LULEÅ UNIVERSITY OF TECHNOLOGY

2004:153 SHU

BACHELOR'S THESIS

The Internet's Impact on the Industrial Buying Process

A Case Study of Sandvik MT

CAROLINE JONSSON
SOPHIA KEDIDI

Social Science and Business Administration Programmes

INTERNATIONAL BUSINESS AND ECONOMICS PROGRAMME

Department of Business Administration and Social Sciences
Division of Industrial Marketing and e-Commerce
Supervisor: Manucher Farhang

2004:153 SHU • ISSN: 1404 – 5508 • ISRN: LTU - SHU - EX - - 04/153 - - SE

Acknowledgements

This thesis was written during a period of ten weeks in the spring 2004. During this time several people have supported and encouraged us in our work.

We would like to start by thanking our supervisor, Manucher Farhang for believing in our ability to successfully conduct this research. He is a man with a large portion of humor and has given us our self-esteem back at times when it was low.

The interviewees, Anders Persson and Anders Elletoft, at Sandvik have given us invaluable information during this period. We appreciate the warm welcome and the tour of the facilities.

Finally we would like to thank each other for putting up with one another.

Luleå 2nd of June 2004

Sophia Kedidi

Caroline Jonsson

Abstract

IBB has been considerably changing during the last few decades, and one reason for this is the use of information technology (IT). Through the expansion of IT, the Internet has been developed, and is today an important part of industrial firms' buying process. By performing a descriptive and partly exploratory study, the aim of this thesis could be fulfilled. This thesis has investigated, through two focused face-to-face interviews, how the Internet has impacted on the buying process in industrial firms. It has also described that the Internet has affected the search for information about suppliers the most; and not so much regarding order placements. Furthermore this thesis has shown that e-mail is a frequently used tool for purchasers when communicating with suppliers.

Sammanfattning

Det industriella köpbeteendet har förändrats avsevärt under de senaste årtiondena och en anledning till detta är utvecklingen av informationsteknologin (IT). Tack vare detta framåtskridande har Internet tillkommit och är idag en väsentlig del av köpprocessen i industriella företag. Målet med denna uppsats var att undersöka hur Internet har påverkat den industriella köpprocessen, och detta har uppnåtts genom att utföra en beskrivande och till viss del utforskande studie. Via två delvis strukturerade enskilda intervjuer, med inköpare på deras arbetsplats, har vi samlat relevant data för att uppnå vårt syfte. De slutsatser som dragits förklarar att Internet haft en väldigt stark påverkan på köpprocessen när det gäller informationssökning. Däremot har Internet nästan inte haft någon påverkan alls angående orderläggning. Vidare har denna uppsats visat att e-mail ofta används när inköpare och leverantörer kommunicerar med varandra.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

In this chapter an introduction of the research topic will be presented. The chapter will start with a background on industrial buying behavior and the Internet and continues with the problem discussion. This will lead to our research purpose and research questions. Finally demarcations and an outline of this thesis will be provided.

1.1 Industrial Buying Behavior

All firms, whether making products or delivering services, sell something and are therefore dependent in one way or another on their customers. The satisfaction of customers' needs and wants is, according to Brassington and Pettitt (2000), the essence of marketing philosophy. To investigate how the buying behavior of firms work is always needed, since it is an ever-changing process influenced by many forces in its surroundings. Industrial firms tend to have a smaller number of customers, which means that they are easier to identify than customers in consumer markets. Buying behavior in this study will focus on the industrial buying behavior (hereafter IBB)[1]. IBB is a complex process over time that involves interaction between several persons, both within and outside an organization (Webster & Wind, 1996). Many have researched this issue and there is a general agreement that the major components of industrial buying behavior are: the buying process; the buying center; and factors affecting the buying process and the buying center (Baptista, 2001). Figure 1.1 shows an overview of the three major components of the IBB and how they affect each other. When looking at the buying organization it is clear that it is affected by a number of forces, and Webster and Wind (1996) have identified four different forces, namely individual, social, organizational, and environmental. Furthermore there are several factors in the buying organization that influence the buying center in different ways such as structure, technology and people (Ibid.). The buying center includes all members that are involved in the buying process and these members' relationships towards each other (Ibid.). Activities that are carried out by the buying center can be divided into different phases and should, according to Wind and Thomas (1980), not be seen as a single event.

IBB has been considerably changing since the 1970's, mainly due to four reasons: global competitiveness; emergence of total quality management (TQM) philosophy; industry restructuring and finally use of Information Technology (hereafter IT) (Sheth, 1996). Therefore, it is increasingly important for industrial marketers to recognize their customers and define their needs, to be able to achieve sales success (Goh, Lau & Phua, 1999). According to Robinson, Faris and Wind (1967) IBB can best be looked upon by studying the problem-solving buying process.

[1] Sometimes referred to as Organizational Buying Behavior, OBB.

Tanner (1996) adds that this is something a marketer must understand in order to fully appreciate the relationship process. The buying process is hence what this study will concentrate on.

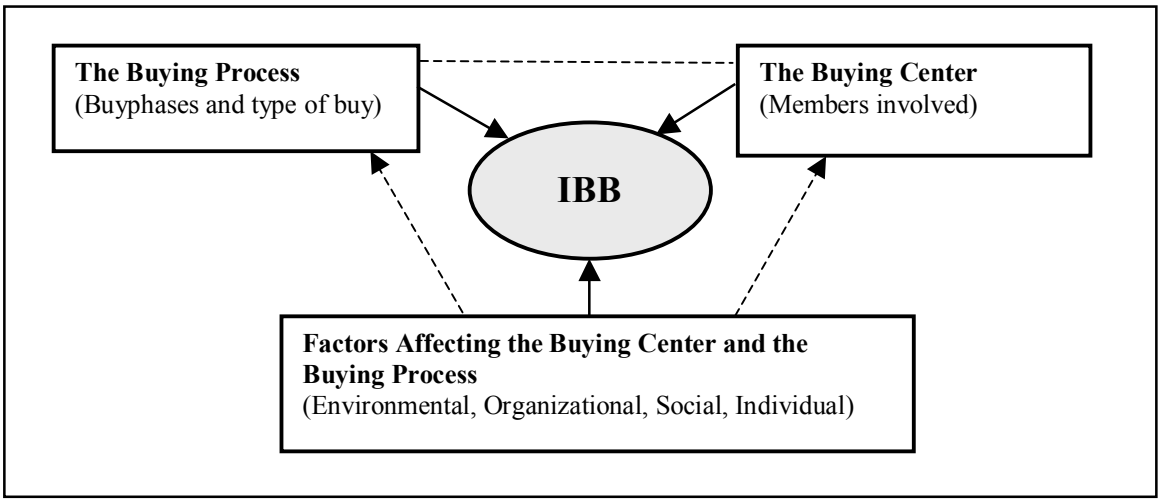


Figure 1.1: Major Components of IBB

SOURCE: Authors' construction based on Webster & Wind, 1996

Gopalkrisham (1996) explains that a purchase's importance serve as a crucial link between the procurement decision and organizational strategy. The industrial buying process has been researched extensively and studies by Webster and Wind (1996) and Robinson *et al.* (1967) are two of the pioneers. One reason for the popularity to study this process is that the importance of a purchase and the uncertainty of its outcome are of great strategic concern for the buying firm. Many of those who have studied the buying process use or refer to the buygrid-framework that Robinson *et al.* developed in 1967. This framework explains how firms make decisions by dividing the decision making process into two parts: the buyphases and the buyclasses (Ibid.). The buyphases explains how a purchase passes through eight different phases, starting with recognition of a need, continuing through search for and selection of supplier, ending with performance feedback and evaluation (Ibid.). There are three different buyclasses that can be used when discussing each of the eight phases: new task; modified rebuy; and straight rebuy (Ibid.). This framework has, according to Baptista (2001), proven to be a very useful analytical tool that is still useful today, almost 40 years later. However times are changing and since this framework was developed, in 1967, new technology has probably had an impact on the buying process.

1.1.1 Impact of Technology on IBB

All modern firms are dependent on technology and need to be updated with the latest equipment in order to stay competitive. Furthermore technology sets the premises for what is bought and what an industry's buying structure looks like. Electronic media is one of many technological innovations that are playing an increasingly important role in

the global business between industrial firms (Honeycutt, Flaherty & Benassi, 1998). Since technological innovations are accelerating the globalization process rapidly (Wild, Wild & Han, 2003), it is of increasing importance for firms to find how they can benefit from using this new technology. A good example of new technology is the Internet, which has grown exponentially during the last decades and its growth is unmatched in the history of technology (Boyle & Alwitt, 1999).

The Internet has been defined as "a series of connected computers that can be accessed by other parties, rather like a telephone system"(Brassington & Pettitt, 2000). The Internet came significantly forward during the 1990's (Ibid.), after the National Science Foundation allowed commercial access to Internet in 1992 (Zinkhan, 2002). Current trends show that the influence of the Internet will continue to grow in the future, as businesses collaborate further with suppliers and partners (Rahman, 2003). The reason to why the Internet has been so successful is, according to Svensson (2003) the World Wide Web (hereafter the Web), since it has given many people all over the world access to information. According to Zinkhan (2002), a key feature of the Internet is its potential to communicate with a global market place. Furthermore the Internet reduces the importance of location and widens the geographic market. Through the Internet firms get access to an infrastructure that can reduce costs and increase efficiency (Lightfoot & Harris, 2003). Porter (2001) points out that Internet technology provides better opportunities for companies to establish distinctive strategic positioning than did previous generations of IT. He continues that gaining such a competitive advantage does not require a radical new approach to business; it requires building on the proven principles of effective existing strategy (Ibid.). The essence of this is that the Internet should be a part of, and a tool for, already existing components in the buying process; it should not be a separate strategy.

Aaker (1992) believes that access to such an effective and efficient distribution channel, as the Internet, is often a key success factor for a firm. In fact, Internet-centered business models have proven to be an effective tool for conducting business-to-business (hereafter B2B) (Kandampully, 2003). Furthermore by applying the Internet on the buying process many firms have during the last decades streamlined their buying process (Lancioni, Smith & Oliva, 2000). The use of B2B international Internet marketing (hereafter B2B IIM) has emerged and increased rapidly during the last decades; and this has affected the dynamics of traditional processes in B2B (Eid, Trueman & Ahmed, 2002). Firms are restructuring and establishing networks in an attempt to adapt and use this new technology to their advantage (Woodside, Gupta & Cadeaux, 2004). The Internet provides an outstandingly efficient means of communication, and therefore the use of it obviously has implications for the environment in which organizations interact (Boyle & Alwitt, 1999). It has actually been said that digital technologies, such as the Internet, are the nervous system of the new economy (McCormack & Kasper, 2002) and the revolution of this technology is, according to Brassington and Pettitt (2000), far from over yet.

1.2 Problem Discussion

IBB involves a number of components, but as Robinson *et al.* have noted, IBB can best be looked upon by studying the buying process. According to Sheth (1996) a major research trend that has evolved from the buygrid-framework is the focus on supply chain partnering and the use of IT. Many authors have during to last decades seen some changes in the buying process opposed to what was described by Robinson et al. For example Mannerstråle and Pons (1999) discussed these changes, and investigated if they were due to the impact of the Internet. They found that other factors than the use of Internet have caused these changes. However changes in technology are occurring rapidly today and the Internet has developed further during the five years that have past since their study was made.

There are several ways for a firm to make use of the Internet. Through a variety of applications on the Internet buyers and sellers can strengthen their position, and thereby they will be in a situation where they can negotiate better terms. Results from a study by Patterson and Dawes (1999) show that in order to reduce uncertainties in purchase decisions, buyers seek additional information, among other things, through involving more/new suppliers. Internet can serve as a very powerful tool for this purpose, as well as to gain competitive advantage, if accurately implemented into the firm's strategy (Porter, 2001). By incorporating the Internet into its business strategy a firm can eradicate many barriers to entry such as marketing costs, distribution, and shelf-space acquisition (Carlton, Ellsworth & Ellsworth, and Hoffman & Novak as referred to in Honeycutt *et al.*, 1998). Even though it can be hard to measure where the Internet has impacted the most in the buying process of industrial firms, Berthon, Lane, Pitt & Watson, (1998) believes that the Internet is most effective in the forth phase of the buying process, search for suppliers. Furthermore, Samli, Wills and Herbig (1997) suggest that better international communications generated by the Internet will create greater satisfaction between firms and their customers.

Many researchers have come to the conclusion that if the Internet is used in the right way, it provides a firm with a competitive advantage, mainly due to reduction in cost and time. However, empirical research to support this view is still limited. Martin and Hafer (2002) state that empirical research on the Internets impact on the buying behavior is difficult to find due to the fact that it is a fairly new phenomenon. As we feel some time has past since the Internet has been introduced in many companies we are motivated to conduct this study, and investigate the impact of technology on IBB.

1.3 Purpose and Research Questions

The purpose of this thesis is *to gain an understanding of the impact of the Internet on the buying process in industrial firms.*

To fulfill this purpose three research questions (RQ) have been stated as follows:

RQ 1: How can the impact of the Internet on different stages of the buying process be described?

RQ 2: How can the stage of the buying process most/least affected by introduction of the Internet be described?

RQ 3: How can the impact of the Internet on communication with suppliers in the buying process be described?

1.4 Delimitations

Due to time restrictions we have not included all aspects there are concerning IBB. This choice means that we will only learn about the impacts of the Internet on the buying process when it comes to the eight buyphases. We will neither consider the buying center and the members involved, nor the factors affecting the buying center and the buying process. Furthermore, we will only look at the affects of the Internet on the buying process from buyers' perspective. Finally, we have chosen to use only the Robinson *et al.* (1967) framework concerning the discussion about the buying process

1.5 Thesis Outline

This thesis consists of six different chapters. This first chapter introduces the reader to the subject and gives an understanding of what will be researched. Then the literature review will present findings on the subject from several different authors. In the third chapter, the method used for this research will be outlined. This will be followed by the case presentation in chapter four and the analysis of this data in chapter five. Finally the conclusions drawn and implications from this research will be included in the last chapter of this thesis.

Chapter 2: Literature Review

In this chapter an overview of previous literature within the research area will be presented. The first part describes the buygrid-framework in detail and the second part will discuss the impact of the Internet on the buying process and the communication between firms. These two sections will thereafter be used as a base for the frame of reference, which will guide our data collection.

2.1 Introduction

The impact of the Internet on the different stages of the buying process will be discussed in this thesis. The buygrid-framework serves as a foundation for this study and therefore it will be presented thoroughly. The literature review does not discuss separately the impact of the Internet on each of these phases, as it has been hard to find literature discussing all phases of the buying process. Much of the literature only discusses one or a few of the buyphases and therefore parts of several different sources have been brought up in order to cover all the phases as good as possible. Due to the lack of literature on this subject, this thesis will include more general data on the issue. The phases on which the Internet has impacted the most/least (RQ2), and the impact of the Internet on communication between suppliers and purchasers (RQ3) are parts of the discussion concerning the overall impact of the Internet on the buying process. As a result of this the literature review is not subdivided into sections corresponding to each research question, but rather into one section explaining the buying process; and one discussing the impact of the Internet on the buying process.

2.2 The Buying Process

When Robinson *et al.* presented their buygrid-framework in 1967 they laid a foundation for many future researchers. This framework has since then been commonly referred to in IBB literature, e.g. Moriarty, 1983 and Ghingold, 1986 referred to in Bayle, 2003, Webster & Wind, 1996;and Zinkhan, 2002. The purpose with the framework was to enable managers to analyze the major phases of the buying decision process (Robinson *et al.,* 1967). Three different premises form the foundation on which the framework is based. First of all Robinson *et al.* (1967) stated that purchasing is a sequence of activities that varies in complexity and that buying can be described as a dynamic decision process; involving different functional areas and hierarchical levels within an organization. Secondly, they pointed out that the central unit of analysis is the buying situation (or buyclass); and this situation develops as an individual recognizes the existence of a need or a problem. Thirdly they define the procurement process as the chain of activities that must be performed in the resolution of a buying situation. From these three premises the buygrid-framework was developed; incorporating three buyclasses and eight buyphases, as shown in table 2.1. The eight buyphases can occur simultaneously, but the tendency is towards a sequence, starting at one proceeding towards eight (Ibid.). A closer presentation of each of the eight stages will be provided in section 2.2.1.

