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C EXTENDED ESSAY

Industrial Buying Behaviour in the Telecommunication Market

A case study within Ericsson AB

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Abstract

Industrial purchasing stands for more than half of the whole economic activity in industrialized countries. Therefore it is important to understand how industries perform buying activities. The telecommunication industry is a fast growing industry and therefore interesting to investigate.

The purpose of this study was to investigate the characteristics of industrial buying behaviour in the telecommunication industry. The purpose has been further developed in forms of research questions dealing with the buying process, buying center and choice criteria.

A case study was made with a customer, to the telecom supplier Ericsson, from the company HI3G Access, also known as 3. A highly topical company in the third generation telecom networks with Ericsson as one of their primary suppliers.

The conducted telephone interview indicates a swift buying process, influenced by word of mouth. Additional findings involve a small buying center, which is mainly controlled by the technical and procurement staff and the importance of price as a selection criteria as the product is becoming a commodity.

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Chapter 1. Introduction and Research Problem

The purpose of this chapter is to give the reader an introduction and background to the intention of this study. It will motivate and finally define the research problem.

1.1. Introduction

Industrial purchasing stands for more than half of the whole economic activity in industrialized countries (Dwyer & Tanner, 2001; Kotler & Armstrong, 1994). Hardly any consumer has the buying authority as organizations and any given end product is made up by many industrial purchases. Therefore it is important to understand how industries perform buying activities (ibid).

Industrial buying behaviour[1] (IBB) is in essence the arrangement of how industrial organizations purchase goods and services (Dwyer & Tanner, 2001; Kotler & Armstrong, 1994). This area is essential for the understanding of customer needs and must be taken into consideration for successful suppliers (ibid).

Robinson, Faris & Wind (1967) states that when understanding the industrial buying behaviour a permanent process of problem solving and decision-making must be taken into consideration. All members in a business who become involved in such a buying process are centred to a specific group. These processes and group members may vary when purchasing different kinds of products or services (ibid).

1.2. Background

1.2.1. Industrial Buying Behaviour

Many researchers in the past have illustrated the problem of describing industrial buying behaviour from different perspectives (Sheth, 1973; Robinson, Faris & Wind, 1967; Webster & Wind, 1972). As some researchers have described the entire area of IBB, they have developed extensive models including psychological aspects of the many individuals and the process that take place between them (Sheth 1973; Webster & Wind 1972). The early researchers contributions to the development of IBB has been broad, as well giving guidance for future researchers as to defining the very basic rules and factors of IBB, and the interactions of these. Environmental, organisational, interpersonal and individual are all such factors that affect industrial buying (Webster & Wind, 1972).
Product specific factors involve the perceived risk of making the wrong decision, type of purchase and the time aspects of the purchase (Sheth, 1972). Personal factors is regarding the fact that industrial buying decision are carried out by individuals and these always have

[1] Industrial buying behaviour is synonymously used as organizational buying behaviour, or OBB, by many authors. IBB will be used in this report but the initial usage will be found in the reference list.

personal motives that are influenced by, for example, age, income, education and personality (Webster, 1965; Webster & Wind, 1972; Kotler, 1991).

Webster & Wind (1972) claims that factors influencing IBB can be structured within two categories of variables: task and nontask. The former are directly related to the buying problem, whilst the nontask variables include aspects beyond the specific buying problem. Furthermore the task variables influence the nature of the industrial buying process, which will end up in a buying decision (ibid).

Robinson et al. describes that in each purchasing situation, with same product in mind, the individual purchasing patterns will differ depending on the buying situation, i.e. being the first time buying this specific product or have bought it or a similar product before. The different buying situations are defined by Robinson et al. as Buyclasses and consist of *new buy*, *modified rebuy* and *straight rebuy* (ibid).

A major aspect of IBB is the process of procurement, the phases or steps that are identified when buying, such as searching information and qualifying suppliers (Sheth, 1973; Robinson, Faris & Wind, 1967; Webster & Wind, 1972). Another aspect is the decision-making group within the organisation and the different roles that these individuals or groups play, roles such as decision maker or initiator. Furthermore, critical evaluation criteria when choosing a supplier such as price or quality of the products offered plays an important role, as well as several other factors influencing IBB (Sheth, 1973; Robinson, Faris & Wind, 1967; Webster & Wind, 1972; Dempsey, 1978; Bharadwaj, 2004).

1.2.2. Buying Process

Many researchers have mapped the industrial buying process (e.g. Webster, 1965; Robinson et al.; Ozanne & Churchill, 1971; Kelly, 1974; Bradley, 1977; Wind, 1978; Wind & Thomas, 1980) and as Webster, as early as 1965 recognized, buying decisions in industries are made by the individuals that the process consists of. Thus it is needed to investigate both individuals as well as organisational decision making in order to map a procurement process (ibid). The importance of describing the industrial procurement process is clear and the very first phrase of Webster (1965) widely referred to article is:

"The aim of the marketer is to influence the industrial buying process to his advantage." (Webster, 1965, pp. 370)

The many processes found in literature are made up by different phases or step and mostly described in a sequential order (Webster, 1965; Robinson et al.; Burger & Cann, 1995). Common phases in these are problem recognition, information search, evaluation and finally some kind of decision phase (ibid).

