something that we have not seen in this investigation. This fact means that since the customers do not use the website, Hands does not only have to develop the services, it also has to make the customers begin to use the website. The current website is presented in figure 24. We also believe that a new post has to be appointed for customer contact if the service is developed, and it is not certain that it is worth the cost this investment will involve.

From the theory, we concluded that it is not sufficient to market the products on the Internet only. We believe that it is easier for companies, which sell physical products as hard discs and music CDs to concentrate their marketing on the Internet. To use the Internet as the only communication channel would not be sufficient, as the products that Hands sells is far too big investment for the customer. Because of this fact we do not think that the customers decide to buy the product when visiting the website. On the other hand, the website may serve as a first contact with the product and make the customer aware of the product. It can also function as a place where the customers can be updated to new products.

\(^{20}\) See chapter 2.1.5 (Chaston, 2001)

\(^{21}\) See chapter 2.1.4
7.2 Recommendations

As far as we have seen during this investigation, we do not recommend Hands to invest in developing a bigger communication strategy on the Internet. To increase the frequency of the customers’ visits on the web site, the company can provide services on the Internet that are impossible to do on the website today. For example:

- Enable the customers to present ideas of how to improve the system or broaden the possibilities. This may increase the contact between the customer and the company. The customer will be more eager to give feedback to the system.
- Put simple services on the web, which are only available by telephone or e-mail today. This could make it easier for the customers to use the services, and in the same time increase the traffic on the website. However, the services used today should not be excluded, as it is important that the customers feel that they can choose how to use the services themselves. It is furthermore important to make the Internet service more simple than the others are, in order to make the users prefer this service above the other alternative services. In correlation to this service, it could be more information about the products presented on the website.
We believe that the website should not primarily be used as a communication tool to find new customers. Instead, it should be used to maintain and strengthen the relationships with current users. Below, two examples are presented how this can be carried out:

- Hands can establish a service, which the customers can use to inform the company about their complaints. We think that the customers will feel more important to Hands thanks to this service and it would help Hands to prevent bad will since the customers can direct their complaints towards a specific target.
- There should also be a service that provides support for the users with information about the most used functions in the system for example a ptf-file with an easy understandable manual.

There is, however, not impossible that new customers visit the website. In these cases it is imperative to have accurate information regarding the system. First of all, there should be more precise information about who to contact if the customers want more information. Today, there are only names and telephone numbers to persons who are responsible for very comprehensive areas. We think that the customers would feel more willing for a more close relation if the first contact is more personal than today.

We also recommend the company to add more information about the products on the website. The current customers may become more likely to extend their systems with more features if they can incorporate all advantages of the products they already use. If Hands presents its new product developments on the website, the customers are able to be aware the updates continuously.

Since we do not think that a developed Internet based communication strategy is the best option for marketing of the system, we present some other options below:

- Hands should be present at trade fairs, which potential customers may visit. Since the product is a big investment it may require more detailed information then is available at the website. Hands may have to have deeper discussions with the customers that are difficult to conduct through the website.
- The company should also advertise itself in magazines read by certain professionals, for example Chef, NyTeknik, and Computer Sweden. These magazines may have a higher credibility than ordinary papers and it is more possible that potential customers read these magazines.
- Hands can, additionally, sponsor itself on the Internet. Then its brands would appear on certain websites and may make potential customers aware of the company. However, we do not recommend Hands to use ordinary banners due to the theory in chapter 2.1.5, which states that people are increasingly unlikely to click on banner advertisements as they become more experienced in using the Internet.
8. Further Research

During our work with this thesis, we have experienced other influencing issues that affect the users’ opinion about the system than the issues we intended to investigate. However, due to the limited time we have not been able to conduct any careful investigation, and hence, we present these issues as proposals for further research, which are presented below.

1. In order to make more certain conclusions regarding our conclusion that fundamental courses organized by Hands AB are the best introduction for the users. Due to the lack of respondents that had participated in such courses we could not make any certain conclusions.

2. We have in our analysis seen that female users in the age around 50 years have a more negative view of the system overall than the other users. This may be an indication that the developers have taken very little consideration of the big group of female users in an age of approximately 50 years that still works at many companies, but who are not very familiar with computers. However, we feel that we have too little support in our material to be able to make secure conclusions regarding this issue. Instead, we suggest further research regarding how the users’ age and gender can affect the users’ satisfaction with the system.