Table 2.1: The Buygrid-Framework.

Buyphases \ Buyclasses	New Task	Modified Rebuy	Straight Rebuy
1. Recognition of a need			
2. Determination of solution characteristics			
3. Description of solution characteristics			
4. Search for suppliers			
5. Acquisition and analysis of proposals			
6. Evaluation of proposals and selection of supplier(s)			
7. Selection of an order routine			
8. Performance feedback and evaluation			

SOURCE: Adapted from Robinson *et al*. (1967)

2.2.1 Buyphases

Buyphase 1: Recognition of a need
This phase consists of two parts: the recognition of a problem and the awareness that the solution may take the form of filling certain needs through a purchase. The recognition of a problem can derive from numerous external or internal directions such as customer needs and requirements, unsatisfactory performance of existing equipment, sellers marketing efforts or low self-inventory (Robinson *et al.,* 1967). Before the recognition of a need can have an impact on procurement it has to be made explicit, and someone with authority must act in order to start the process (Ibid.). The second part of this phase is an awareness of the direction where the best solution to the problem is most likely to be (Ibid.).

Buyphase 2: Determination of solution characteristics
Decisions at this phase, concerning the general problem solution, are usually made within the using department or group (Robinson *et al.,* 1967). Those involved need to agree on, in a specific and narrow way, how the problem can be solved in order to enable more specific analysis (Ibid.). Hence, they need to decide, what application requirements that must be met, and the desired type and quantity of the good or service. In some cases this phase proceeds simultaneously with later phases (Ibid.).

Buyphase 3: Description of solution characteristics
This phase includes a transformation of the need into a particular solution that is detailed and precise so that it can be communicated to others inside and outside the organization (Robinson *et al*., 1967). At this phase the buyer might work closely with a supplier, especially if the supplier was causing the recognition of the need at phase one (Ibid.).

Buyphase 4: Search for suppliers
Here the organization shifts from searching for alternative solutions into searching for potential sources of supply, leading to a qualification of suppliers (Robinson *et al.,* 1967). Since the purchasing process often is complex, it may take several months before a firm finally selects a supplier (Patterson & Dawes, 1999*)*. It is common for firms to use a two-phase search process (Robinson *et al,* 1967). First, a buyer narrows the total number of possible suppliers down to a list of suppliers that meet the organizations' demands (Ibid.). Secondly, the buyer gathers more detailed information on these suppliers and based on this information they select a few of them that are the most appropriate for meeting the objectives (Ibid.). The criterions for qualification varies with the buying organization, the specific situation and the buying influences involved (Ibid.). No matter how suppliers are qualified, the result of this phase is a decision of which suppliers will be considered as potential vendors (Ibid.).

Buyphase 5: Acquisition and analysis of proposals
After suppliers have been examined the buyer request offers (Patterson & Dawes, 1999). This may in cases of standardized procurements involve only checking a catalog or telephoning a supplier to attain information (Robinson *et al.,* 1967). On the other hand, more complex situations may involve a series of counter proposals and new offers, extending over a period of time (Ibid.). In the former situations, were little information is needed phases four and five often take place simultaneously. In the latter situations, where more information is needed, these phases are separate (Ibid.).

Buyphase 6: Evaluation of proposals and selection of supplier(s)
At this stage, offers and proposals from potential vendors are weighed and evaluated, and after approving one or several offers and rejecting the others, a supplier is selected (Robinson *et al*., 1967). In the latter part of this phase, there might be further negotiations with the supplier(s) concerning the prices, terms of deliveries etc. (Ibid.).

Buyphase 7: Selection of an order routine
This phase begins when an order is placed. However, the procurement process is not completed until the item is actually delivered and accepted for use. The order routine that guides and scrutinizes the remaining activities includes both internal and external aspects (Robinson *et al*., 1967). Furthermore, internal activities of two types are involved: status reporting and inventory management (Ibid.). External activities include preparation of the purchase order, follow-up activities such as trouble shooting and inspection, and acceptance of invoice (Ibid.). By monitoring the vendor's performance the buyer can get relevant feedback for the qualification of suppliers in future procurements (Ibid.).

Buyphase 8: Performance feedback and evaluation
Continuing on the previous phase, this phase includes a more thorough evaluation, but does not occur until after the purchased items are actually in use (Robinson *et al*., 1967). This evaluation seeks to find out how well the product solved the problem and how well the suppliers performed (Ibid.). The information gained from the evaluation is necessary for an efficient elucidation of future procurement problems (Ibid.).

Each of the eight stages discussed above could be assessed in accordance with the type of purchase, or buyclass, that the situation provides. It may look very different if the purchase is a new product from a new supplier or if it is a rebuy from an already existing supplier. Hence, Robinson *et al*., (1967) have divided these situations into three different buyclasses: new task, modified rebuy, and straight rebuy.

2.2.2 Buyclasses

New task
This is when a new problem arises and little or no past experience exists, therefore a lot of information is needed (Robinson *et al*., 1967). Furthermore it can be assumed that many different individuals are involved, due to the newness of the problem. At this stage reputation is considered more important than price (www.mysite.freeserve.com). The buyer must seek alternatives for solving the problem and alternative suppliers (Robinson *et al*., 1967). This new task does not occur very often, however it is not less important since it sets the platform for future, more routine purchases (Ibid.).

Modified rebuy
A need for modification arises through changes in the internal and/or external environment (www.mysite.freeserve.com). Changes in the external environment leading to a need can be for example emergencies or efforts from marketers. Marketers who are not current suppliers can try to switch buyers straight rebuys into modified rebuys (Robinson *et al*., 1967). Internally raised needs can be new buying influences, potential cost reductions, potential quality improvements or service benefits (Robinson *et al*., 1967). Before the decision can be made supplementary information is collected and in addition to this the buyer usually makes the decision with other members of the buying center (www.mysite.freeserve.com).

Straight rebuy
The straight rebuy is the most common situation in industrial purchasing (Robinson *et al*., 1967). Straight rebuy contains routine transactions only with listed suppliers (www.mysite.freeserve.com). Buyers have relevant experience and therefore little new information is needed (Robinson *et al*., 1967); hence personal commitment is important as the buyer often makes decisions autonomously (www.mysite.freeserve.com).

2.2.3 Changes of the Buygrid-Framework

Since the buygrid-framework is quite old, from 1967, one can question whether the buying process can still be accurately described with the use of the buygrid-framework or if changes have occurred. Some researchers (Anderson et al. 1987, Bunn, 1993, Johnston, 1981, McQuiston, 1989, referred to in Gopalkrisham, 1996) have for example proposed that considering "purchase importance" as an additional dimension of the buying situation can extend the buygrid-framework. Mannerstråle and Pons (1999) looked into the Internets impact on the buying process and they did not find any changes that could be derived from the Internet. Nevertheless they believe that the seventh phase, selection of an order routine, will diminish in the future if orders start to be made on the Web. Even though Mannerstråle and Pons (1999) did not find any changes in the buying

process due to the Internet, they did find some benefits that firms have gained from the use of this new technology. Examples of such benefits are cost reduction and product improvement due to the possibility of including more suppliers in the search process (Ibid.).

2.3 The Impact of the Internet on IBB

There has been a major focus on the Internet the last decade and firms are trying to connect through this system more and more. Electronic B2B exchange can occur between business trading partners and between different units in a firm (Lim & Wen, 2002). Zinkhan (2002) defines electronic exchange as "using computer networks to achieve organizational goals", and this includes how firms can pursue their goals and objectives via the Internet. Each firm will have their own way of integrating it into their business. However, most firms do need to use it, in one way or another, due to its many benefits. Lim and Wen (2002) have divided these benefits into three different types: strategic, operational and opportunity benefits. Figure 2.1 shows a summary of these benefits. The emphasis of these will be different in different organization due to how the electronic B2B has been implemented (Lim & Wen, 2002).

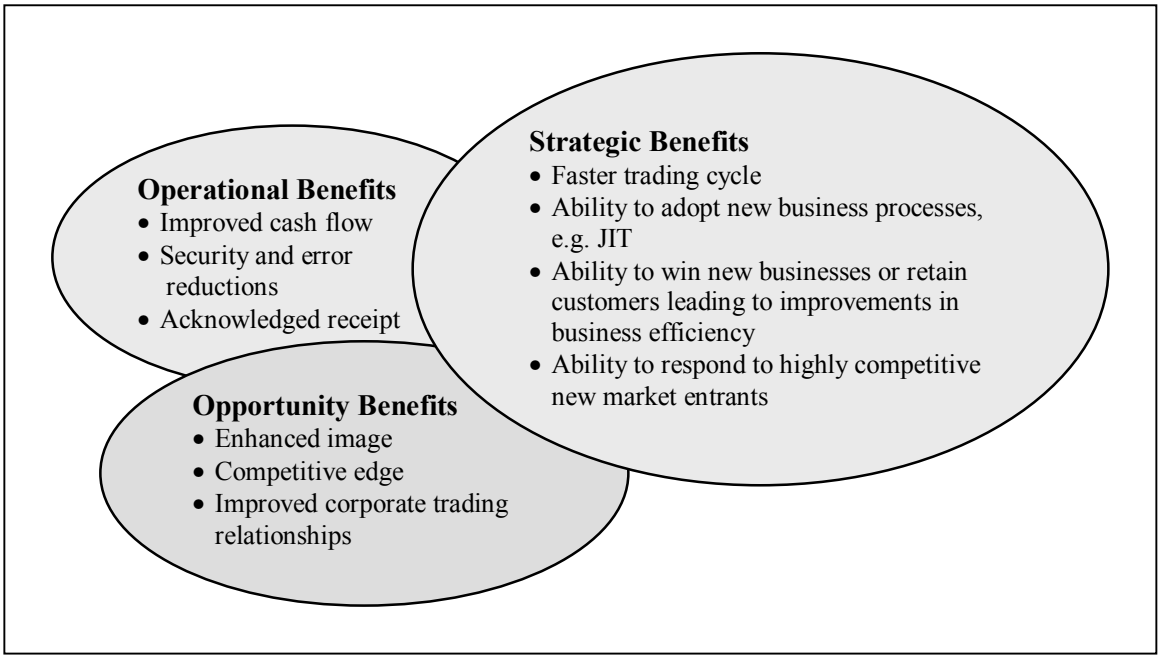


Figure 2.1: Benefits Resulting from Electronic B2B Exchange

SOURCE: Authors' construction summarized from Lim & Wen, 2002

These benefits may come to work as success factors in a firm, and in a study by Eid, Trueman and Ahmed (2002) twenty-one critical factors that have a direct impact on successful implementation of the B2B IIM have been collected. These 21 factors have been summarized from different authors, such as Porter (2001); Karayanni (2000) and

Quelch & Klein (1996), and then classified by Eid *et al.,* (2002) into five categories; shown in table 2.2.

Table 2.2: Critical Success Factors for Implementation of B2B IIM

Categories	Marketing strategy	Website	Global	Internal	External
Related Factors	Top management support and commitment	Website design	Understanding foreign marketing environment	Technological infrastructure	Trust
	Setting strategic goals		Resources required for working globally		Security
	Integrating the Internet with marketing strategy	Effective marketing of the site	Multilanguage Website	Internal culture	Successful relationship
	Collaboration		Culture considerations	Sales force role	Internet affordable access
	Deciding on who are the potential audiences		International delivery availability	Training program	Customer acceptance

SOURCE: Authors' construction summarized from Eid *et al.,* (2002)

How personnel perceive the attributes is important since it will determine how to best make use of them and whether the implementation will be successful or not (Eid *et al.,* 2002). All factors shown in table 2.2 need to be taken into consideration for a successful implementation of the Internet (Ibid.). If not all of these factors are considered, some of them, e.g. trust and security might turn into having negative effects on a firm (Ibid.).

Kandampully (2003) describes the Internet as a network of networks and presents a summary of the uses of the Internet. This summary presents five issues that are considered to be most efficient and makes the Internet attractive, as shown below:

- Reducing search costs by facilitating comparison of price, products and services
- Reducing lead times
- Improving production and supply capability
- Managing demand
- Improving personalization & customization of offerings

It is obvious that both cost- and time savings are often highly prioritized issues within a firm, and the possibility of gain in these may very well attract firms to invest in computers and educate the personnel on how to use them and the Internet in the most efficient way.

2.3.1 Benefits from Using the Internet in the Buying Process

In 2003 Rahman did a survey on how Indian companies use the Internet in supply chain management. This survey showed that eighty percent of the respondents use the Internet in one way or another. One of the two most popular uses was, according to Rahman (2003), in purchasing/procurement systems (approximately fifty percent usage); the least popular use was in production scheduling (only seven percent used). The most frequent use of the Internet regarding purchasing applications is when communicating with vendors, and the least use concerns warranty issues and information regarding damaged products (Ibid.). Furthermore Rahman found that forty-five percent of the firms use the Internet in the actual order process. Within order processing; order status and placement is definitely the most popular application (fifty-two percent) while obtaining prices from suppliers seems to be of less importance (nineteen percent) (Ibid.). By using the Internet for order placement and order status firms can reduce costs of order processing heavily (Ibid.). Cost reduction is a significant motivation for firms that consider using the Internet. Since the Internet has given firms easier access to suppliers, the buyers search process has come to include more suppliers, and this should make prices more flexible, and moreover make it possible to change supplier often at a lower switching cost (Poirier & Bauer 2002 in Rahman 2003). According to Brassington and Pettitt (2000) a firm can reduce costs for sales, marketing and distribution with approximately a third by using the Internet.

Lim & Wen (2002) have discussed the major costs savings from using the Internet. Reductions of costs in data entry, which is automatically transferred when using the Internet, makes the usage of paper and postage costs diminish (Ibid.). They add that firms gain time, since electronic transfer often is much faster than the old fashioned way. Today documents are stored and retrieved electronically, making the personnel's work easier (Ibid.). Lim and Wen (2002) also bring forward the reduced costs and time used for communication, and they consider e-mail to have replaced a lot of the usage of telephones and faxes and therefore made the process smother.

It is obvious that firms may benefit from cost savings in many different ways, but there are also other positive effects from using the Internet that should be considered. Zinkhan (2002) believes that the ultimate goal for a firm is to provide quality service to the customer and through automation of some service aspects firms can manage their valuable time better. McCormack and Kasper (2002) furthermore propose that the use of Internet for connections with customers and suppliers can improve SCM performance. The contributions from their research project suggest how and for what purposes B2B supply chains are mainly using the Internet, namely: sharing data; exchanging e-mails; providing timely digital orders; and establishing a collaborative effort with their partner. Another finding of theirs was that the gathering of information on the Internet about both customers and suppliers was unexpectedly low; approximately 45 percent of the respondents never use the Internet for this reason (Ibid.). Furthermore the authors concluded that suppliers are the ones that benefit the most from ordering systems on the Internet. Therefore the suppliers are more concerned than the buyer how to use Internet to improve their relationships (Ibid.).

The Internet is a very efficient medium as a communication tool. Hunter, Kasouf, Celush and Curry (2004) have investigated how firms can satisfy the needs of industrial customers through the Internet. They have divided the different customer satisfactions into six different categories, and a summary of these is provided in table 2.3.

Table 2.3: Customer Satisfaction through Internet

Category	***Explanation***
• Streamlining the procurement process	*Due to cost reduction in paper handling and other time consuming purchasing transactions the procurement process can be streamlined*
• Connecting buyers and sellers	*Easier to connect and transact business with one another through the Internet*
• Coordinated supply chain management	*The Internet can speed up the exchange time for information*
• After-sales service	*This enables customers to update their own orders. Furthermore it provides online support*
• Sales and marketing efficiencies	*Through cheaper and faster access, Websites can serve as on-line channels for e.g. e-mail*
• Intraorganizational efficiencies in the selling organization	*This allows easier database constructions and can help develop customer relationship management (CRM)*

SOURCE: Authors' construction based on Hunter *et al.*, 2004

All these customer benefits depend on the different kinds of buying situations where diverse uses of the Internet are employed (Hunter *et al.,* 2004). Purchasing may look very different depending on the perceived risk. Whether it is very important that the purchase is not risky or that there is considerable risk that one make a bad choice, are risk factors that both affect every buying situation (Ibid.). Different products may be considered more or less risky. When purchasing a strategic product[2] the risk is essentially higher than for non-critical products (de Haan, de Groot, Loo & Ypenburg, 2003). Hence customers may be treated different depending on the type of product that is bought (Ibid.). Long-term relationships with a partner that are buying strategic products are more carefully managed (Ibid.). Therefore suppliers may be more concerned to invest in systems that will speed up the communication with these buyers than those buying low risk, non-critical, items (Ibid.).