In the first phase it is either an *internal need*, that arises within the organisation (something breaks down or new needs arise because of new production line), or *external need* is derived from changes in the environment of the organisation (technological shift or simply external marketing actions that show potential resource saving) (Webster, 1965; Robinson et al.; Burger & Cann, 1995). Thus a problem that needs to be solved, and can be solved by a purchase, have occurred in the organisation. Generally this phase is followed by some kind of initial information seeking regarding how to solve the problem, which is followed by

gathering information about potential suppliers to the problem. This can occur as well formal, e.g. approved suppliers lists, or informal by word of mouth. Naturally there is some evaluation of options and alternatives in order for the final decision to be as optimal as possible. The different models vary from being small in extent; consist of only few phases, or being very extensive involving over ten phases (Webster, 1965; Robinson et al.; Burger & Cann, 1995).

1.2.3. Buying Center

Industrial buying rarely involve only a single individual, all of the activities conducted by the organizational members such as identifying, evaluating and choosing between vendors define a buying situation (Webster & Wind, 1972). Six different roles of individuals involved in industrial buying process have been mapped by Webster & Wind (1972) and these are classified in a decision-making unit called the buying centre (Robinson et al.; Johnston & Bonoma, 1981; Dwyer & Tanner, 2002). Depending on the type of product, the formality of the organisation at hand or other environmental conditions, will the members and the number of this group vary (Robinson et al.). The different roles are: *initiator, influencer, decider, buyer and gatekeeper*, and each role can be carried out by a group or a single person (Webster & Wind, 1972; Bonoma, 1982).

Generally a more complex buying decision implies a larger buying center (Webster & Wind, 1972; Bonoma, 1982). Additionally Johnston & Bonoma (1981) identify some dimensions that have been mapped within the buying center and exerts influence on the group in different ways (Johnston & Bonoma, 1981). *Vertical* and *lateral involvement, extensivity, connectedness* and *centrality* are these five structural and interactive dimensions that describe the involvement and force influences in, on and by the buying center in a buying situation (ibid).

As mentioned before, IBB is very complex and there are other factors such as buying situation, product factors and personal factors that influence the buying behaviour and the individuals that carry it out (Robinson et al.; Sheth, 1972; Webster & Wind, 1972).

1.2.4. Choice Criteria

Factors such as quality, delivery, price and service are often seen as significant buying criteria when choosing suppliers (Bharadwaj, 2004; Lehmann & O'Shaughnessy, 1974; Matthyssens & Faes 1985). Whether these are uncontrollable or controllable depends on the situation in hand and the emphasis of these factors changes depending on the buying organisation, specific buying situation and the individuals involved in the buying decision (Webster, 1965, Robinson et. al., Bharadwaj, 2004).

1.2.5. Industry Selection

Researchers have recognized the fact that buying behaviour varies depending on the situation at hand, which makes it meaningless to generalise about (Webster, 1965; Dempsey, 1978; Matthyssens & Faes, 1985; Bharadwaj, 2004). The behaviour will also vary across product categories, therefore it is interesting to map these in various areas and thus an industry must be chosen (Dempsey, 1978; Matthyssens & Faes, 1985; Bharadwaj, 2004).

During the end of last century telecommunications experienced a time of increased business opportunities (Telekom, 1997). In Europe this was even more obvious as a deregulation within this sector had started and many new possibilities would arise. Although a deregulation decreases price and consequently revenue per piece, it was estimated to increase overall profit since many new users would arise. Internet users practically doubled yearly and mobile phone subscribers increased with even more than that.

This period followed by an enormous collapse within the telecom industry, but the sector is now reviving and as many companies are regaining strength, the telecom sector is growing rapidly (Teknikbolagen, 2005). High technology products and services, which now have matured, such as Internet based telephony, broadband, Internet based video and TV, wireless broadband and equipment for these technologies are evidently increasing in demand (ibid).

1.3. Research Area

Industrial buying behaviour is an extensive area, both for the practical marketer as well as from an academic perspective (Dwyer & Tanner, 2001; Kotler & Armstrong, 1994). As the telecommunications is once again expanding it is of essence to understand the buying behaviour in this industry.

This report has the intention of giving an overview to how industrial buying behaviour can be described in the telecommunications industry.

1.4. Outline of the Study

Figure 1.1 below is illustrating an outline of the study. The horizontal width is representing the broadness of discussed areas in each chapter, and the vertical height is illustrating the sequence of how the work has been conducted.