3. Our last proposal on further research is to investigate how the participation is affected by an implementation of this system. During our research, we discerned positive effective, but due to the time limit, we were unable to investigate this issue further.
9. References

**Articles and Reports**


**Literature**


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Appendix A

Interview Questions to the Seldom Users

Användarprofil

- Ålder?
- Vilken utbildning har du?
- Har du någon tidigare erfarenhet? Vad?
- Hur länge har du varit anställd på företaget?
- Vilka är dina arbetsuppgifter?
- Hur ser arbetsrutinerna ut?
- Hur många är ni som samarbetar dagligen?
- Hur väl anser du att du kan ditt arbete?
- Hur mycket arbetar du med systemet?
- Har du gått någon speciell datakurs?
- Hur länge har du använt dator?
- Hur många timmar i veckan använder du dator?

Delaktighet

- Har du hört talats om Hands?
- Känner du dig mer delaktig nu sen ni införde systemet?

Systemet

- Hur fick du höra om systemet? Första kontakt?
- Hur lång tid tog det att lära sig systemet?
- Vad är ditt helhetsintryck av systemet?
- Vad hade du för förväntningar?
- Hur har det mött dina förväntningar?
- Hade du läst något om systemet innan du använde det första gången?
- Har du fått någon introduktion om hur systemet?
  - Om ja, är du nöjd?
  - Förstod du hur det används?
  - Om nej, hade det behövts en genomgång?
- Vilken roll spelar systemet för dig? Hur hjälper det dig?
- På vilket sätt har systemet förenklat ditt arbete?
- Har du varit i kontakt med något annat beslutsstödjande system?
- Får du ut information när du behöver den eller är du i behov av någon annan användare?
- Vad anser du om: Skala 1-5
  - Utseende
  - Begriplighet
  - Lättförståelighet
- Har du något förslag till förbättring av systemet?
- Vilka brister anser du systemet har?
Användargränssnitt
- Hur upplever du menyerna i systemet?
- Vad anser du om gränssnittets estetik?
- Tycker du att det är svårt att lära sig systemet? Om ja Varför?
- Vad (om något) får dig frustrerad?

Användbarhet
- Hur/på vilket sätt anser du att systemet hjälper dig att vara mer produktiv i ditt arbete?
- Hur bra tycker du att systemet uppfyller dina behov?
- Anser du att systemet motiverar dig i ditt arbete?
- Markera de alternativ som du anser stämmer in på systemet.
  - Roligt
  - Tillfredsställande
  - Belönande
  - Kreativt stöttande
  - Hjälpsamt
  - Underhållande
  - Behagligt
- Markera de alternativ som du anser stämmer in på systemet.
  - Effective to use
  - Säkert att använda
  - Nyttigt
  - Lätt att lära sig
  - Lätt att komma ihåg hur det används

- Vad om något tycker du systemet saknar som gjorde att du inte valde alternativen ovan?

Användarvänlighet
Vad anser du om systemets användarvänlighet, d.v.s. åtkomligheten, den mentala supporten, individualiseringen och hjälp resurser.

- Vad anser du om åtkomligheten dvs. att du känner att du har tillgång till de resurser du behöver för att kunna utföra ditt arbete?
- Vad anser du om den mentala supporten dvs. systemets anpassningsförmåga efter ditt tankesätt?
- Vad anser du om individualiseringen dvs. dina möjligheter att anpassa systemet efter dina behov?
- Hur stor användning har du av hjälp resurser dvs. medarbetare och andra personer som kan hjälpa dig?
Interview Questions to the Buyers

Webbsidan

• Har du besökt hemsidan?
• Vad tycker du om presentationen av informationen? Tyckte du att det var svårt att hitta aktuell information? Hittade du den information du sökte?
• Vad anser du om informationsmassan? Är det tillräckligt, relevant osv?
• Hur ambitiöst anser du att företaget är i sin presentation av systemet?
• Hur reagerar du som kund på designen av webbsidan?
• Finns det nåt särskilt som är bra/dåligt med hemsidan?
• Var det något som inte fungerade?