Martin and Hafer (2002) have investigated, through looking at purchasing agents and purchasing departments, how purchasers perceive changes of the buying procedure due to the impact of the Internet. The study is of exploratory nature since empirical research is almost nonexistent (Ibid.). The results from the study shows to what extent Internet is used in business, and is presented in table 2.4.

[2] For a matrix showing different product categories see Appendix D

Table 2.4: Extent of Use of the Internet

Use of the Internet	Percent
Access to e-mail at work	91.0
Access to Internet at work	83.0
Less than one hour/week	27.0
Between 1-5 hours/week	44.0
When finding suppliers	61.0
Communicating with suppliers	58.0
Locating technical data	44.0
Make purchase	14.0
Companies that maintain a web page for purchasing divisions	33.0
Companies that will or might get a web page for purchasing divisions in the next 3-5 years	23.0
Procurement system with suppliers	11.0
Companies that probably will get a procurement system	38.5

SOURCE: Authors' construction summarized from Martin & Hafer (2002)

Table 2.4 shows that e-mail is frequently used in firms as almost all personnel have access to it, but that the Internet is not commonly used for procurement systems with suppliers. However almost forty percent of the participants believe that such a system will be developed in the future. The respondents consider the largest problem with the use of the Internet to be "lack of Internet knowledge" (Martin & Hafer, 2002). This suggests that a firm needs to invest in educational programs about the Internet in order to be able to gain as many benefits as possible from this new technology. The respondents furthermore believed that this would continue to be a problem in the future. However, most believed that the use of Internet saves time; especially since the Internet is accessible twenty-four hours a day and users do not need to adapt to different time zones.

2.3.2 The Effectiveness of the Web in the Buying Process

There are a number of different basic functions on the Internet. Eriksson and Wiedersheim-Paul (1999) points out the following: electronic mail; File Transfer Protocol; Newsgroups; Telnet; Gopher; the Web; IRC (chat) and Bulletin Board System. The real power of the Internet, according to early adopter visionaries, was in its potential to be a major sales channel for marketers (Silverstein, 1998). However the efficiency first shows when a computer is connected with others through networks (Svensson, 2003). It is due to the Web the Internet has become a global network open to almost anyone. Since the Web is such a well functional communication tool, where it is possible to combine sound, pictures, videos and texts, it is very useful for firms when they want to communicate with customers, suppliers and employees (Svensson, 2003).

One problem with the Web is how to make persons use it more actively; i.e. turn them from being passive watchers into become more interested and ultimately take action and become purchasers (Berthon *et al.*, 1998). As Robinson *et al.* pointed out already in 1967, the buyers' need is different in every phase of the buying process and hence the communication tasks of the marketer differ with the phases (Berthon *et al.*, 1998).
Berthon *et al.* (1998) recognize Robinson's *et al.* (1967) buygrid-framework and extend it to include the role of three different marketing communication tools when combining the

models as shown in figure 2.2. Berthon *et al.* (1998) have classified the relative effectiveness of the three different marketing communication tools at different phases of the buygrid framework as low, medium or high. Their classification suggests that a Website play a complementary role when it comes to both advertising and personal selling, helping the industrial marketer, and sometimes it can even be a preferred strategy.

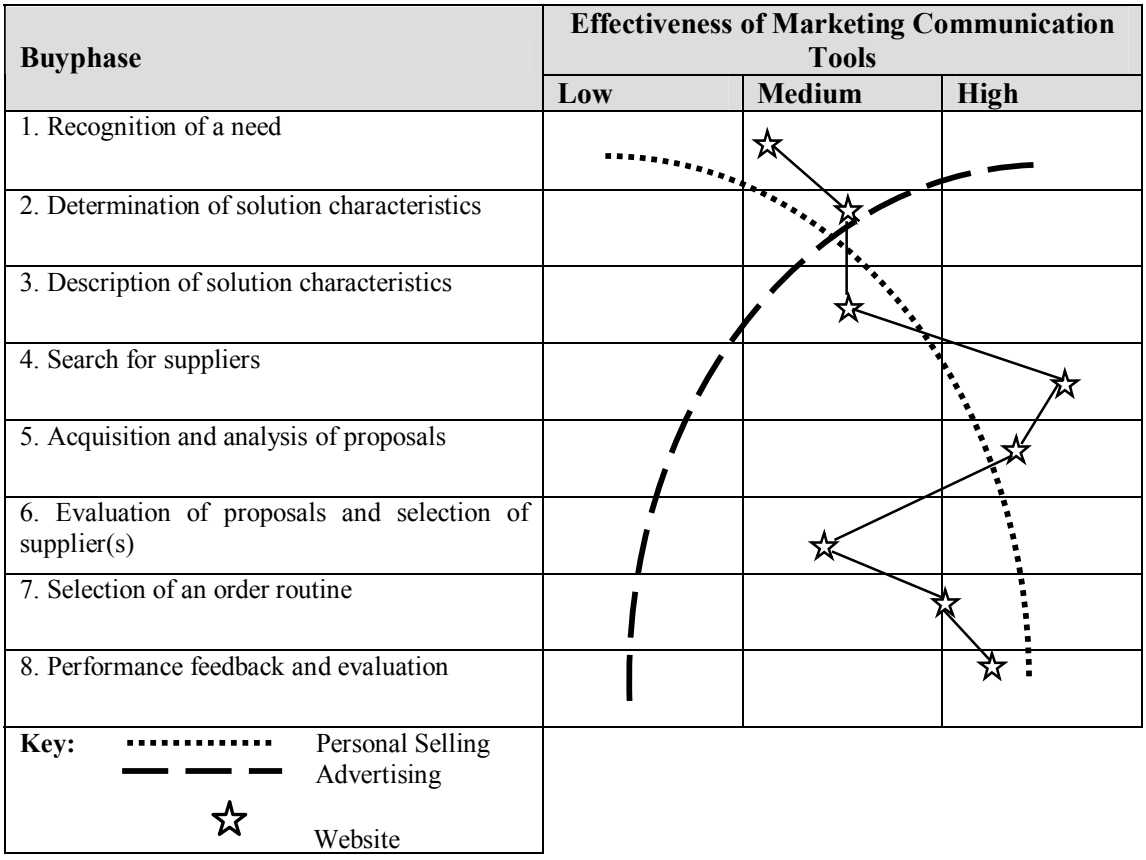


Figure 2.2: The Effectiveness of Marketing Communication Tools

SOURCE: Berthon *et al.* (1998)

Berthon *et al*. (1998) propose that the Web is a highly effective communication tool for phases four, five and eight; and the most effective in phase four. The implication of this is that buyers use the Internet and the Web mostly to search for potential suppliers and less in other phases of the buying process, and therefore, in accordance with what Brassington and Pettit (2000) said, the use of Websites is still evolving. When closing a deal face-to-face communication seems to be the most effective way of doing business. From figure 2.2 it can be understood that phase one (recognition of a need) is the phase where Websites are least effective as a communication tool. From the Web two applications that help fulfilling this communication desire has sprung namely the Intranet and the Extranet.

Extranet and Intranet

A firm has an interest in communicating with several different stakeholders such as: suppliers; competitors; business partners; governments; and employees (Kandampully 2003; Rahman 2003; Zinkhan, 2002). Network computer systems can enhance communication with all of these different groups (Zinkhan, 2002). Today many organizations have realized that computer technology have several applications other than the Internet and the use of it has expanded and serves today also as a tool for restricted networks, such as Intranet and Extranet (Ibid.). The topology of these three applications is briefly shown in table 2.5.

Table 2.5: Electronic Commerce Topologies

Topology	**Internet**	**Intranet**	**Extranet**
Extent	Global	Organizational	Business partnership
Focus	Stakeholder relationships	Employee information & communication	Communication with channel member or alliance partner

SOURCE: Watson *et al.* (2001) in Zinkhan (2002)

An Intranet is a smaller version of the Internet, with the exception that it requires private identifications and passwords, so that it is fenced-off from externals (www.trichys.com). Intranet consists of a number of computers within an organization that are linked together (Zinkhan, 2002). Through Intranet people can communicate and cooperate with one another. Thereby they can collect information from other divisions regarding both individuals and items (Quelch & Klein, 1996). It also enables managers to use internal marketing and to smoothly share information within a firm. A key advantage and requirement of the Intranet is that it creates a secure environment, enabling fast message transfer (Zinkhan, 2002). But according to Quelch and Klein (1996) the greatest impact on businesses from the Intranet is when it comes to enable real-time communication, since information can be spread faster between divisions, especially globally. Lancioni, Smith and Oliva (2000) show that seventy percent of the companies in their study were using the Intranet, and most of them for communicative reasons. An Extranet is an extension of the Intranet and has more or less the same functions (Zinkhan, 2002). However the Extranet also includes business partners within the value chain and supports the communication between firms through a secure network (www.trichys.com). On the other hand Zinkhan (2002) states that due to security issues, firms might hesitate to share information electronically. A delay in arrival of products can turn out to be very expensive for a manufacturer, and by using an Extranet firms will have a system enabling them to know when they really will get their products, and therefore do not have to put so much effort into finding this out (Angus, 1997). Thereby firms can cut communication costs and make the process smoother (Couretas, 1997). Through these applications, the Intranet and the Extranet, firms can communicate much faster and cheaper than with traditional means, internally and externally. Due to this effectiveness in communication it is predicted that these tools will soon be as common as telephones and e-mail are today (www.trichys.com).

2.4 Frame of Reference

Generally speaking most of the literature presented in the previous sections of this chapter are relevant for this study, but some are more specific than others for answering our research questions. Berthon *et al.* pointed out in 1998 that no serious attempts on identifying the role and performance of the Internet and the Web specifically had been done. Four years later Martin and Hafer did an empirical research on Internet's impact on the buying situation since they noted that it was still difficult to find research in this area, as it was still considered to be a fairly new technology. We have found that this is still true, and to be able to answer our research questions we have combined earlier studies from several authors that have looked into the Internet's impact on either some or all of the different buyphases of a firm. Since the Internet started to impact businesses during the 1990's we have chosen to use this period as a comparative base in our research. Models we consider to be most useful for answering each research question are presented in the following sections.

2.4.1 Impact of the Internet on Different Stages of the Buying Process

Our goal with this study is to investigate how the Internet has affected the buying process. The buygrid-framework developed by Robinson *et al.* (1967) is a well-known and frequently used framework and therefore we have decided that this validates our choice of using it as a base for our research. Another reason for choosing this model is that previous research has shown that the framework is still useful. However, the buying process is rather extensive, and therefore we have chosen to limit our research by excluding the three buyclasses. We will investigate how Internet has affected the framework when it comes to:

- The eight phases that describes the buying process
    1. Recognition of a need
    2. Determination of solution characteristics
    3. Description of solution characteristics
    4. Search for suppliers
    5. Acquisition and analysis of proposals
    6. Evaluation of proposals and selection of supplier(s)
    7. Selection of an order routine
    8. Performance feedback and evaluation

This framework is the base for this research and will therefore be used in research question two and three as well. However, the phases will mainly be used as a foundation for describing the case, not analyzed and compared to the case we studied.

Since the Internet provides immediate and virtually free communications it is interesting to see to what extent it has impacted on a purchaser's daily work. This is something Martin and Hafer (2002) have investigated, and we have chosen to include parts of their work in our frame of reference, concerning the use of the Internet:

- When finding suppliers
- Make purchase
- Procurement system with suppliers

Berthon *et al.* (1998) have developed a model that shows the effectiveness of three different communication tools on the different buyphases. Even though the idea with the model is that industrial marketers should use it, we believe that there must be interdependency between the effectiveness of the Web as a marketing tool and buyers' use of it. Using the model developed by Berthon *et al.*, investigating the effectiveness of sellers Websites, seems to be most appropriate to us, keeping in mind that there is little empirical research on the area we want to investigate.

The chosen theories together with additional literature written about the Internets impact on the buying process have been summarized in table 2.6.

Table 2.6: Summary of Theories for RQ 1

Area	Model/Concept	Authors
Buying Process	Buygrid-framework	Robinson, Faris & Wind, 1967
Internet		
- Communication	Communication	McCormack & Kasper, 2002
- Extent of Use	Extent of use of the Internet	Martin & Hafer, 2002
- Websites	The effectiveness of Websites	Berthon, Lane, Pitt & Watson, 1998
- The Intranet	The Intranet	Zinkhan, 2002 Lancioni, Smith & Oliva, 2000

2.4.2 The Phases in the Buying Process Most/Least Affected by Introduction of the Internet

In this research question we wanted to find out where the Internet has impacted the buying process most and least respectively, therefore we will only include the parts that discuses these issues from the studies depicted in table 2.7.

Table 2.7: Summary of Theories for RQ 2

Area	Model/Concept	Authors
Buying Process	Buygrid-framework	Robinson, Faris & Wind, 1967
Internet use		
- Most/least affected	Extent of use of the Internet	Martin & Hafer, 2002
	The effectiveness of Websites	Berthon, Lane, Pitt & Watson, 1998

2.4.3 Use of the Internet in Communication With Suppliers

No firm would exist without customers, and hence customer satisfaction is crucial for a firm's survival. Therefore we regard it as interesting to investigate how the Internet has changed suppliers' work in handling customer relationships. Hunter *et al.* (2004) have in their article summarized, by defining different categories, how the benefits of Internet can

satisfy customers. The literature review in this article is based on the work of a lot of different, valid and acknowledged authors, and this is the reason why we have chosen to use this source in our research.

Concerning to what extent the Internet is used in the communication between buyers and sellers Martin & Hafer (2002) have included five aspects that are relevant to answer this research question:

- Access to e-mail
- Communicating with suppliers
- Make purchase
- Maintaining a Website for purchasing divisions
- Procurement system

Berthon *et al.* (1998) have discussed how effective different communication tools are in the buying process. For this research question we will consider the phases concerning communication with suppliers only, not internal communication.

An Extranet is a secure network that includes business partners and is used for communication between firms. In this study we will include the concept when discussing communication between the buyer and its suppliers.

For the discussion of how the Internet is used when communicating with suppliers, additional studies that discuss this will be used. The chosen studies are shown in table 2.8.

Table 2.8: Summary of Theories for RQ 3

Area	Model/Concept	Authors
Buying Process	Buygrid-framework	Robinson, Faris & Wind, 1967
Internet use - Communicating with suppliers	Cost Savings	Lim & Wen, 2002
	Communication	McCormack & Kasper, 2002
	Customer Satisfaction	Hunter, Kasouf, Celuch & Curry, 2004
	Extent of Use	Martin & Hafer, 2002
	Websites	Berthon, Lane, Pitt & Watson, 1998
	Extranet	Angus, 1997

The objective with this study is to investigate the impact of Internet on the different phases of the buying process. However, the Internet is a very broad tool, and due to time limits we have been forced to exclude the wider aspects. The buygrid-framework has been chosen as a basis for the frame of reference, and hence the eight phases together with relevant concepts and models from different authors concerning the impact of the Internet are included in our frame of reference presented in figure 2.3.