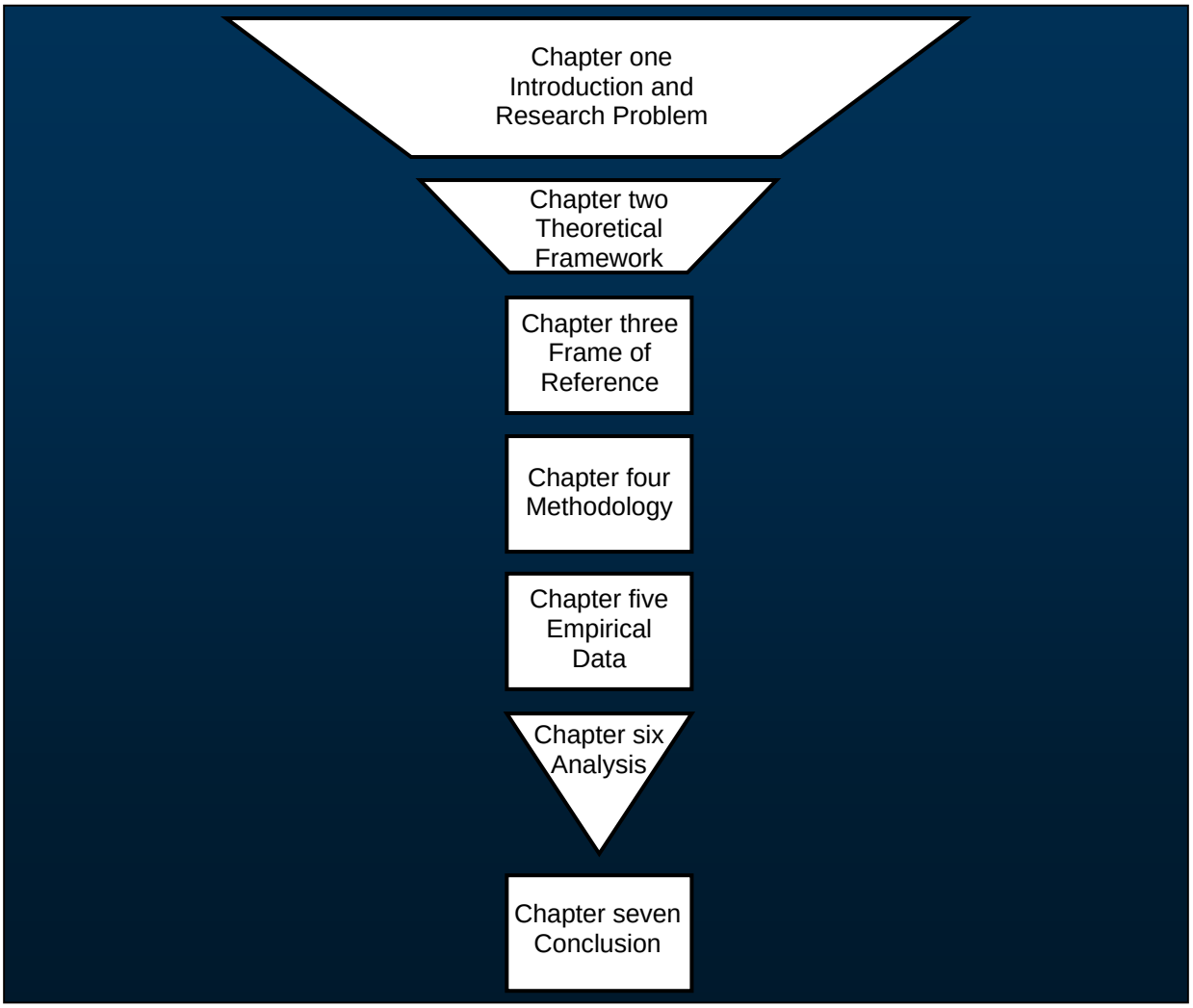

Figure 1.1. Outline of the study.

Chapter 2. Theoretical Framework

The purpose of this chapter is to give an overview to the evolution of industrial buying behaviour. The first part will prevail with classification for the chosen research area, illustrating overall models of industrial buying behaviour. The next part will exemplify different perspectives on industrial buying processes. Furthermore the concept of decision-making units within industries will be discussed and is followed by a brief discussion regarding choice criteria in industrial buying.

2.1. Industrial Buying Behaviour

According to Webster (1965), when understanding the industrial buying process it is necessary to examine both industrial and individual decision-making. This is due to the fact that individuals are making the industrial buying decisions (ibid).

Sheth (1973) explains that not all the buying decisions are a result from a systematic decision-making process. Ad hoc situational factors do also often result in a buying decision, for example unforeseen situations like machinery breakdowns (ibid).

Industrial buying behaviour is influenced by a selection of variables (Webster & Wind 1972). These variables are divided into four fundamental classes; *environmental*, *organizational interpersonal* and *individual*. Table 2.1 illustrates this classification and exemplifies variables being used. The variables are also grouped in task and nontask variables that apply to all other classes. The task variables are directly related to the buying problem, and the nontask variables are broaden beyond the specific buying problem. To separate variables into task and nontask are not always obvious, so the one being predominant ought to be chosen in many cases. The correlation between these variables is illustrated in figure 2.1 that is further discussed in the pages to come (ibid).