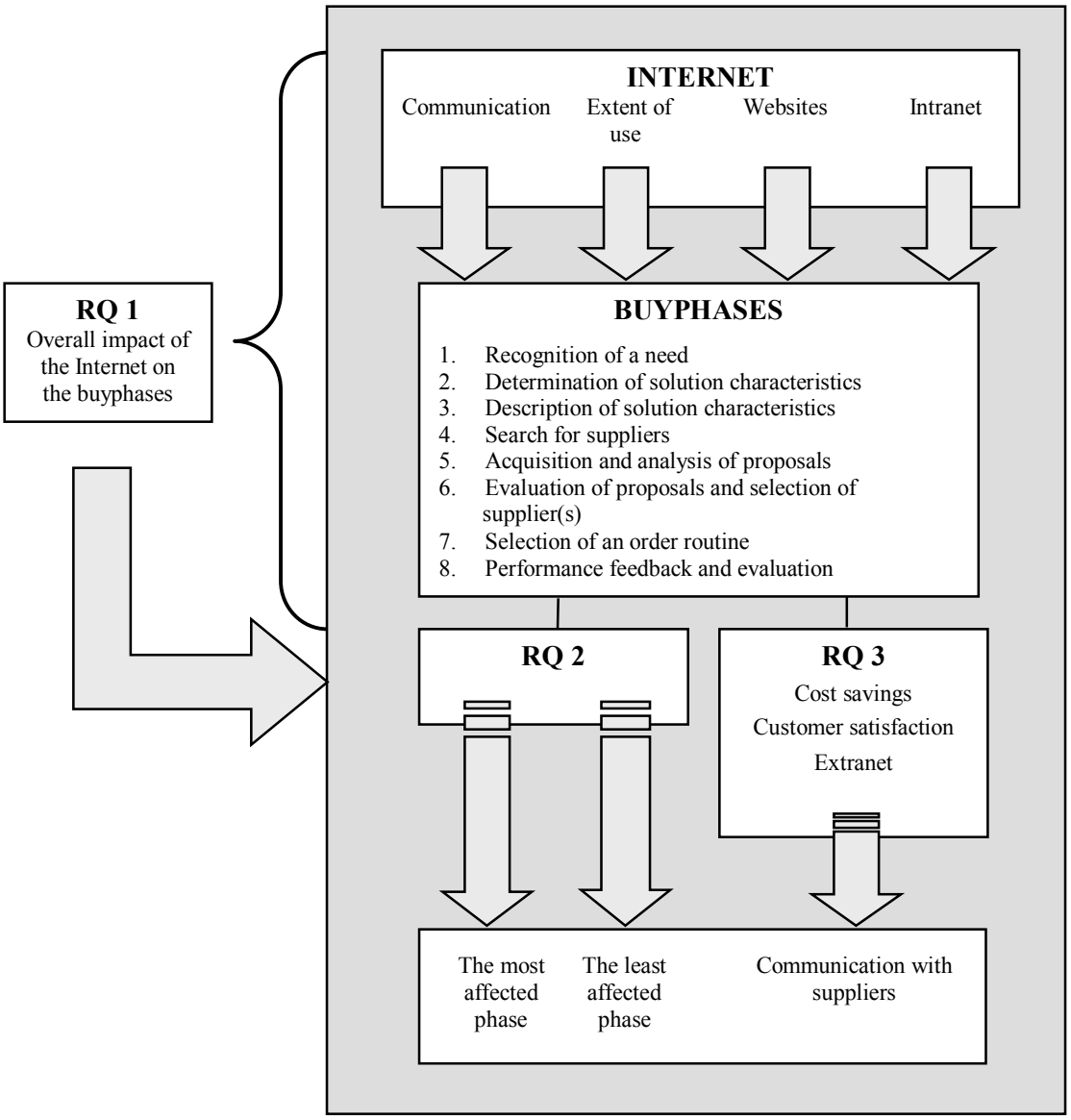


Figure 2.3: Frame of Reference

Four different aspects of the Internets impact on the buying process have been considered first; and from this research question two and research question three have sprung. The answer to research question two derived from the same literature as research question one. Finally literature on how the Internet is used in communication between buyers and sellers has been added in order to answer research question three.

Chapter 3: Methodology

The emerged frame of reference presented in the previous chapter was tested in a case study with two interviews. The results of these will be presented in chapter four and five. In this chapter a presentation of the choice of methodology used for collecting data is presented and justified.

The aim with the research methodology in this chapter was to give us guidelines for how we should collect the needed data and how to analyze it. The reason for structuring the methodology is that it increases the possibilities of getting valid information so that we in an honest way can answer our research questions and draw conclusions.

3.1 Research Purpose

The purpose of a research may be exploratory, descriptive or explanatory (Yin, 1994). These purposes do not need to be treated separately; it is possible to use more than one research strategy for a research project, depending on the purpose (Saunders, Lewis & Thornhill, 2000).

Exploratory research
An exploratory research aims to define questions and hypotheses of a study (Yin, 1993). This kind of research is carried out when there is not much knowledge about the situation (Sekaran, 1992). Therefore it is a quite suitable research form when investigating a problem or look at a problem from a new angle since it is a very flexible method (Gummesson, 1991). In such cases widespread preliminary work is required to get initiated in the subject (Sekaran, 1992). According to Saunders et al. (2000) there are three ways of conducting exploratory research: (1) search for literature; (2) talking to experts; and (3) conducting focus group interviews.

Descriptive research
Descriptive research can work as a forerunner to exploratory research, in order to get a good picture of a phenomenon (Saunders et al., 2000); since description is a matter of collecting information through observation and reporting, or reading others work and summarizing it (Gummesson, 1991). Description does not aim to find causes to a problem but rather to describe a phenomenon within its context, and can be used for describing characteristics (Yin, 1993). Gummesson (1991) points out that description is sometimes thought of as a less prestigious research method in scientific circles, since it is a matter of observing and summarizing other people's works. However this is something that Gummesson do not fully agree on; he believes that it is a matter of using it in a correct way and that analysis is always included. According to Saunders et al. (2000) "description should be thought of as a means to an end, rather than an end in itself".

Explanatory research
Explanatory research presents data that explains which causes that are produced with what effects, e.g. the cause-effect relationship, and is hence suitable for designing and doing more complex case studies since it is easier to do pattern matching of several

sequences (Yin, 1993). Yin believes that this kind of research can facilitate theory testing with a rich and extensive data collection effort. Furthermore Saunders et al. (2000) recommend using this method for testing correlations; to be able to get a better picture of relationships. However, Yin (1994) points out that it might be hard to be precise when measuring and describing these relationships.

Our purpose with this research was to describe the impact of the Internet on the buying process. We have chosen to do mainly a descriptive research by putting together findings from several authors and combined these so that they form a base for this research. We are supporting the descriptive research with information gained from two experts in the area. However, little information about the subject could be found in literature, since the Internet is a rather new phenomenon, and therefore the nature of this research is also somewhat exploratory.

3.2 Research Approach

There are two different research approaches, qualitative and quantitative. The main distinction between the two procedures is that qualitative research tend to apprehend words and use them as the main factor for analysis, while quantitative research tend to use figures (Denscombe, 1998). However, sometimes it can be problematic to distinguish between quantitative and qualitative research (Silverman, 2000); and Denscombe (1998) claims that good scientific research tends to use features from both procedures. Silverman (2000) furthermore explains that many people seem to think that quantitative research is somewhat better than qualitative research. However, Gummesson (1991), Silverman (2000), and Yin (1994) all points out that this is not the case. The importance is not to choose the one most accepted; it is a matter of choosing the right one depending on the purpose of the research (Gummesson, 1991).

Qualitative
Denzin and Lincoln (2003) define qualitative research as: "a situated activity that locates the observer in the world". Qualitative research is exceptionally helpful for identifying the scope of the research and should be used to fully understand the views, opinions and attitudes that the researcher might come across (www.ryerson.ca). It is quite common that a hypothesis is produced in the early stage of a qualitative research, not at the very beginning of it (Silverman, 2000). The strength of qualitative research is, according to Silverman (2000), that it focuses on actual practice and looks at how social interactions are routinely performed. There are, according to Travers (2001) five main methods to be used for qualitative research: observation; interviewing; ethnographic fieldwork; discourse analysis; and textual analysis.

Quantitative
Quantitative research reports reality in an objective way (Silverman, 2000). The most common quantitative research techniques include: observation, experimentation and surveys (www.ryerson.ca). When collecting quantitative data, structured research instruments, such as surveys, are often used in order to investigate a large sample that is representative for the whole population (www.ryerson.ca). According to Wiedersheim-

Paul and Eriksson (1999) all quantitative research models need to include only quantitative data e.g. figures and numbers.

We wanted to gain a deeper understanding of how the Internet has impacted the buying process. Travers (2001) claims that qualitative research is simple to perform and may very well be used for research on a business organization. This led us to use the qualitative approach since it will give us the opportunity of gaining a deeper understanding of the phenomenon. Furthermore, it is impossible to use quantitative data when looking further into everyday situations (Silverman, 2000), and therefore the qualitative approach is necessary for our research approach. When using this approach we also got the opportunity to come close to our source of information, and we regard this as crucial for gaining information on attitudes and getting reliable information.

3.3 Research Strategy

A research strategy is a plan that will clarify to the reader how we have gone about to answer our research questions. According to Yin (1994) there are several ways of doing research in the social sciences:

- Experiments
- Surveys
- Archival analysis
- Histories
- Case studies

Yin (1994) states that each of these strategies has advantages and disadvantages depending on three conditions: (1) the type of research question; (2) the control an investigator has over actual behavior events; and (3) the focus on contemporary versus historical phenomena. Furthermore each of them could be used for all different research purposes: exploratory as well as descriptive and explanatory (Yin 1994). To get the most out of a chosen strategy, the researcher first needs to know the differences between them (Ibid.). To easier see the connections and differences between the five research strategies and the conditions, they are summarized in table 3.1.

Table 3.1: Relevant Situations for Different Research Strategies

Strategy	**Form of Research Questions**	**Requires Control Over Behavioral Events?**	**Focuses on Contemporary Events?**
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis (e.g. economic study)	Who, what, where, how many, how much	No	Yes/No
History	How, why	No	No
Case study	How, why	No	Yes

SOURCE: Yin, 1994

Yin explains that using case studies is a preferred strategy when: how or why questions will be answered; the researcher do not have much control over events; and the focus is on contemporary phenomenon within some real life context. In case studies, a few objects are studied, but in greater detail and many dimensions, as opposed to studies with statistical methods (Eriksson & Wiedersheim-Paul, 1999).

Since this study aims to gain a deeper understanding of how the Internets has impacted on the buying process, a case study approach was sought as the most appropriate strategy and therefore chosen. We did not seek to have control over events, only to investigate how reality works today. Furthermore is case study as a research strategy often associated with a qualitative research (Yin, 1994).

3.3.1 Case Study

Robinson (in Saunders *et al.,* 2000) defines case study as the "Development of detailed, intensive knowledge about a single 'case', or a small number of related 'cases'". When a case study strategy is chosen the data collection may include several different methods such as interviews, questionnaires and documentary analysis (Saunders *et al*., 2000). Saunders *et al.* (2000) argues that, even though some may claim that case studies have an "unscientific" feel, case studies can be a very valuable means of exploring existing theory, as well as challenge it. Moreover, case studies can be used as a base for new hypotheses (Ibid.). Case studies are, as mentioned, good for gaining a deep understanding of one or a few subjects, not for generalizing (Eriksson & Wiedersheim-Paul, 1999). The logic behind using a case study strategy is the possibility of finding information that could not have been discovered if multiple cases, e.g. surveys, had been used (Denscombe, 1998). Denscombe provided a summary of the characteristics of case studies:

Table 3.2: Summary of Characteristics of Case Studies

Case Studies are characterized by emphasizing		
Depth of the study	rather than	Width of the study
The special	rather than	The general
Relationships/processes	rather than	Results and final products
Holistic point of view	rather than	Separate factors
Natural environments	rather than	Artificial situations
Several sources	rather than	A single research method

SOURCE: Denscombe, 1998

Due to the descriptive and somewhat exploratory nature of this study, a deep understanding of the subject is necessary; and therefore a case study seems appropriate. Furthermore, to fulfill the purpose of this study it is essential to find special aspects, not general ones, and also to investigate processes and relationships in a natural environment. To gain a deep understanding it is impossible to use multiple cases, since we would not be able to discover clues for specific details by using for example surveys. As a result of this we have chosen to use a single case study for collecting our empirical data. Furthermore, in line with what Denscombe suggests, three sources of evidence were used.

3.4 Data Collection

After having chosen a research strategy, the researcher needs to decide what method to use for collecting data (Yin, 1994). According to Saunders *et al.* (2000) there are two types of data, secondary and primary data. Data that has already been collected, by other researchers for another purpose, is called secondary data (Saunders *et al.*, 2000). Primary data is data that a researcher collects on his/her own for a specific purpose (Eriksson & Wiedersheim-Paul, 1999). In our study we have chosen to collect material from both primary and secondary data.

Yin (1994) states that there are six sources of evidence for the collection of data when conducting case studies: documentation; archival records; interviews; direct observations; participant-observations and physical artifacts. All of these sources of evidence have both strengths and weaknesses, but none is considered superior to the other (Ibid.). It is therefore best to use several of them. Yin (1994), for example, recommends that documents can be used in conjunction with other sources of evidence such as interviews. Interviews are, according to Yin (1994) a good source of evidence when case studies are about human affairs, since these are best interpreted through the eyes of a well-informed respondent. Furthermore an interview is the most advantageous approach when a large number of questions need to be answered; questions are complex or open-ended; and the order and logic of questioning need to be varied (Saunders *et al.*, 2000). To complement an interview, Yin (1994) recommends using documentations, especially when conducting a case study. The main source of evidence used in this study will be interviews. As, Yin (1994) points out, documentations are relevant to every case study, and therefore this source of evidence is also used. Below we have explained the strengths and weaknesses with these sources of evidence, and also the different types within each source.

Table 3.3: Sources of Evidence: Strengths and Weaknesses

Source of Evidence	Strengths	Weaknesses
Interviews; -Open-ended: *allows for discussion* -Focused: *allows some discussion, also called semi-structured* -Structure: *pre-stated questions*	• Targeted - *focuses directly on case study topic* • Insightful - *provides perceived causal inferences*	• Bias due to poorly constructed questions • Response bias • Inaccurate due to poor recall • Reflexivity – *interviewee gives what interviewer wants to hear*
Documentation; -Written reports -Agendas -Letters -Administrative documents -Formal studies -Newspaper clippings and other articles	• Stable – *can be reviewed repeatedly* • Unobtrusive - *not created as a result of the case study* • *Exact – contains exact names, references, and details of an event* • Broad coverage – *long span of time, many events, and many settings*	• Retrievability – *can be low* • Biased selectivity, if collection is incomplete • Reporting bias – *reflects (unknown) bias of author* • Access - *may be deliberately blocked*

SOURCE: Adapted from Yin, (1994)

Another, quite new, secondary source of evidence is Home pages, which are, if thoroughly and well developed, an excellent way of gaining information about a firm or an organization (Saunders *et al.*, 2000). However this source of evidence has not yet been evaluated much in literature.

As mentioned, the most important source of evidence for this study was interviews. To use a structured interview is best when conducting descriptive research; and semi-structured is good for exploratory research (Saunders *et al.,* 2000). The time for the interviews was limited, and as Yin (1994) recommends in this situation and in compliance with what Saunders *et al.* (2000) recommends, focused (or semi-structured) interviews were conducted. This enabled us to have a dialogue with the respondents and ask questions that were open-ended but still gives a well-structured interview. However at points during the interviews the discussions ran smoothly and we felt that it was necessary not to stick to the questions in the interview guide, to allow the interviewees to express freely. When choosing between face-to-face or telephone interviews, our choice fell on the face-to-face interview, since we where invited by the interviewees to visit their firm in Sandviken. The main advantage with this kind of interview is that the researcher can adopt questions, clarify doubts, pick up on body language and ensure that the questions are properly understood (Sekaran, 1992).

The documentations that we have used include written reports and newspaper articles. Written documents have been used in combination with other sources of evidence, mainly to gain background information and raise questions and create interest. Finally, as a third source of evidence we have used the home page of our chosen case firm. This Website has provided us with valuable information about the firm's history and different business areas.

By mixing and matching several methods triangulation can take place and enhance the quality of a research (Saunders *et al.,* 2000). Saunders *et al.* refer to triangulation as: "the use of different data collection methods within one study in order to ensure that the data are telling you what you think they are telling you". The triangulation in this study consists of documentation, interviews and a home page.

3.5 Sample Selection

When the sources of evidence have been chosen, next step is to decide appropriate sample(s). According to Yin (1994) it is advisable to use only single case studies when: the case represents a critical test of existing theory; the case is a rare or unique event; or if it serves a revelatory purpose, that is, if the investigator has the opportunity to observe and analyze a phenomenon that has not been previously accessible to scientific research.

Based on this and due to the limited time frame of this study, we have conducted a single case study. For this single case we have chosen to investigate the Swedish based steel firm Sandvik AB. Sandvik AB was chosen due to two reasons: (1) It is a major industrial firm which operates globally. To study its buying behavior would be extremely

interesting. (2) The authors could use their personal connections to have access to necessary data.