Table 2.1. ***Variables influencing organizational buying decisions*** **(adapted from Webster & Wind, 1972, pp. 13).**

	Task	**Nontask**
Environmental	Anticipated changes in price	Political climate in an election year.
Organizational	Policy regarding local supplier preference	Methods of personnel evaluation.
Interpersonal	Meetings to set specifications	Informal, off-the-job-interactions.
Individual	Desire to obtain lowest price.	Personal values and needs

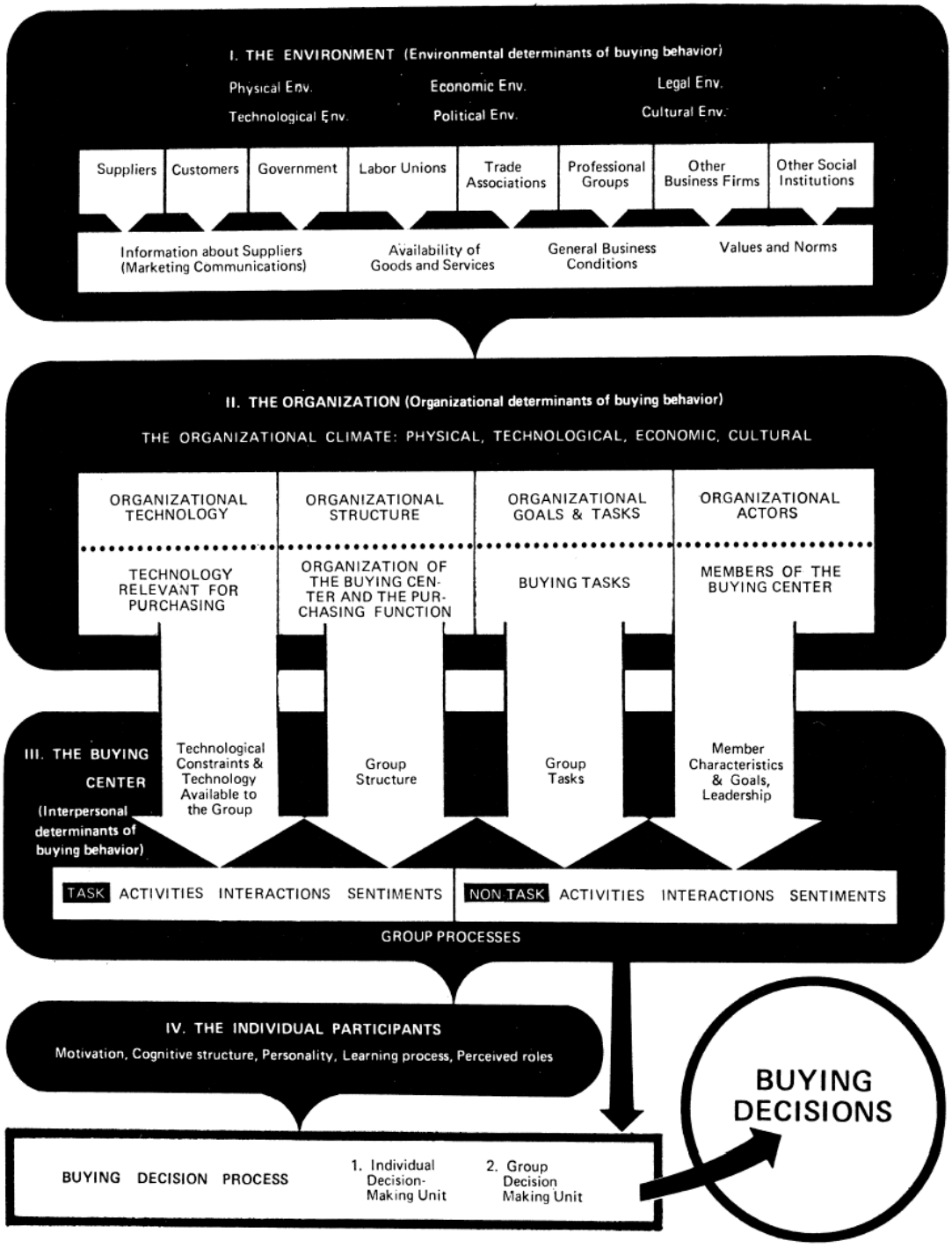

Figure 2.1. ***A model of organisational buying behaviour*** **(Webster & Wind, 1972, pp. 15).**

This concept has been further developed and explains that all of IBB can be divided into three dimensions; the buying process and buying center, which will be discussed later in this chapter, and the factors that affect these (Wind and Thomas, 1980; Johnston & Lewin, 1996):

- The buying situation
- Environmental factors
- Organisational factors
- Interpersonal factors
- Personal factors
- Additional influences

2.1.1. The Buying Situation

Webster & Wind (1972) describe that a buying situation is created when someone in an organization encounter a problem. This occurs when a difference between the wanted outcome and the actual situation can be solved through some buying action, the procedure of solving the problem is regarded as a buying process (ibid).

All the activities that organizational members perform in a buying situation are included in industrial buying behaviour, for instance identifying, evaluating and choosing among different alternative suppliers and brands (Webster & Wind, 1972). All the members affecting this process are a part of the buying center. These members are striving by a complex interaction of individual and organizational goals. The organizational goals are mainly influencing the buying members and the environmental effects surround the whole organization (Webster & Wind, 1972; Wind & Thomas, 1980). This discussion is presented as an outline in figure 2.1 (Webster & Wind, 1972).

Robinson, Faris & Wind (1967) defines the buying situation, or Buyclasses, as the systematisation of the complexity of industrial buying situations. This classification was needed since the approach of product classification in buying situations was found inadequate for explaining industrial buying behaviour. The Buyclasses idea is based upon the notion that for any given buyer, when purchasing the same product, individual buying patterns and buying process will differ. It has been found that the relative importance of attributes when choosing a certain supplier changes depending on the different Buyclasses (Dempsey, 1978; Robinson et al.).