Focused face-to-face interviews were conducted with two purchasers at Sandvik AB, which both have long experience and are skilful in their area. One of the interviewees, Anders Persson, was chosen since he is a relative to one of the authors of this study; moreover through his position in the firm he has the knowledge to answer our questions. The other respondent, Anders Elletoft, was selected since Anders Persson recommended him to us.

3.6 Data Analysis

In order to answer our research questions the collected data needs to be thoroughly analyzed. Yin (1994) explains that every investigation should start with a general analytic strategy, allowing the researcher to decide what to analyze and why. He continues by discussing how this could be done, namely through examining, categorizing, tabulating, or otherwise recombining the evidence. Saunders *et al.* (2000), as well as Yin (1994), claim that there is no traditional way of analyzing qualitative data and therefore it is more time consuming to analyze than quantitative data. Miles and Huberman (1994) recommend that the collected data should be analyzed in three stages:

- Data Reduction: *This stage of qualitative data analysis selects, abstracts, simplifies, focuses, and transforms the collected data. The purpose is to organize the data so that final conclusions can be drawn and verified*
- Data display: *When having reduced the data, it should be displayed in an organized, compressed way, enabling easy conclusion drawing*
- Conclusion drawing and verification: *In this stage the researcher decides the meaning of occurrences, noting regularities, patterns, explanations, possible configurations, casual flows, and propositions.*

It is important to make sure that the analysis is of the highest quality possible, and it can be done by following four principles recommended by Yin (1994). The first thing to consider is that as much evidence as possible has been sought and that no loose ends have been left in the interpretation. Second, all major rival interpretations of the subject should be included. Third, the most significant aspects of the case study need to be addressed. Finally, authors' own expert knowledge, on the studied issue or similar ones, should be brought in.

We have chosen and collected appropriate data from our two interviews. Information that was not necessary for our study has been excluded, to not confuse the reader and to make it easier to draw conclusions. If the interviewees did not agree on an issue we have noticed this and presented it. Finally, the aspects that came forward the most during our interviews have been highlighted.

3.7 Quality Standards

It is important that a research project has high quality, and this cannot be achieved only through collecting data. The criterion for testing whether a thesis has high quality or not is whether the research instruments are neutral and if the same conclusions should be drawn by other researchers (Denscombe, 1998). To increase the possibility of getting the right meaning of the answers, the researcher has to pay extra attention to reliability and validity (Saunders *et al.*, 2000).

3.7.1Validity

Saunders *et al.* (2000) state that, "validity is concerned with whether the findings are really about what they appear to be about". According to Yin (1994) there are three different kinds of validity: construct validity; internal validity; and external validity. *Construct validity* is about establishing correct operational measures for the concept being studied. To increase the construct validity one can use three different case study tactics: (1) multiple sources of evidence; (2) chain of evidence; and (3) key informants review draft of case study report. *Internal validity* is about establishing causal relationships and concerns explanatory and causal studies only. *External validity* is about establishing the domain to which a study's findings can be generalized. Therefore external validity is considered to be quite low for single case studies. However, if case studies rely on analytical generalizations, which should try to generalize findings in theory, external validity can however, according to Yin (1994), still be high.

We have chosen to use documentations, Websites and interviews in our study and this triangulation increases the construct validity. Furthermore our supervisor, Manucher Farhang, have read and commented on the interview guide, which gives validity to the work, and even more so due to his long experience. We sent the interview guide in advance to both respondents, enabling them to prepare for the questions and search for necessary information. When analyzing the empirical data we decided to do so separately in order not to influence each other. After this we met and discussed our drawn conclusions thoroughly. Since the conclusions of our study are based on only one case study, it is not an option to generalize our findings. The interviews were conducted in Swedish and then translated into English and hence some translation errors may occur.

3.7.2 Reliability

Reliability is concerned with whether other researchers would have gotten the same results if they performed the same research with the same methods. In other words, the reliability indicates the stability and consistency with which the used instruments are measuring the issue studied and helps to assess the quality of a study (Sekaran, 1992). There are four issues that need to be taken into consideration to increase reliability (Saunders *et al.,* 2000): Subject error, "Monday mornings and Friday afternoons may give different results"; (2) subject bias "the interviewee say what they think they should say"; (3) observer error, different interviewers may get different answers; and (4) observer bias, different interviewers may interpret the results differently.

We have increased the reliability of this thesis by letting our respondents choose the week, day and time that is most suitable to them. This ensures that the respondents have set time apart to participate in the interview and that they have a positive attitude towards participating. By having open-ended questions where we ask the interviewees to explain in their own words, instead of leading them to the answer, we have tried to avoid subject bias. Since both interviewers where present at both interviews, observer error is not of major concern for the reliability of this study. Observer bias, on the other hand, is more important and to avoid this, both interviewers first interpreted the results individually, and then discussed and compared where different interpretations showed, in order to reach consensus. Furthermore, both the interviews were tape-recorded, which made it easier to re-tell what came forward during the interviews, and to check what was actually said.

Chapter 4: Case Study; Sandvik Materials Technology

In this chapter we will present the empirical data, found through primary and secondary sources. First general data about the firm will be provided. Then findings from the two Interviews with the purchasers, Anders Elletoft and Anders Persson, at Sandvik AB will be portrayed. All information provided in this chapter is based on data collected from the home page of Sandvik AB, other material received form the firm and the interviews.

4.1 Company Background

Sandvik emerged in 1862 as a result of a new idea from Göran Fredrik Göransson when he managed to produce malleable steel using the Bessemer method[3]. In 1972 the firm changed name from Sandvikens Jernverks AB to Sandvik AB, or just "Sandvik" in everyday speech. The firm started exporting already from the beginning, and today they are active in approximately 130 countries with 37 000 employees and a turnover of SEK fifty billion. The firm is characterized by both tradition and innovation; and renewal is an integral part of the firm's strategy, together with quality development. The firm has chosen to work closely with their customers concerning these issues and this is, according to Sandvik, one of their main success factors.

Sandvik is divided into three core areas: Sandvik Tooling; Sandvik Mining and Construction; and Sandvik Materials Technology. Each of these business areas operates individually when it comes to research and development (R&D), production and sales. The interviewees are both working within Sandvik Materials Technology, and thus the data presented in this case study will be limited to the business of Sandvik Materials Technology.

4.1.1 Sandvik Materials Technology

Sandvik Materials Technology is a world-leading producer of high technology stainless steels, special alloy materials and advanced value-added products. Their five product areas include: Tube; Strip; Wire; Kanthal resistance materials; and Process Systems. Sandvik Materials Technology has a global presence and this business area focuses on product niches and customers with specific demands. In 2003 Sandvik Materials Technology started a comprehensive program that aimed to increase efficiency and raise capacity. Focusing on shorter lead-times and improved product mix will do this; and the program will be completed in the end of 2005 according to plans.

We have interviewed two purchasers at Sandvik Materials Technology working within the Tube division with Special Metals (hereafter only referred to as Sandvik MT). To get a better understanding of the position of the interviewees an organization chart can be viewed in Appendix C.

[3] The Bessemer Method is the decarbonization of cast iron by forcing a blast of air through the mass of metal when in the molten condition (encyclopedia.org)

Anders Persson has worked for the firm thirty-eight years and he started with purchasing right from the beginning. Today he is purchasing only so called strategic products[4]; raw material that the firm use when they develop tubes for nuclear reactors. This makes the purchasing situation very complex and hence he needs very much to rely on personal relations.

Anders Elletoft has been with the firm for twenty-seven years and he has been working as a purchaser for fourteen years. Likewise Anders Persson he is purchasing strategic products for nuclear components but he is also responsible for the purchase of alloys. To purchase alloys is a much less complex procedure and therefore he has the possibility of changing supplier more often for this kind of products. However in this thesis the focus will be on strategic products, as both respondents are concerned with these.

Sandvik MT does business with firms all over the world but orders mainly from two firms in Russia and one in France. There are a small number of actors on the market for nuclear components and competitors need to cooperate due to reputation and trust issues; they are in fact dependent on each other. In practice this means that they also share mistakes, as the faults of one firm will harm all the others. This information is sometimes shared via press releases or governmental control units, if there has been a major mistake, but often also more informally via e-mail. The relationships with both suppliers and customers within the nuclear area is a major concern for both parties in all steps of the supply chain and therefore it is more a question of long-term partnerships rather than transactional relations.

Both interviewees believed that the buying process at Sandvik MT could quite accurately be described by the eight phases in the framework by Robinson *et al.* (1967). However phase seven includes ordering a trial sample only, not selection of an order routine. This has led to that phase eight consists of a qualification period, during which the quality of the sample is tested and the supplier's ability to fulfill other requirements is evaluated. All suppliers need to be qualified in the qualification process, both regarding product performance, but also regarding their own quality assurance system. This process extends over a period of five years and is very cost and time consuming for the firm; hence it is considered to be a large investment. If a supplier passes the tests during the qualification period they are put on a list with qualified suppliers. After this phase they acquire, analyze and evaluate the proposal from the now qualified supplier. When they have agreed; an order routine is selected and this takes the form of a skeleton agreement often lasting for up to ten years. During the whole time within this agreement, the supplier's performance is evaluated and the firm gives feedback to the supplier. Hence the buying process at Sandvik MT can be summarized as shown in table 4.1.

[4] Sandvik MT, Special Metals, divides their products into four different categories. A further description of these is found in Appendix D

Table 4.1: Buyphases at Sandvik MT

Phase	Description of phase
1	Recognition of a need
2	Determination of solution characteristics
3	Description of solution characteristics
4	Search for information about supplier(s)
5	Acquisition and analysis of proposals
6	Evaluation of proposals and selection of supplier
7	Purchase of trial sample
8	Qualification process and evaluation
9	Acquisition, analysis and evaluation of proposal
10	Selection of an order routine
11	Performance feedback and evaluation

A closer description of these phases and how the Internet has impacted on each phase will be presented in section 4.2. The Internet had its major breakthrough in Sandvik MT approximately six years ago, not until 1998 they were educated on how to use the Internet in an efficient way. The most commonly used application is e-mail, and e-mail is used more or less in all phases of their buying process. In fact e-mail has come to replace both the fax-machine and much of the telephone in the firm.

4.2 The Impact of the Internet on the Buying Process at Sandvik MT

When a need is recognized (phase one) it is often internal, and suppliers rarely contact the firm in the beginning of the buying process. At this stage most of the communication is between colleagues within the firm and e-mail on the Intranet is frequently used. In fact e-mail is used to such extent that it is almost overused and information errors has been occurring more often now than when they met more often face-to-face. Sandvik MT has not developed a special Website for the purchasing department that their suppliers can visit; neither do they consider this for the nearest future regarding strategic products. However the firm is currently developing the central purchasing department, which all purchases passes through today, and this might lead to a development of a Website that will make it easier for suppliers to contact the right person. Once a need has been recognized, the quality and quantity of what they want to buy is specified in writing (phases two and three). This is a rather complex document and is always signed by the quality manager and often also by a researcher. During the development of this document, drafts are often sent via e-mail. Up till now the final draft is always kept in printed form, but an electronic database that will keep these documents in the future is currently under development.

The search for information about supplier(s), phase four, concerns finding information about already known suppliers. This since they are only a few actors in this line of business and they all know about each other; sometimes there is only one supplier that can deliver a product. This process has changed remarkably due to the search engines on the Internet, which is regarded as a revolutionary tool for gaining up to date information. Suppliers' Websites are often visited in order to find information, concerning e.g. financial status, ethical matters and environmental issues. Furthermore information

regarding exchange rates, daily prices and customs are important issues where the Internet is extremely helpful for finding the desired information. Today special technical literature is difficult to find on the Internet but there is a hope that this will be easier to obtain in the future. Even though the Internet is highly effective and used to a large extent in this phase the importance of trust in personal relationships is emphasized. As a result of this and due to the fact that there are only a few actors present, new suppliers are primarily found through other sources than the Internet. The relationships in this line of business are colored by familiarity; all actors know each other and there is often a question of cooperation rather than competition. Hence information about new actors or products is always shared, and as they claimed - if you do not know about a new actor you are not in this line of business.

Proposal acquisition and analysis (phase five) has changed thanks to the Internet, since today all proposals are received via e-mail. There is however a question of a few, often only three, suppliers making proposals. When the proposals have been received necessary information for analysis is collected. It is today possible to collect much more valuable information via the Internet, in a fast and easy manner. When the needed information has been collected, colleagues within the firm are discussing and analyzing each proposal separately. For this purpose, the Intranet is used and face-to-face meetings are used less than before. After proposals have been collected and analyzed they are evaluated and a supplier is selected (phase six). Earlier proposals were evaluated only based on what was stated in them, but today they make use of other secondary sources of information available on the Internet, collected in earlier phases of the process. This information is sometimes crucial and facilitates the selection process. In this phase e-mail is used a lot when purchasers evaluate the proposals. When they have finally selected a supplier, the purchaser meets the supplier and negotiations starts. These negotiations are always done when they meet face-to-face, and the Internet is not used. If the negotiations goes well next phase takes place (phase seven) and this phase is about ordering a trial sample from a supplier, since the product that will be manufactured with this raw material is classified as a high-risk product (tubes for nuclear reactors). This order is always placed during a face-to-face meeting and hence the Internet is not used at all. The importance of personal relationships when dealing with materials for nuclear products is stressed; and meetings in person are always necessary before considering a purchase. Consequently, to actually place an order of a trial sample on the Internet is not an option for Sandvik MT.

Next step in the buying process for the firm consists of a qualification-of-supplier-process (phase eight). This process lasts for approximately five years and is considered as the most time consuming part of their work in the buying process. It is required to take this long due to the complexity of the final products; which governmental supervising authorities have a heavy influence on. In this process the Internet is used for communication via e-mail, and e-mail attachments with photos have replaced many cost and time consuming trips for showing samples. Evaluation of the supplier is made continuously throughout this phase since it is important that the supplier maintain the desired standard, including among other things code of conducts and code of ethics. One appreciated way of finding this information is in local newspapers on-line, but other Internet sources are also used for evaluation: This very important and crucial process has

been made much easier with the help of the Internet. If the supplier is qualified they are put on a list with qualified suppliers. After the supplier has been qualified, phase nine (acquisition, analysis and evaluation of proposal) takes place. This phase is quite similar to phase five and six i.e. proposal is received via e-mail and discussed internally; much via the Intranet. The difference is that this time there is only one supplier involved and hence only one proposal. At least five years have now past since the first contact was made with the supplier and therefore they also have much knowledge about them. The focus is now on negotiating about terms for the agreement, and not so much of whether the supplier will be accepted or not. The emphasis is therefore on face-to-face meetings when negotiating about terms, such as price and time for delivery, for the final agreement.

The actual selection of an order routine (phase ten) is done when the negotiations about the terms are decided upon. A skeleton agreement is drawn and signed, and the final closure always takes place when they meet face-to-face with their supplier. The main reason to that the Internet is not used for placing orders is due to the complexity of the purchases. Furthermore order placement on-line is not yet used in the firm since some Eastern European countries require stamps and signatures from two authorized signatories or the CEO, due to legal technicalities. Furthermore all orders need to pass through the central purchasing department in Sandvik AB. Nevertheless there is a belief that an Extranet will be developed with their main suppliers in the future; handling, among other things, order placements. Regarding complement of orders, one of the interviewees believes that the telephone is still the most effective tool, while the other is of the opinion that e-mail is just as effective.

The eleventh and final phase of the buying process at Sandvik MT is evaluation and feedback of supplier performance, and lasts during the whole skeleton agreement. For sharing their opinions and data with the supplier, e-mail is used very much, but also face-to-face meetings and telephone calls are used to some extent. One way of handling the evaluation is to use the Internet for surveillance purposes; to follow the suppliers' work and development. This includes watching how the suppliers handle issues such as environmental policies and staff welfare; information found mainly in local newspapers on-line. Furthermore keeping track of fluctuations in exchange rates and political situation in the country is of great concern. For finding this information the Internet is an excellent tool that has facilitated the process extraordinary much. This phase is much the same as phase eight regarding evaluation of the supplier's performance. However, it is not as intense and crucial, since the agreement has already set the standards under which the supplier needs to work. Therefore the use of Internet is not considered to be as extensive as in phase eight.