Three Buyclasses where identified namely, *new task*, *modified rebuy* and *straight rebuy* (Robinson et al.). These can be described based upon three dimensions (ibid):

- Newness of the problem to the buying influences and decision makers.
- Information requirements of the buying influences and decision makers.
- New alternatives given serious consideration by the buying decision makers.

Together with the Buyclasses these fundamental characteristics can illustrate the different demands set upon each buying situation (table 2.2) (Robinson et al.).

Table 2.2. *Distinguishing characteristics of buying situations* (Robinson, Faris & Wind, 1967, pp. 25).

Type of buying situation	Newness of the problem	Information requirements	Consideration of new alternatives
New Task	High	Maximum	Important
Modified Rebuy	Medium	Moderate	Limited
Straight Rebuy	Low	Minimal	None

New Task

Either an internal stimulus or an environmental factor triggers this recognition that lead to the seeking of a new task product (Robinson et al.). The problem is new from the perspective of the buying influence and is new compared from other problems in the past, e.g. a new product line can stimulate need for entire new equipment etc. Since little or no relevant experience exists in the organization from the past, much information is gathered and new (alternative) ways as well as suppliers should be considered. New task situations occur relatively infrequently (ibid).

Straight Rebuy

In industrial purchasing this is the most common situation (Robinson et al.). The same solution that was considered the time before is now considered and since the company has experience regarding the matter, the solutions is routinized[2]. It is possible that the quantity changes from time to time and still consider it as a straight rebuy, even changing suppliers for the same product is considered as a straight rebuy situation as long as the selection is made from a previously approved selected group, only suppliers on the list are considered. When the companies recurring needs are satisfied in this way it is even possible that the buyer believes that there are better offers on the market but that the returns devoting the time to investigate alternatives are unsatisfactory (ibid).

Modified Rebuy

In any rebuy situation the buyer has at least some relevant experience (Robinson et al.). This Buyclass differs from the straight rebuy since new alternatives are considered. This does not necessary mean that a new supplier or alternative is chosen, just that these are considered. It is not uncommon that firms re-evaluate their straight rebuys' periodically, evaluating existing suppliers. Modified rebuys' usually occur from either (ibid):

- Buying decision makers anticipate that cost savings, an improvement in end product or production process can be derived from change of supplier.
- The buying organization is displeased or partially satisfied.
- A change in the buying organizations requirements.

2.1.2. Environmental Influences

According to Webster & Wind (1972) environmental influences have effect in four different ways, illustrated in figure 2.1. These are (ibid):

Availability of Goods and Services: This statement primary reflects the influence of physical, technological and economic factors affecting the availability of goods and services.

[2] Even in 1967 the potentials of computerized ordering procedures are highlighted, "*When the reorder point is reached, the computer automatically transmits a predetermined order by data-phone or similar means to a computer used by the seller.*" (Robinson, Faris & Wind, 1967, pp. 140). Today EDI (electronic data interchange) systems are frequently used (Dwyer, 2002).

General Business Conditions:	The main influences here are political and economical effects on business condition, for example national income and unemployment.
Values and Norms:	Cultural, legal, social and political are the dominant forces when determining the values and norms of organizational and personal relationships, between a seller and a buyer.
Information about Suppliers:	The flow of marketing communication from suppliers can vary depending on environmental factors like: physical, technological, economic and cultural influences.

The industrial marketer to other organizations must accurately observe and analyse the environmental factors for each market segments (Webster & Wind, 1972).

Sheth (1973) gives another approach towards the environmental influences and starts to explain that industrial buying decisions does not always include just individuals from the buying process. Hence, it is important for a marketer to understand whether a purchasing decision is made jointly or autonomous. Sheth shows six main factors that determine if a buying decision will be joint or autonomous. The factors can be related to the environment of the product/service, and are listed below (ibid).

Product specific	**Company specific**
Perceived risk	Company orientation
Type of purchase	Company size
Time pressure	Degree of centralization

Perceived risk includes the uncertainty of making the wrong decision (Sheth, 1973) [3]. *Type of purchase* determines whether it is a one-time opportunity or regular purchase and the persons who then have to get involved. *Time pressured* purchases are more likely to be delegated to one party and hence excludes joint decision. *Company orientation* relies on the nature that if for example a company is technology based the engineers will have a greater influence on the buying decisions. If the *company size* and *centralization* is large the decision-making tends to be jointly (ibid).

2.1.3. Organizational Influences

Individual decision makers act differently in an organizational buying decision due to the influences they receive there (Webster & Wind, 1972). For a better understanding of the organizational influence it has been divided into, and described by the main groups; buying tasks, organizational structure, buying technology and the buying center, which all also can be found in figure 2.1 (ibid).

- The buying tasks arrive from organizational tasks and goals, such as specified budgets. These differ frequently between the buying situations.

[3] An overview of Sheths' (1973) integrative model of IBB is found in Appendix A.

- The organizational structure includes dimensions as; communication, authority, status, rewards and work flow. These subsequently consist in task or nontask variables, hence they have different influences on various organizations.
- Buying technology affects not only what is bought but also the settings of organizational buying process itself. Intra organizational technology is characterized by the equipment available in an organization that facilitates the process of buying.
- The behaviour of other members of the buying center in an organization contributes with influencing in organizational buying. These members are also affected by the earlier mentioned groups. This is illustrated in figure 2.1 with the arrows patching over II and III.