In summary, the Internet has smoothened the whole buying process essentially at Sandvik MT, even though face-to-face meetings are still important. In spite of the fact that the Internet has only been a part of their work in less than a decade, its many operational and strategic benefits are often taken for granted. This since the process has changed so rapidly, and there has been no time for reflecting upon the extent to which this new technology has actually positively impacted.

4.3 The Stage of the Buying Process Most/Least Affected by the Internet at Sandvik MT

There are two phases (four and eight) in the buying process of Sandvik MT that are considered to be more affected than the others by the use of the Internet. They find it hard to consider one of these as more affected, since the impact of the Internet has been very valuable in both phases, but also since the time spent on each phase is very different.

(1) When searching for information about suppliers(s) (phase four), the Internet is a new source of information that provides the possibility of gaining a deeper understanding of suppliers' situation in an uncomplicated manner. Earlier this process was much too time and cost consuming to be further considered. One example of valuable information received from the Internet concerns information from local newspapers on-line. Through these newspapers, the purchasers can gain information about the firm that cannot be found on their home page, for example conflicts within the firm. This kind of information would not be available off-line other than through a visit in the concerned country. Such information is actually so valuable that it has happened that Sandvik MT has sent a warning to a supplier. As a matter of fact, the information available on the Internet is regarded as superior to the kind of information they had possibility to collect earlier.

(2) The other phase that has been very affected by the introduction of Internet is phase eight (qualification process and evaluation). As explained earlier, the qualification and evaluation process is a very time consuming part of the purchasers' work; lasting for five years. During the whole process they use the Internet not only for exchanging e-mails but also for finding information about how the supplier acts in general. Furthermore the information that is now available through the Internet has made the evaluation of supplier performance easier and more through. The whole qualification procedure is very lengthy and intense; therefore it is the phase where the Internet has had one of the most important influences; considering the time and cost savings that has been created through it.

The Internet does not affect order placement and this is hence the least affected part of the buying process. Both phase seven and phase ten concerns order placement and therefore both phases are considered as those least impacted. Order placements in Sandvik MT are only done when meeting the supplier face-to-face, and this is due to four reasons: (1) the products are very complex; (2) the old fashion ordering system they are using today (all purchases need to pass through the central purchasing department in the firm); (3) some suppliers have not come as far regarding technical development; and (4) people developing these systems in Sandvik MT together with their partners has not been quite ready for this development. As the main reason the respondents emphasized that personal relationships will always be a major part of their work, since it is impossible to create trust via a computer and furthermore it is more difficult to negotiate about prices. In the future, however, when people and technology are ready for it, order placement of this kind of products will probably be done online.

4.4 Internet Use when Communicating with Suppliers at Sandvik MT

When searching for information about suppliers, different home pages are visited and the information found there is regarded as very essential; therefore these home pages have become increasingly important. Many Eastern European countries have realized the importance of putting forward their work with environmental concerns and ethical issues on their home page; and this has changed during the last five years. This is to be able to compete with other firms that have this kind of information on their home pages. The respondents have noticed a remarkable change in this during the last four years. It is common that after a visit to the Website the first contact with the supplier is made by e-mail.

The Internet has enhanced the communication with suppliers by making it possible to send e-mail attachments, e.g. pictures and blueprints. Ninety percent of the information exchange in the communication with suppliers was via telephone ten years ago, but today the same amount is via e-mail. The picture is somewhat different if taking into consideration the time spent on each way of communication. Approximately one quarter is spent on personal meetings, while another quarter is via telephone and the second half is communication via e-mail, as shown in table 4.2. This has changed remarkably during the past few years, as e-mail has almost replaced faxes and much telephone calls, but also some personal meetings. E-mail is preferred since it saves time and costs and eliminates faulty accusations; as everything discussed via e-mail is now saved in the mailbox. However there are some drawbacks; misunderstandings, misinterpretations and miss out on information is occurring more often today than when questions could be asked and answered in real-time. Moreover the purchasing department does not have a special Website for suppliers. Such a site will however probably be developed for the central purchasing department, once it have been reorganized. Other Internet tools than e-mail, such as videoconferences and on-line chat, are not yet extensively used within the buying process at Sandvik MT, even though they have tried it.

Table 4.2: Allocation of Communication Means with Suppliers

Communication	Time spent (% of total)
E-mail	50 %
Face-to-face meetings	25 %
Telephone calls	25 %

A system for order placement is usually mainly in the interest of suppliers and therefore something initiated and paid by them. However, at Sandvik MT a development of such a system lies in their interest as well, as there are only a few key suppliers that they are dependent on. Sandvik MT did try to develop a database (EDI) with one of their partners in 1996; however this did not work out well and our respondents believe this was due to human reasons, since people where not ripe enough and did not have enough knowledge for handling this technological development. The respondents believe that a new attempt would be more successful today and probably come in the form of a Web based Extranet; that would include only their main suppliers.

Chapter 5: Data Analysis

The previous chapter has presented the collected data and is a foundation for this chapter. The data is examined and analyzed through comparing it to theories selected and presented in our frame of reference. This means that we will perform a within-case analysis on our single-case, Sandvik MT. This chapter is divided into sections corresponding to the research questions.

5.1 Introduction

This within-case analysis is manly descriptive, but also somewhat exploratory as not all aspects are covered by the literature we have relied on; hence some issues will not be compared to literature and analyzed. However this kind of qualitative data gave us clues on attitudes and more reliable information, which are needed to gain a deep understanding on the area. Therefore it will be presented as it came forward during the two focused face-to-face interviews. Information irrelevant for our purpose will not be analyzed in this chapter; instead the most important aspects will be emphasized. We will present where the literature and the opinion of interviewees correspond and mismatch, however the reasons why will not be analyzed in this chapter. An introduction of the differences of the buyphases in Sandvik MT compared to literature is needed, as it is a foundation for answering the research questions.

5.1.1 The Buyphases

As described in chapter four, the buying process for Sandvik MT involves eleven phases; not eight as in theory, see table 5.1.

Table 5.1: Comparison of Buyphases

Buyphases	**Buyphases at Sandvik MT**
1. Recognition of a need	1. Recognition of a need
2. Determination of solution characteristics	2. Determination of solution characteristics
3. Description of solution characteristics	3. Description of solution characteristics
4. Search for suppliers	4. Search for information about supplier(s)
5. Acquisition and analysis of proposals	5. Acquisition and analysis of proposals
6. Evaluation of proposals and selection of supplier(s)	6. Evaluation of proposals and selection of supplier
7. Selection of an order routine	7. Purchase of trial sample
8. Performance feedback and evaluation	8. Qualification process and evaluation
	9. Acquisition, analysis and evaluation of proposal
	10. Selection of an order routine
	11. Performance feedback and evaluation

According to Robinson *et al.* (1967) the phases of the buying process can occur simultaneously, but it is often a sequence from one to eight; this is also the case in Sandvik MT. The buyphases at Sandvik MT are similar as those described by Robinson *et al.* (1967), however due to the complexity of the products bought, the process consist of eleven phases; and there are four main differences between the buying processes

presented in table 5.1. (1) Phase four in the framework is often a two-phase process where they first narrow down the total number of suppliers and then gather information about these. In Sandvik MT this is only a question of collecting information about supplier(s) since it is a matter of only a few already known suppliers. (2) In phase seven Sandvik MT is purchasing a trial sample only and therefore an order routine is not actually selected as described in the framework. (3) In phase eight a qualification period lasting for five years starts, where they test the trial sample. (4) Due to this, acquisition, analysis and evaluation of proposal(s), and also order placement are passed through again before the actual performance feedback and evaluation can begin.

The literature has told us that the Internet had its major breakthrough in businesses during the 1990's and in Sandvik MT it had its breakthrough in 1998, even though it was used to some extent already in 1995. The fact that the Internet has not been used more than four years supports what we have found in the literature written on this area; and this is why there is very little research done on the Internets impact on the buying process (Martin and Hafer, 2002, & Berthon *et al.*, 1998). Since our empirical data is collected on the buyphases in Sandvik MT, the focus will be these phases and not the phases presented by Robinson *et al.* (1967).

5.2 The Impact of the Internet on the Buying Process

Since stage one to three (recognition of a need; determination and description of solution characteristics) mainly concerns communication with colleagues within Sandvik MT, e-mail on the Intranet is mainly used. Lancioni *et al.* (2000) supports the fact that the Intranet is a very useful tool when communicating internally, and states that seventy percent of the studied firms use the Intranet. Furthermore Zinkhan (2002) argued that communication through the Intranet is a secure and effective way of transferring documents internally, and this is exactly how they work at Sandvik MT. As the Intranet is used for internal communications, the Web is not yet used much in these first three phases of the buying process. This is somewhat contradicting what Berthon *et al.* (1998) suggested, since in their categorization, Websites are seen as medium effective at these phases.

In phase four (search for information about supplier(s)) the Internet and the Web is used to a very large extent at Sandvik MT. They search for information about suppliers mainly by visits to the suppliers' Website (home page), but also through searching other sources on the Internet. The literature is as far as we can understand unanimous regarding Internet as a search tool; Martin and Hafer (2002) and Berthon *et al.* (1998) have come to the conclusion that using the Internet when searching for information about suppliers is very convenient. For example Martin and Hafer (2002) found in their exploratory study that more than sixty percent of the respondents use the Internet for this purpose.

When they have gathered enough information about supplier(s) acquisition and analysis of proposals (phase five) takes place; and today all proposals are received via e-mail in Sandvik MT. The firm can collect much more information about suppliers via the Internet; and due to this the process can be considered much more thorough than before.

To obtain this information is not as time consuming as it was before the Internet was used. This is in accordance with what Berthon *et al.* (1998) stated, as they suggested that Websites are highly effective at phase five. Furthermore the Intranet is helpful during the internal discussions, hence the findings from Lancioni *et al.* (2000), that seventy percent of the firms studied use the Intranet, is supported. The proposals then need to be thoroughly evaluated before a supplier can be selected (phase six). The evaluation is mainly a question of communication within Sandvik MT and e-mail on the Intranet is used a lot when they evaluate the information collected and analyzed in the previous phases. This supports what Zinkhan (2002) stated, that the Intranet is a good tool for internal communication. In the end of this phase the firm is negotiating with the supplier they have chosen and this is only done when the purchasers at Sandvik MT meet the supplier face-to-face. Hence this is in accordance with what Berthon *et al.* (1998) stated; that Websites are less effective for this phase and that personal selling is more effective. If the negotiations goes well an order of a trial sample is made in Sandvik MT (phase seven). Personal relationships are emphasized for ordering trial samples and for building this kind of relationships face-to-face meetings are necessary; hence the Internet is not used at all.

The trial sample is then thoroughly tested in the eighth phase (qualification process and evaluation) that extends, as mentioned, over a very long time. During this period Sandvik MT keeps up to date with the supplier's activities through the Internet and communicate with them via e-mail. This is how they evaluate the supplier and most of the information is gathered on the Internet, as it is an excellent tool for this purpose. The Internet has enhanced this phase as information not available for the firm earlier is now included; and it is not as time and cost consuming today. Even though no literature about this phase is included, search on the Internet has shown to be efficient (Berthon *et al.*, 1998), and that e-mails are used frequently has also been proven in an earlier study (Martin and Hafer, 2002). After the qualification process in Sandvik MT is done, a new proposal from the now well-known supplier is received, analyzed and evaluated (phase nine). Throughout this phase, discussions about the proposal take place between colleagues internally and also with the supplier. For this purpose e-mail is used extensively, and this coincides with what McCormack and Kasper (2002) found; namely that e-mail is one of the most frequent uses of the Internet. However in this phase they do not need to collect as thorough information as in phase five since they are by now well acquainted. Berthon *et al.* (1998), believes that Websites are very effective when acquiring, analyzing and evaluating proposals, and even though the Web is used to some extent, this is not the case in this phase for Sandvik MT. Instead the final negotiations with the supplier, concerning the terms for the agreement, are preferably done face-to-face in Sandvik MT, and this nevertheless coincides with Berthon *et al.* (1998), suggesting that personal selling is most effective at this phase.

When they have agreed the actual agreement is drawn and signed (phase ten), and the Internet is not used at all in Sandvik MT. This fact supports what Martin and Hafer (2002) found in their study, i.e. that only fourteen percent of the respondents use the Internet for placing orders. Contradictory to this, McCormack and Kasper (2002) are proposing that it is quite common, and that as much as forty-two percent of the

participants of their study use the Internet for order placement. Furthermore Berthon *et al.* (1998) claim that the Internet is very useful when placing orders. During the whole timeframe for the agreement, performance feedback and evaluation (phase eleven) is made, and e-mail and search engines on the Internet are used frequently in Sandvik MT. E-mails are used to communicate both internally and externally; and search engines are used for surveillance of how the supplier acts overall. Hence the Internet has impacted greatly on this phase, even though it is not as intense as in phase eight. McCormack and Kasper (2002) claim that the Internet is commonly used for performance feedback and Berthon *et al.* (1998) believes that the Internet is very effective for this purpose, hence the literature accurately describes how the use of the Internet works in Sandvik MT.

Overall the buying process in Sandvik MT has been streamlined since the introduction of the Internet. The expansion of the Internet use in Sandvik MT is still going on e.g. the development of the central purchasing department and a Website for it. Furthermore the respondents believe that procurement systems for them and their suppliers will be developed in the future. This correspond to what Martin and Hafer (2002) found, that the progress will probably continue since several of their respondents believed that firms will develop both Websites for purchasing and procurement systems with suppliers.

5.3 The Stage of the Buying Process Most/Least Affected by the Internet

In 1998 Berthon *et al.* proposed that phase four (search for supplier) was the phase most affected by the Internet, and Martin and Hafer supported this in a study 2002. However in Sandvik MT two phases are considered more affected than others:

(1) Phase four (search for information about supplier(s)). Valuable information about a supplier can be found through different sources on-line. Overall, search engines on the Internet have been very helpful as much information was too time and cost consuming to be obtained before. Information published by local newspapers was very hard to obtain before and is considered as very important today.

(2) Phase eight (qualification process and evaluation); since this process lasts for a long period of time and during this time a lot of information and feedback is exchanged via e-mail. They are furthermore using the Internet for surveillance purpose, to check that the supplier is acting in accordance with the policy of Sandvik MT. Moreover the Internet has opened up possibilities of discussing pictures sent on-line, speeding up the communication process in this phase. The Internet also makes more, earlier inaccessible, data available, thus enhancing the evaluation.

In the study by Martin and Hafer (2002) the part of the buying process least affected by the Internet would be order placement. Our respondents agree with Martin and Hafer since they state that phases seven and ten are least affected by the Internet. Sandvik MT purchases a trial sample (phase seven) after the negotiations face-to-face have been closed; and an order routine (phase ten) is selected after the final negotiations in phase nine. This is in accordance with what Berthon *et al.* (1998) found; that personal selling is the most effective communication tool for selection of an order routine.

5.4 Internet Use when Communicating with Suppliers

E-mail is a frequently used tool both when it comes to communication with suppliers and when communicating with colleagues within the firm, Martin and Hafer (2002) have also recognized e-mail as the most used form of the Internet. Sandvik MT considers e-mail to be the tool that has modernized their work most and it has, to a large extent, replaced other communication tools such as the fax machine and the telephone. This is in accordance with what Lim and Wen (2002) has written in their article where they believe that firms have gained cost savings due to this. Today e-mail takes up fifty percent of the time spent on communicating with suppliers in Sandvik MT, however more than ninety percent of the information exchange is via e-mail. This coincides whit what Hunter *et al.* (2004) claim, namely that through e-mail customers and suppliers can reach each other efficiently. The fact that the buying department in Sandvik MT does not have a Website of their own is not unexpected since an exploratory study by Martin and Hafer (2002) concluded that it is quite unusual. However, suppliers have come to realize the importance of Websites as a marketing communication tool, especially in Eastern European countries that have not focused much on this earlier. This is in line with Berthon *et al.* (1998) when they claimed that when searching for suppliers, the Internet is highly effective as a marketing communication tool. Trust is a big issue when dealing with complex products and face-to-face meetings will always be an important part of the buying process when communicating with supplier, and this is in accordance with the model by Berthon *et al.* (1998), stating that personal selling is very effective from phase four and onwards.