Here it is important that the industrial marketers who wish to influence organizational buying process must define and understand these four variables (Webster & Wind, 1972).

2.1.4. Interpersonal Factors and the Buying Center

Haas (1995) has the following view regarding influences on buying center:

"A good definition of a buying influence is anyone within the purchasing firm who not only has the power to make a decision in favour of the product involved but who also may be able to cast a negative vote against that product" (Haas, 1995, pp. 179)

Three classes of variables must be identified to understand influences in the buying decision process (Webster & Wind, 1972). To begin with, different roles between the buying center members must be recognized. Next is the variables conducted for interaction among individuals in the buying center. Finally, the dimension that makes the group functioning has to be identified. These dimensions are required to take into consideration for the salesman responsible to contacting the members of the buying center. The salesman should also be prepared for how each of these members expects him to behave. In conclusion an understanding of the interpersonal relationships in the buying organization is a significant source for the development of marketing strategy (ibid).

Sheth (1973) gives a description of decision-making that is made jointly between individuals in the buying center. It starts with the initiation of the decision to buy, which is followed by the gathering of information, evaluating alternative suppliers and settle conflicts between the parties who must jointly decide. Sheth states that the most significant task of the joint decision-making process is the assimilation of information, deliberations on it, and the inevitable conflict which most joint decisions involves (ibid).

Sheth (1973) further discusses that there are at least three departments whose members are connected to the different stages in the buying process. The most usual are employees from the purchasing, quality control and manufacturing departments. There are considerable interactions between the persons in the three departments and they are often taking joint decisions. Hence, it is important for an industrial marketer to investigate similarities and differences in the psychological world of these persons. The decision makers' expectations about potential suppliers and brands are an important aspect as well (ibid).

2.1.5. Personal Factors – The Individual Participants

Individual behaviour is the base of all industrial buying behaviour (Webster & Wind, 1972). The individuals are the one analysing, deciding and acting to perform the purchase either in groups or alone. The attributes from industrial buyers will affect their response to the situation and marketing actions towards them from a vendor. The primary attributes are; personality, perceived role set, inspiration, learning and reception skills. A marketer or potential vendor should consider the individual determinants and strategies that buyers probably will use, if they desire to affect an individual industrial buyer (ibid).

Sheth (1973) presents how different expectations are aroused among the individuals involved in the buying process. These are including; the background of individuals, information sources, active search, perceptual distortion and satisfaction with past experiences. These factors ought to be described and defined if they are to represent the psychological world of the industrial buyer (ibid).

Sheth (1973) explains that the *background of individuals* is the most significant factor to each of the persons involved in the buying process. The variety in educational, demographical, social and life style backgrounds generate different goals and values between purchasing agents, engineers and managers. To find information about this background factor is relatively easy, in example the educational differences are often closely related to the demographic factors. *Information sources and active search* includes the sources of information each person is exposed to and how much they contribute to the information search. The purchasing agent is for example more exposed to commercial sources connected to a particular supplier than an engineer, who often get the information through word of mouth or similar sources. The active search is implied to the persons being responsible for the buying actions. *Perceptual distortion* declares that each person involved in a buying process attempts to make the objective information consistent with his own prior knowledge. For that reason many different interpretations of the same information may occur. Perceptual distortion is probably the most difficult factor to quantify but the author suggests perceptual mapping techniques as a way of measuring judgements between persons. *Satisfaction with past purchases* explains that persons does not have the same experiences with various suppliers and hence the levels of satisfaction differ within each parts involved in the buying process (ibid).

2.1.6. Additional Influences

Thomas & Wind (1980) further discusses additional factors that influence IBB. *Interorganisational* factors are regarding the relationships between the buying and selling organisations (Baptista & Forsberg, 1997; Wind & Thomas, 1980). The industries *marketing variables* such as positioning, price or distribution and the m*arketing strategies* of the competitors are also important influences on IBB (Wind & Thomas, 1980).

An article by Johnston & Lewin (1996)[4] summarizes 25 years of research in industrial buying behaviour. The authors present an integrated model of IBB that combines the intention of the original works made by Robinson, Faris & Wind (1967), Sheth (1973), and Webster & Wind (1972) with several new structures that have been developed through the past years (Johnston & Lewin, 1996).

[4]An overview of Johnston & Lewins' (1996) integrated model of IBB is found in Appendix B.

Johnston & Lewin (1996) states that the general categories gathered from the original authors consistently have failed to capture all of the concepts, factors and relationships required to predict complex behavioural outcomes. Two factors were added, to complete the original constructs, these were *role stress* and *decision rules* and they work in an intra-firm level (ibid).

Decision rules are influenced by factors from environmental, organizational, buying and selling characteristics (Vyas & Woodside, 1984). Decision rules are also expected to change through the stages of the industrial buying process. These rules can be formalized in some organizations, which may include procedures for selecting supplier. Informal rules based on buyers' experience and rule of thumb may exist in other organizations (ibid).

Role stress can be identified by role ambiguity and/or conflict in IBB (Johnston & Lewin, 1996). Role conflict is the incompatibility between purchase expectations. Role ambiguity is the level to which plain information is missing about (ibid):

1. Expectations related with the purchase
2. Methods for satisfying purchasing expectations
3. The consequences of role performance

The influence on role stress comes from factors as environmental, organizational, purchase, group and participants characteristics (ibid).

2.2. Perspectives on the Buying Process

The industrial buying process is regarding industrial decision-making in procurement situations and many researchers have emphasised the importance of modelling this process (Kelly & Coaker, 1976; Robinson et al.; Sheth, 1973; Webster, 1965; Wind & Thomas, 1980). One of the most referred to buying processes is the one developed by and incorporated in the Robinson et al. Buygrid framework, and according to Baptista & Forsberg (1997) no research about industrial buying should oversee this particular model. Kauffman (1996)[5] reviews many researchers work and a comparison between a few models are illustrated by Wind & Thomas (1980)[6].

2.2.1. Webster's (1965) Model

The first noted model in Kauffmans' (1996) overview is Webster's (1965) industrial buying process. The suggested four-phase process (figure 2.2) is based upon interviews with 135 individuals in 75 companies and comprises of (Webster, 1965):

[5] Kauffman' (1996) overview of buying process literature is found in Appendix C.
[6] Wind & Thomas' (1980) comparison of a few buying processes is found in Appendix D.

Figure 2.2. ***A model of industrial buyer behaviour*** **(reconstructed from Webster, 1965).**

Problem recognition: Problem recognition is the identification of a need that can be solved by a purchase. This means that there is a perceived difference between goal and actual performance and is solved either by changing the performance or the goals. Industrial buying should not be viewed upon as a completely objective and rational process but rather as an interaction of the individuals in the organisation. Factors that create a buying situation are e.g. regularly review of vendor performance, new product development or process and value analysis program.

Buying responsibility: Buying responsibility referrers to the individuals' responsibilities in the buying organisations and comprises of the technical complexity, its importance to the firm, the individuals product specific knowledge and the individuals centrality in the production process. Product variables (product features, quality etc), important for the users of the product, can come in conflict with the market variables (price, delivery), interest of the centralised purchasing organisation. The influence of product variables will e.g. increase with higher technical complexity, importance to the firms' production and decrease as the size of the organisation and formal responsibilities of the centralised purchasing organisation increases. Another perspective to be taken into consideration is the involvement of top managements influence versus the importance of the operating department. Generally the management influence increases as the monetary value increases and increases as the size of the firm increases and the increase of product variables.

The search process: In the search process individuals follow routine methods for gathering information. The search process can result in the change of goals, which can be viewed upon as choice criteria. It is necessary to find which criteria is the foundation of evaluation based upon what is needed and what is available as well as offered on the market. The first step of this phase is to evaluate goals since if these are attained there is no need for information search. Information search leads to better market knowledge, which gives better goal accomplishment, but is heavily constrained by time factor. After preliminary screening focal point information is gathered, a process that is considered habitual and consist of rules that are changed and learned over time.

The choice process: The choice process is guided by the organisations purchasing rules that consist of objectives, policies and procedures. Parametric are factors that can be assumed to be given or uncontrollable, e.g. a given price on the market or specific capacity that is a standard. Variables

are considered factors that can be negotiated, controlled or influenced by the decision maker. It should be observed that there is no static border between the two categories; rather a parametric factor can be variable in other context and vice versa. The choice process consists of three stages that comprise of vendor qualification, comparing offerings with specifications and comparing offerings with each other and ends in the selection of a supplier (Webster, 1965).

According to Webster (1965) this model is to be regarded as the start toward a rationalization of the industrial buying process.

2.2.2. Robinson, Faris & Wind (1967) – Buyphases

As above-mentioned, the Robinson et al. Buygrid framework incorporates a buying process. Compare to the Webster (1965) model it is somewhat more extensive and consists of eight steps called Buyphases. These phases are fundamental to industrial buying and even though they are described sequentially and in the order they usually are performed it is possible that some of the steps happen simultaneously. Especially phases 4 and 5 tend to take place concurrently in particular when the buying organisation is well informed and information need is small. The phases are as follows (Robinson et al.):

1. Anticipation or recognition of a problem (need) and a general solution.
2. Determination of characteristics and quantity of needed item.
3. Description of characteristics and quantity of needed item.
4. Search for and qualification of potential sources.
5. Acquisition of and analysis of suppliers.
6. Evaluation of proposals and selection of suppliers.
7. Selection of an order routine.
8. Performance feedback evaluation.

Anticipation or Recognition of a Problem (Need) and a General Solution

In this first phase the process is either set into motion by the buying organization that recognizes a problem or by external sources such as a (potential) supplier and anticipates that a need will arise (Robinson et al.). This phase is regarded as two steps:

1 a. Recognition of a problem (need) by someone with at least partial authority in the organization in order to be heard. The recognition might occur from sources such as (ibid):

- Inventory running low
- New needs are derived from the customers of the buying organization
- Unsatisfactory performance of existing option
- Breakdown or malfunction
- Realization that better options exist

1 b. The awareness that this might be solved (satisfied) through a purchase and in what particular direction the solution lies (ibid).