Sandvik MT does not take part in a system for order placement on the Internet. In 2002 Martin and Hafer found that only eleven percent of the firms studied had this kind of systems with their suppliers, even though almost forty percent believed that they would get a procurement system with their suppliers in the future. The respondents of this research were of the same opinion, i.e. there was a belief that such a system will be developed in the future. McCormack and Kasper (2002) have suggested that suppliers are the ones that usually focus on how to improve relationships with customers and hence develop these systems. But since Sandvik MT buy's very rare products, with only a few suppliers, a development of such a system is just as much in their interest. The attempt to develop a database (through a so called EDI system) with a partner in 1996 failed, partly since the people working with this project were not ready for this development. This supports the findings of Martin and Hafer (2002), that the largest problem with the Internet was lack of knowledge. However this will probably be developed in the future but this time as a Web based Extranet, to make the communication with suppliers clearer. An Extranet is according to Angus (1997) a very efficient tool for firms to use for this purpose. All in all the Internet has proven to be a useful tool during the whole communication process with suppliers for Sandvik MT, as Hunter *et al.* (2004) also pointed out. However, personal relationships are emphasized a lot and none of the respondents believed that their face-to-face meetings will or could be cut down on further in their communication with suppliers. This especially since they are buying strategic products that are considered more risky than other products; also recognized by Hunter *et al.* (2004).

Chapter 6: Conclusions & Implications

In this chapter we will answer our research questions stated in the first chapter. First a brief introduction concerning general information about the topic will be presented, followed by conclusions drawn on each research question. Finally this chapter and thesis will end with implications for managers, theory and future research. The conclusions drawn from comparing the collected data with theory are only valid for this particular case and can therefore not be generalized. Furthermore only complex products and the extended buyphases, as they are in Sandvik MT, are discussed when we draw our conclusions.

6.1 Introduction

Firms were allowed access to the Internet in 1992 and started to use it to a much larger extent in the middle or late 1990's. Even though technology have developed rapidly cautiousness and the fall of several IT-firms in the beginning of this millennium have slowed down the growth of the use of the Internet in firms. Cautiousness is significant for the whole buying process at Sandvik MT and maybe the firm acts the same way as when they are purchasing a product before they accept a new technology; they want to test it thoroughly. Circumspection seems to influence the whole firm and to make sure that nothing goes wrong the buying process is also extended over a longer period of time. However this is not only significant for the studied firm, we found it interesting that the Internet has not been used for such a long time in firms and hence little research on the topic has been done.

6.2 Research Question 1: How Can the Impact of the Internet on Different Stages of the Buying Process be Described?

Websites for purchasing departments are not much used in firms today, however we believe that such a Website would be useful since it should make it easier for suppliers to contact the right person at an early stage of the buying process. Firms will probably develop such Websites in the future, as it would make the process smoother. E-mail on the Intranet is used frequently during the first three phases. In fact it is used to such a large extent that sometimes the importance of discussing face-to-face is forgotten; information errors due to overuse of e-mails occurs more often today. Therefore firms need to find a perfect match between the use of e-mail and face-to-face meetings internally, so that the risks of misunderstandings and missing out on information are reduced.

When firms have specified the need, they start to search for information about supplier(s) (phase four). We find it interesting that this phase does not concern search for suppliers, but rather search for information about them, as in the concerned line of business there are only a few suppliers. Due to this firms cannot change supplier more often due to information found on the Internet; as we though they would when we first started this research. When searching for information, purchasers often visit suppliers Websites (home pages); and this has obviously put pressure on firms to actually have something

positive to present about themselves on these home pages. Moreover does the Internet make information that was almost impossible to obtain before available; earlier it was too expensive and time consuming to get hold of it. This phase is also where the use of the Internet probably will continue to grow most in the nearest future, as it is in this phase businessmen/businesswomen use the Internet for most and desire it to grow further. However if firms develop a special Website for suppliers, as mentioned earlier, this phase will probably only be a question of searching for information about the suppliers they already know of. This as they probably will be contacted more often by suppliers, and do not have to actually find them; instead the suppliers will contact firms with inquiries and proposals.

Today proposals are mainly received via e-mail and this has come to speed up this part of the process, phase five (acquisition and analysis of proposals). Furthermore the Internet is a very effective and extensively used tool regarding internal and external communication via e-mail and the use of search engines. Firms can collect much more valuable information about suppliers on the Internet, and have gained not only in time, but also in quality. The information available on the Internet makes the process more thorough, and enhances the next phase in the buying process. The decisions in phase six (evaluation of proposals and selection of supplier) are based on information collected and analyzed in previous phases. It should therefore be considered easier as the information is now much more thorough. This should make the selection process much more reliable and give purchasers a more secure feeling of that they made the right decision. However the actual negotiation part in the end of the phase require that suppliers and buyers meet, so that they can build a trustful relationship with each other.

Since phase seven and eight in Sandvik MT does not coincide with literature presented, we have decided to not draw any general conclusions on these phases. Nevertheless we want to present some facts regarding Sandvik MT: (1) when a decision of a purchase of a trial sample (phase seven) finally is made it is always done when they meet the seller in person. Therefore the Internet is not used at all in this phase today and will probably not be so in the future, since it is important to meet the supplier to be able to build a trustful relationship. (2) When purchasing high-risk products an investment in a qualification process is needed (phase eight). This phase also include evaluation of suppliers' performance and hence it includes a lot of search for information and the Internet has simplified and increased the quality of this evaluation a great deal.

The Internet has made it easier to communicate both internally and externally and thereby the ninth phase (acquisition, analysis and evaluation of proposal) has been streamlined. However for negotiations, face-to-face meetings are, and will probably always be, preferred. One part of the negotiations concerns prices, and as for today this is best done through face-to-face meetings. We are not sure that this is always the most effective way since personal relationships might have a negative impact on the price level. That is, if a person likes the other part and therefore would like to do business with this person he/she might accept a slightly higher price

In phase ten an agreement is drawn and signed, and the Internet is not used at all. Internet has only been used in firms since the middle of the 1990's and people working with this new technology have not been quite ready for development regarding placing orders on the Web. Today, however, the Internet is a common tool in firms and personnel use it on a daily basis; therefore they should be riper for further development when it comes to order placement. By using the Internet more in this phase firms should be able to speed up the process further; developing an Extranet could do this. These procurement systems need to be developed in close cooperation with suppliers and therefore only the main suppliers will be included. If a firm uses an Extranet this phase will probably disappear since an order routine is already set.

The final phase, eleven, (performance feedback and evaluation) consists of searching for valuable information and exchanging feedback. Even though some feedback is via the telephone or when meeting face-to-face, the main part is via e-mail. Thanks to the Internet less time is spent on searching for information and visiting the supplier; and therefore costs have been reduced. Taking into consideration that an agreement, for high-risk products, goes on for many years firms should have saved a lot of money by the use of the Internet. If firms start to use an Extranet they should be able to gain a lot more in this phase, as via an Extranet firms can jointly build flow charts that will lead to improved delivery schedules.

The whole buying process has been extensively streamlined since firms started to use the Internet. It seems like all phases are still a part of the buying process, even though some have become essentially more efficient, and may disappear or change in the future (as suggested, phase four and ten). E-mail is probably the tool that has revolutionized businesses the most, since it can be used in all eight stages of the buying process.

Now when we have discussed the first research question, we draw the following conclusions based on the above discussion. General conclusions on the overall process will be drawn; not described separately for each phase, as many of the phases have been affected in similar ways.

- The Internet has impacted the buying process to a large degree; mainly through e-mail, and search engines on the Web
- Firms need to find a balance between face-to-face meetings and e-mail in the internal communication
- If firms develop a Website for purchasing departments, phase four will consist mainly of search for information about supplier(s), not actually finding them
- Information available on the Internet is considered more thorough and valuable
- Internet puts pressure on suppliers to have something positive to present on their Website
- If orders are placed on line, the selection of an order routine will disappear
- The emphasis in the buying process is on personal relationships when it comes to strategic products, and the Internet will never fully take over

6.3 Research Question 2: How Can the Stage of the Buying Process Most/Least Affected by Introduction of the Internet be Described?

We have come to the conclusion that there are two stages of the buying process that are more affected by the Internet than the others, namely phase four and phase eight. Both phases contains a lot of search for information about suppliers and for this the Internet is an excellent tool, containing several different search engines, providing the possibility to collect more valuable information about firms. Through the Internet, information that was hard to find earlier can be found and thereby improve the quality of the two following phases and decreased the occurrence of unnecessary surprises. These phases are probably where the use of the Internet will continue to grow most in the nearest future, as this is where purchasers want it to grow further; and there will always bee a need for searching information.

Order placement, that occurs in both phases seven and ten, is the part of the buying process least affected by the Internet. We believe the main reason for this is the human factor, that people have not been ready for this development, neither have they been educated enough to be able to handle it. Even though there is new technology that would be able to replace much of the order process the Internet can never give the same information as face-to-face communication, nor is it as effective when it comes to negotiating about prices. Therefore personal relationships are far the most important influence when it comes to order processing. However if development of Extranets will grow, as we believe it will, this phase will change remarkably and maybe even disappear as an order routine already will be set up on the Web.

The conclusions that can be drawn after discussing the second research question are:

- Internet has impacted most on the search for information about supplier(s) in phases four and eight, in the buying process
- Internet has impacted the least on order placement, in phases seven and ten, in the buying process

6.4 Research Question 3: How Can the Use of the Internet in the Communication with Suppliers in the Buying Process be Described?

The Internet has reduced the use of the telephones and fax-machines significantly, and today the communication with suppliers during the buying process is mainly through e-mail. Even though e-mail is a great tool it has both positive and negative effects. Positive since it, as opposed to the telephone, eliminates faulty accusations of broken promises that were never made, as it is now saved in writing. Negative since misinterpretations and missing out on information have increased between the purchaser and supplier because

questions cannot be asked and answered in real-time. We believe that the Internet will further reduce the use of telephone and faxes in the future; and the fax machine will probably be totally replaced by other applications, e.g. the scanner and electronic signatures. Furthermore it is possible that the use of videoconferences will grow and replace some of the face-to-face meetings. Nevertheless, personal contact is a never-ending need, and it will therefore always be important for firms to maintain personal relationships. It is hence important for firms to find a balance between using face-to-face meetings and the Internet, and also to remember that the Internet should be seen as a tool for communication, not as an all-mighty problem solver.

The importance of a well-designed Website has grown as the Internet is more and more used. Firms have come to realize the importance of marketing themselves through these sites, and not only the selling, but also purchasing departments, can benefit from such sites as they can be contacted by suppliers and thereby not need to use valuable time searching for them.

Today purchasers mainly sign agreements when they meet the seller in person. However if firms develop a procurement system in form of a Web based Extranet, orders can be placed on-line. This would make the negotiation process regarding terms in the agreement a bit smoother, as it would not have to include decisions on an order routine. We believe that development of these systems in firms is slow since personnel have not been quite ready for this progress. If firms invest and educate personnel more about how to use the Internet in an effective way they would probably be able to benefit more from the use of the Internet. Timing is everything!

After having discussed how the Internet is used in communication with suppliers the following conclusion has been drawn:

- E-mail is dominating the communication process between buyers and seller in the buying process
- Misunderstandings has increased, while incorrect accusations has declined through the use of e-mail in the communication with suppliers
- Firms need to find a balance between face-to-face meetings and e-mail in the external communication
- Face-to-face meetings will not become less important due to the use of the Internet

6.5 Implications

In this last section we will imply in what field we consider this study to be useful in the future. These implications are mainly useful for scholars and managers.

6.5.1 Implications for Management

In the progress of writing this thesis we have learned that it is unusual for purchasers/purchasing divisions to maintain special Websites for suppliers. We want to emphasize that all actors could gain from this. For purchasers we see special Websites as an opportunity for cost savings since it gives time reductions in the search process and allow more suppliers to contact them and participate. For suppliers, purchasers Websites are an opportunity since they will find the right person to contact easier, and thereby be able to track down new customers more easily.

Since misinterpretations and miss out on information actually occurs in the use of e-mail today firm should be cautious and carefully consider that, sometimes, personal meetings are necessary. Maybe some kind of scheduled face-to-face meetings would eliminate some of the misinterpretations and the missing out on information between colleagues.

If a firm wants to benefit as much as possible from the Internet they need to educate their personnel on how to best use this tool before they actually invest in advanced programs, e.g. procurement systems. If they however do this they will be able to benefit from both time and cost savings.

6.5.2 Implications for Theory

The purpose with this research was to find out and get a deeper understanding of how the Internet has affected the buying process in different ways. We have done this by thoroughly searched the literature about the topic. Furthermore we have explored trough a case study how purchasing actually has been affected by this new technology and then explained our findings. Finally we have drawn our conclusions based on our findings in comparison with the literature. Even though most of our findings are similar as earlier studies, some issues are not exactly the same. Moreover did we not find literature on all of the topics and hence our own conclusions are drawn based on our empirical findings. We have found that the Internet has impacted the most in phase four, search for information about supplier(s). The part of the buying process where Internet has impacted the least is order placement. Finally we have concluded that e-mail dominates the communication with suppliers.

6.5.3 Implications for Future Research

How the Internet has impacted on the buying process when it comes to very complex products has been presented in this research. This area is very wide and we have narrowed it down so it would not include to many different aspects. There are several other aspects to study further in the future:

- The three different buyclasses in the buygrid framework (new task, modified rebuy, and straight rebuy) that are not discussed in this thesis, however the impact of the Internet may vary with the buyclasses. Hence further research on this area should bring forward new aspects.

- The Intranet is something that is used more and more in firms today and some phases of the buying process are mainly affected of the use of this application. Therefore it would be interesting to further explore how the Intranet has impacted on the buying process.

- The Web has made it possible to develop a less expensive database for cooperation between suppliers and buyers, an Extranet. Hence how the Extranet is used when communicating with suppliers in the buying process is a topic for future research.

- Our research has focused on very complex products and therefore not taken into account that the process may look very different when dealing with transactional purchases. A similar study on transactional purchases would be interesting.

- The growing importance for firms to have a well designed home page, and what kind of information that is needed on these pages would be interesting to further investigate.

References

Aaker, D.A., (1992), *Strategic Market Management,* 3rd edition, John Wiley & Sons Inc., U.S.A.

Angus, J., (1997), Extranet Keeps Production Flying, *InformationWeek,* Issue 643, pp. 98-100

Baptista, C.S., (2001), *Buying Behavior and Long-term Relationships in the Metal Mining Industry – Case Studies of Capital Equipment Buying,* Doctoral Thesis, Luleå University of Technology (2001:02)

Bayle, L.D., (2003), *The Internet's Influences on Industrial Buying behavior in Small and Medium Sized Enterprises*, Master's Thesis, Luleå University of Technology (2003:233 CIV)

Berthon, P., Lane, N., Pitt, L., & Watson, R.T., (1998), The World Wide Web as an Industrial Marketing Communication Tool: Models for the Identification and Assessment of Opportunities, *Journal of Marketing Management,* Volume 14*,* pp.691-704, Cardiff University, University of Georgia, USA

Boyle, B.A., & Alwitt, L., (1999), Internet Use within the U.S. Plastics Industry, *Industrial Marketing Management,* Volume 28*,* pp. 327-341, New York

Brassington, F., & Pettitt, S., (2000), *Principles of Marketing,* 2nd edition, Pearson Educational Limited, Italy

Couretas, J., (1997), Get Connected! Automakers Want Internet Link to Suppliers, *Automotive News,* Volume 71, Issue 5733, p. 16

de Haan, J., de Groot, G., Loo, E., & Ypenburg, M., (2003), Flows of Goods or Supply Chains; Lessons from the Natural Rubber Industry in Keral, India, *International Journal of Production Economics,* Volume 81-82, pp. 185-194

Denscombe, M., (1998) *Forskningshandboken – för småskaliga forskningsprojekt inom samhällsvetenskaperna*, Open University Press, Lund

Denzin, N.K, & Lincoln, Y.S., (2003), *Collecting and Interpreting Qualitative Materials,* 2nd edition, Sage Publications Ltd., Thousand Oaks

Eid, R., Trueman, M., & Ahmed, A.M., (2002), A cross-industry review of B2B critical success factors, *Internet Research: Electronic Networking Applications and Policy,* Volume 12*,* pp. 110-123,

Eriksson, L.T., & Wiedersheim-Paul, F., (1987), *Att Utreda och Rapportera,* Edition 2:1, Liber, Stockholm

Goh, M., Lau, M.T., & Phua, S.L., (1999), Purchase-Related Factors and Buying Center Structure, *Industrial Marketing Management,* Volume 28, pp. 573-587, New York

Gopalkrisham, R.I., (1996), Strategic decision making in industrial procurement: implications for buying decision approaches and buyer-seller relationships, *Journal of business and industrial marketing*, Volume 11, No. ¾, pp. 80-93, New York

Gummesson, E., (1991), *Qualitative Methods in Management Research*, Revised edition, Sage Publications, Inc., Newbury Park

Hedebrant, O., Bratt, T., Davidson, L., Jansson, G. & Jonson, B., (1987), *Transformation: Sandvik 1862-1987. From a Steelworks into a High-technology Industrial Group,* Sandvik AB, Stockholm

Honeycutt, E.D., Flaherty, T.B., & Benassi, K., (1998), Marketing Industrial Products on the Internet, *Industrial Marketing Management,* Volume 27, pp.63-72, New York

Hunter, L.M., Kasouf, C.J., Celush, K.G., & Curry, K.A., (2004), A classification of business-to-business buying decisions: Risk importance and probability as a framework for e-business benefits, *Industrial Marketing Management,* Volume 33*,* pp. 145-154

Kandampully, J., (2003) B2B relationships and networks in the Internet age, *Management Decision*, Volume 41*,* No. 5, Ohio

Lancioni, R.A., Smith, M.F., Oliva, T.A., (2000), The role of the Internet in Supply Chain Management, *Industrial Marketing Management,* Volume 29*,* pp.45-56, New York

Lightfoot, W., & Harris, J.R., (2003), The effect of the Internet in industrial channels: an industry example, *Industrial Management & Data systems,* Volume 103*,* No.2, pp. 78-84, MCB UP Limited

Lim, B.L., & When, J.H., (2002), The impact of next generation XML, *Information Management & Computer Security,* Volume 10*,* No.1*,* pp. 33-40, MCB UP Limited

Mannerstråle, G.L., & Pons, P.M., (1999), *Changes in Organisational Buying Behaviour Practice Due to Internet Marketing*, Masters Thesis, Luleå University of Technology, (1999:159 CIV)

Martin, T.N., & Hafer, J.C., (2002), Internet Procurement by Corporate Purchasing Agents: Is It All Hype?, *Sam Advanced Management Journal/Winter,* pp. 41-47

McCormack, K., & Kasper, K., (2002), The extended supply chain – A statistical study, *benchmarking: An International Journal*

Miles, M.B., & Huberman, M.A., (1994), *An Expanded Sourcebook: Qualitative Data Analysisi,* Sage Publications Inc., Thousand Oaks

Patterson, P.G., & Dawes, L.D., (1999), The Determinants of Choice Set Structure in High Technology Business Markets, *Industrial Marketing Management,* Volume 28*,* pp. 395-411, New York

Porter, M.E., (2001), Strategy and the Internet, *Harvard Business Review,* Volume 79, No. 3, pp. 62-78

Quelch, J.A., & Klein, L.R., (1996), The Internet and International Marketing, *Sloan Management Review,* Spring Volume*,* pp. 60-75, (Reprint 3735)

Rahman, Z., (2003) Internet-based supply chain management: using the Internet to revolutionize your business, *International Journal of Information Management,* Volume 23*,* pp. 493-505,

Robinson, P.J., Faris, C.W., & Wind, Y., (1967), *Industrial Buying and Creative Marketing,* Allyn & Bacon Inc., Boston

Samli, A.C, Wills, JR, Jr., & Herbig, P., (1997), The Information Superhighway Goes International: Implications for Industrial Sales Transactions, *Industrial Marketing Management,* Volume 26*,* pp.51-58, (New York)

Saunders, M., Lewis, P., & Thornhill, A., (2000), *Research Methods for Business Students,* 2nd edition, Pearson Education Limited, Gosport

Sekaran, U., (1992) *Research Methods for Business- A Skill Building Approach,* 2nd edition, John Wiley & Sons, Inc., New York

Sheth, J.N., (1996), Organizational buying behavior: past performance and future expectations, *Journal of Business and industrial marketing*, Volume 11, No. ¾, pp.7-24, (New York)

Silverman, D., (2000), *Doing Qualitative Research- A Practical Handbook,* Sage Publications, Inc., Trowbridge

Silverstein, B., (1998), *Business-to Business Internet Marketing*, Maximum Press, U.S.A.

Svensson, L., (2003), *The Internet and International Marketing in Small Firms,* Licentiate Thesis, Luleå University of Technology, (2003:32)

Tanner, J.F. Jr., (1996), Buyer Perceptions of the Purchase Process and Its Effect on Customer Satisfaction, *Industrial Marketing Management*, Volume 25, pp.125-133, (New York)

Travers, M., (2001), *Qualitative Research Through Case Studies- Introducing Qualitative Methods,* Sage Publications Inc., Trowbridge

Webster, F. E. & Wind, Y., (1996), A General Model for Understanding Organizational Buying Behavior, *Marketing Management,* Volume 4, No.4, (Reprinted from Journal of Marketing, (1972), Volume 36, pp.12-14)

Wild, J. J., Wild, K.L., & Han, J.C.Y., (2003), *International Business,* 2nd edition, Prentice Hall, New Jersey

Wind, Y.P., & Thomas, J.R., (1980), Conceptual and Methodological Issues in Organizational Buying Behavior, *European Journal of Marketing,* Volume 14, No. 5, pp.239-263

Woodside, A., Gupta, S., & Cadeaux, J., (2004), Diffusion Process Models and Strategic Performance Theory for New B2B Electronic Ventures, *Journal of Business and Industrial Marketing,* Volume 19, No. 1, pp. 23-38

Zinkhan, G.M., (2002), Promoting Services Via the Internet: New Opportunities and Challenges, *Journal of Services Marketing,* Volume 16, No. 5, pp. 412-423

Yin, R.K., (1993), *Applications of Case Study Research,* Applied Social Research Methods Series, Volume 34, Sage Publications Inc., Newbury Park,

Yin, R.K., (1994) *Case Study Research – Design and methods*, 2nd edition, Applied Social Research Methods Series, Volume 5, Sage Publications Inc., Thousand Oaks,

Internet pages

Encyclopedia.org, (2003), The 1911 Edition Encyclopedia, *Bessemer,* [on-line], Avaliable: http://83.1911encyclopedia.org/B/BE/BESSEMER.htm, [2004-03-25]

www.mysite.freeserve.com, Bell, S., (2000), Mode and Freight Forwarder Selection: A Study of Shippers and Forwarders in the West of Scotland, *MSc in Logistics and Supply Chain Management*, University of Edinburgh and Heriot-Watt University, [on-line] Available: http://mysite.freeserve.com/stevens_world/Clyde_00_home.htm, [2004-03-24]

www.ryerson.ca, Joppe, M., (No Date), The Research Process, *Dr. Marion Joppe,* [on-line] Available: http://www.ryerson.ca/~mjoppe/rp.htm, [2004-04-14]

www.sandvik.se, (2004), Frequently during the whole period [March-May, 2004]

www.trichys.com, (2004), Intranet Definition: What is an Intranet?, *WorkZone all together smarter,* [on-line] Available: http://www.trichys.com/intranet-extranet/intranets-extranets.vm, [2004-04-08]

Interviews

Elletoft, A., (2004), Manager of Marketing & Administration at Sandvik Materials Technology Special Metals, [2004-04-28], 10.00 pm

Persson, A., (2004), Production Manager at Sandvik Materials Technology Special Metals, [2004-04-28], 13.00 am

Appendix A: Interview Guide, English Version

General Information:

Date: _____

Name of the firm: _____

Name of respondent: _____

Respondent's position and years in firm: _____

_____

Respondent's years as a purchaser: _____

Type of industry and years in business: _____

General Information on the Purchasing Area:

1. Would you like to tell us some general information about suppliers, type of product bought and countries purchasing from?

_____

Your Firm and the Internet:

2. What year did your firm start to use the Internet?

_____

3. Is your firm using the Web, Extranet and Intranet? Please describe!

_____

4. The purchasing process has been theoretically described through eight different phases. Do you recognize these stages/phases in your firm? Do they fit or are there phases missing? Are there too many? Please Explain! Why/Why not/How?

Buying Phase	**Sandvik**
1. Recognition of a need	
2. Determination of solution characteristics	
3. Description of solution characteristics	
4. Search for suppliers	
5. Acquisition and analysis of proposals	
6. Evaluation of proposals and selection of supplier(s)	
7. Selection of an order routine	
8. Performance feedback and evaluation	

5. Would you like to describe how and when these phases have changed due to the Internet?

_____

6. Does your purchasing department have a special Website for suppliers?

_____

7. When communicating with your suppliers, how is the Internet used?

_____

8. How important is e-mail in the communication with suppliers?

_____

9. Does your firm have any kind of procurement system with supplier(s)?

_____

10. Does your firm change supplier more often due to the Internet? Please, explain

11. Customer satisfaction is crucial for sellers. How do you think your suppliers have changed their way of handling your relationships due to the impacts of Internet?

12. To what extent has the use of the Internet impacted on your daily work, when it comes to contact with suppliers?

13. In which step of the buying process do you think the Internet has changed the buying process the most? Describe, is it only for the better?

14. In which step of the buying process do you think the Internet has changed the buying process the least? Should it have changed more? Describe. Is it only for the better?

15. Do you have any additional comments concerning Internets impact on the buying process?

May we contact you for further questions, if needed?

Thank you for your time! It has been appreciated!

Appendix B: Intervjuguide på Svenska

Allmän Information

Datum:_____

Företagets namn:_____

Respondentens namn: _____

Respondentens position och antal år inom företaget: _____

_____

Respondentens antal år som inköpare: _____

Typ av industri och antal år företaget verkat inom denna industri: _____

_____

Allmän Information om Inköp:

1. Vill du vara vänlig och berätta lite allmänt om inköp, tex. leverantörer och länder som ni köper ifrån?

_____

Ert företag och Internet

2. Vilket år började Ert företag använda sig av Internet respektive World Wide Web?

_____

3. Använder Ert företag Webben, Extranet och Intranet?

_____

4. Inköpsprocessen brukar teoretiskt sägas innefatta åtta olika steg. Anser du att dessa steg finns inom ditt företag? Är det något steg som saknas och/eller är det något steg du vill lägga till? (vill du vara vänlig att förklara hur, varför, varför inte?)

Inköpsfaser	**Sandvik**
1. Ett problem eller behov uppstår	
2. Precisering av vad och hur mycket som skall köpas in	
3. En beskrivning tas fram av vad som skall köpas in	
4. Företaget letar efter potentiella leverantörer	
5. Insamling och analys av offerter	
6. Utvärdering av offerter och val av leverantörer	
7. Order till leverantören skickas	
8. Leverantörens prestation utvärderas	

5. Skulle du vilja beskriva hur och när Internet förändrade de olika stegen?

6. Har eran inköpsavdelning en särskild Webbsida som era leverantörer kan besöka?

7. Hur använder du och/eller din avdelning Internet i er kontakt med era leverantörer?

8. Hur viktig anser du att e-mail är i kommunikationen med leverantörer?

9. Har er firma något upphandlingssystem med någon/några leverantörer?

10. Byter företaget generellt sett leverantörer oftare som en verkan av Internet? Vänligen förklara.

---

11. Att ha nöjda kunder är av yttersta vikt för alla säljare/företag. Anser du att de leverantörer du varit i kontakt med har förbättrat era relationer på olika sätt tack vare att de numera kan använda sig av Internet?

---

12. Till vilken grad anser du att Internet har påverkat ditt dagliga arbete, angående kontakt med leverantörer?

---

13. Vilken av köpfaserna anser du att har förändrats mest på grund av Internet? Vänligen beskriv, har det bara varit till det bättre?

---

14. Vilket steg i köpprocessen anser du har förändrats minst och borde ha förändrats mer p.g.a. Internet? Vänligen förklara. Är det endast positivt?

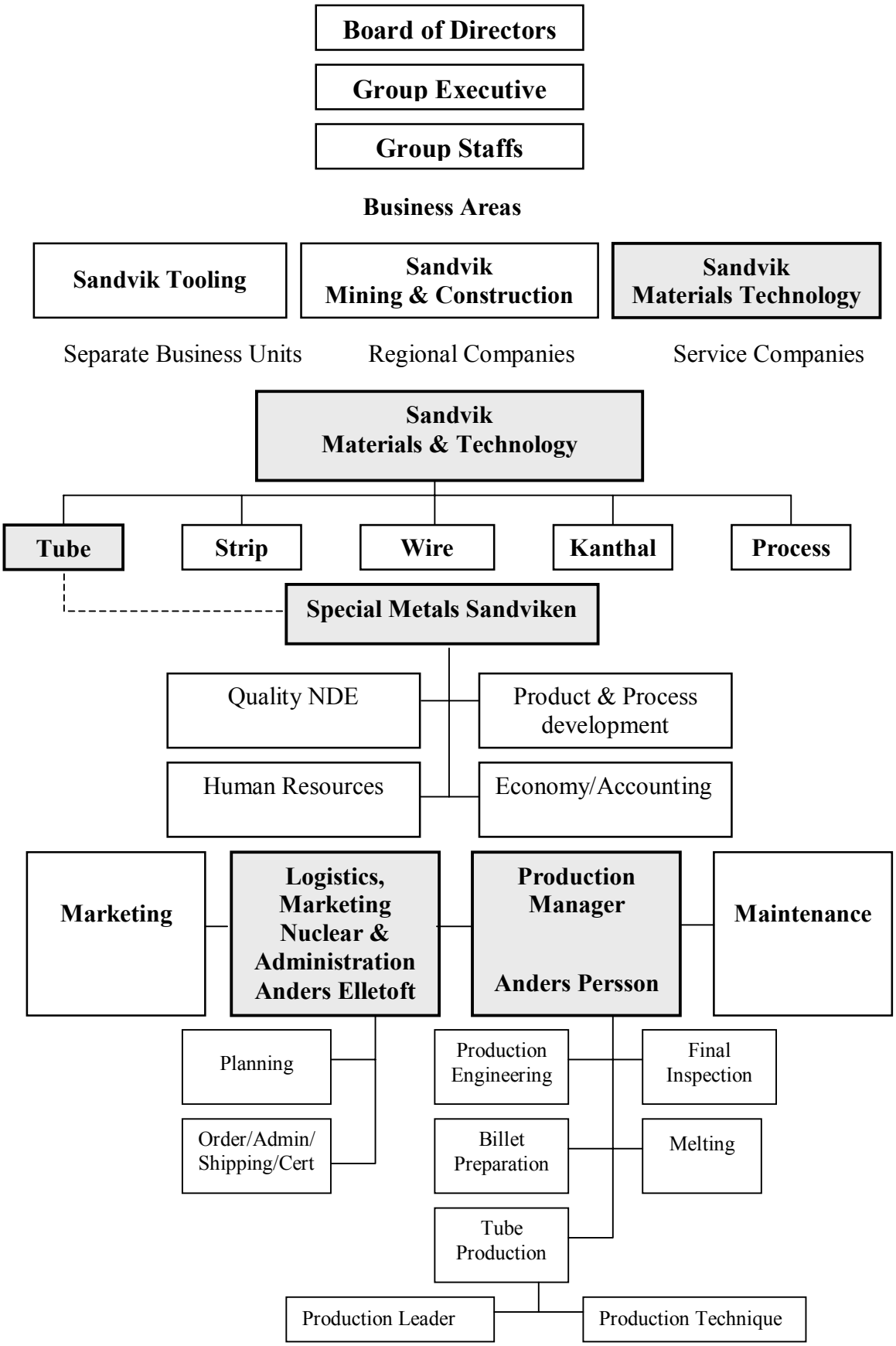
---

15. Har du några ytterligare kommentarer om ämnet?

Är det möjligt för oss att kontakta dig ytterligare om vi behöver komplettera med fler frågor?

Tack så mycket för din medverkan!

Appendix C: Organizational Schedule for Sandvik AB



Appendix D: Purchasing Portfolio Classification