Determination of Characteristics and Quantity of Needed Item

In quite specific ways the need is determined by the decision makers in this step, often the department or group that is using the product (Robinson et al.). People outside the department might be consulted but usually this is an internal phase. The problem is narrowed down and delimited so that more precise analysis is possible. As one example, for technical products the using department may gather information regarding product specifications of what a existing product is expected to do, or composition of ideal attributes are gathered disregarding budget or availability aspects if the need not clearly is satisfied by an existing product on the market (ibid).

Description of Characteristics and Quantity of Needed Item

As an extension to the prior phase, now the translation of the need into a specific solution can easily be communicated to others (Robinson et al.). The description becomes the basis for action inside and outside the buying organization thus demands are set to be precise, otherwise the remainder phases will be more complicated and the results less precise (ibid).

Search for and Qualification of Potential Sources

The shift from searching for alternative ways of solving a problem to alternative suppliers is made (Robinson et al.). Criteria for qualifying to suppliers vary with the buying organization, situation and other influences. In this phase alternative sources are screened and evaluated, something that in some cases is as simple as selecting a preferred supplier from a list and in other cases extensive information search is necessary. At the end of this phase the decision makers have a clear opinion regarding a few qualified suppliers to consider as potential vendors (ibid).

Acquisition of and Analysis of Suppliers

Now when there remain only few considerable alternatives, specific proposals are gathered from these (Robinson et al.). Depending on the complexity of the need this phase can involve anything from, in simple cases, looking through a catalogue or in more complex situations a series of counter-proposals that can consume a few months of time (ibid).

Evaluation of Proposals and Selection of Suppliers

The various offers are weighed and analysed and possible negotiations have been conducted with several of the vendors (Robinson et al.). During this phase the suppliers is selected as the buying organization approves one or more offers and rejects the others. After this screening further negotiations might be carried out regarding prices, terms, deliveries or other aspects concerning the specific proposal (ibid).

Selection of an Order Routine

An order is given to a vendor and in this a routine is specified that directs as well the internal as external aspects (Robinson et al.).

External factors include:	Preparation of purchase order for forwarding to the vendor, follow-up activities such as expediting,

	troubleshooting, securing status report and receiving, inspection and approval of invoices for payment.
Internal factors include:	The order routine; status reporting to the using department, and inventory management such as reordering of quantities at appropriate times.

Performance Feedback Evaluation

In this final step fundamental evaluation occurs after the purchased items are in use (Robinson et al.). This reviews how well the purchased item solved the problem and how well the vendor preformed. This type of formal feedback is positive and necessary for future procurements in the organizations but even if no formal feedback is explicitly gathered in the organization, informal is. It occurs as users apprise and report on the utility of the item at hand and as formal reports often might often show what the item fails to do, the informal reports can be more positive (ibid).

Whilst discussing their model Robinson et al. consider the complexity of the procurement process. One mentioned factor is the relationships between the phases, and these phases do not necessary follow the sequential appearance of the model and are not to be considered mutually exclusive. Neither is it necessary that the relative emphasize given to each step is equal, but rather, this changes for each situation, e.g. phases 2 and 3 are more likely to be significant in complex buying situations where the decision maker have none or little knowledge. It is not obvious that the process, whilst started, step by step will proceed, a redefinition of a basic need can anywhere in the process overthrow or restart it. The process is to be seen as a dynamic interaction of people and influences with the purpose of solving a new or recurrent problem (ibid).

Another aspect of the procurement process that might be complicating when observing an organizations buying behaviour is that of the *creeping commitment* (Robinson et al.). By this the authors refer to the series of incremental choices that occur and as each successive decision is made, less alternatives are left and the organisations are committed to some alternatives. Under certain conditions the creeping commitment is more likely to describe the problem solving process in following situations (ibid):

1. The importance of the buying situation to the buying organisation.
2. The number of people involved in the decision making process.
3. The increased diffusion of buying responsibility by placing it on buying committees or other similar arrangements.

The Buygrid Framework

As mentioned several times before, the Buygrid framework (also known as Buygrid matrix) was introduced in 1965 by Robinson et al. Incorporating, in matrix form, the Buyphases (chapter 2.2.2) and the Buyclasses (chapter 2.1.1.) it provides the frame of reference within which industrial buying occurs. The most complex buying situations occur in the upper left corner of table 2.3 where the most number of buying influences and decision makers are to be involved (ibid).

Table 2.3. ***The Buygrid analytic framework for industrial buying situations*** **(Robinson, Faris & Wind, 1967, pp 14).**

		BUYCLASSES		
		New Task	**Modified Rebuy**	**Straight Rebuy**
BUYPHASES	1.Anticipation or recognition of a problem (need) and a general solution.			
	2.Determination of characteristics and quantity of needed item.			
	3.Description of characteristics and quantity of needed item.			
	4.Search for and qualification of potential sources.			
	5.Acquisition of and analysis of suppliers.			
	6.Evaluation of proposals and selection of suppliers.			
	7.Selection of an order routine.			
	8.Performance feedback evaluation.			

2.2.3. Burger & Cann (1995) – Model for Higher Technology Markets

As the mentioned models are general for industrial purchases Burger & Cann (1995) suggest an industrial buying process for higher technology industrial goods, and is derived from their empirical work. The phases shown in figure 2.3 are the steps performed prior to purchase and are thought of to be carried out by a decision-making unit (DMU) (ibid).

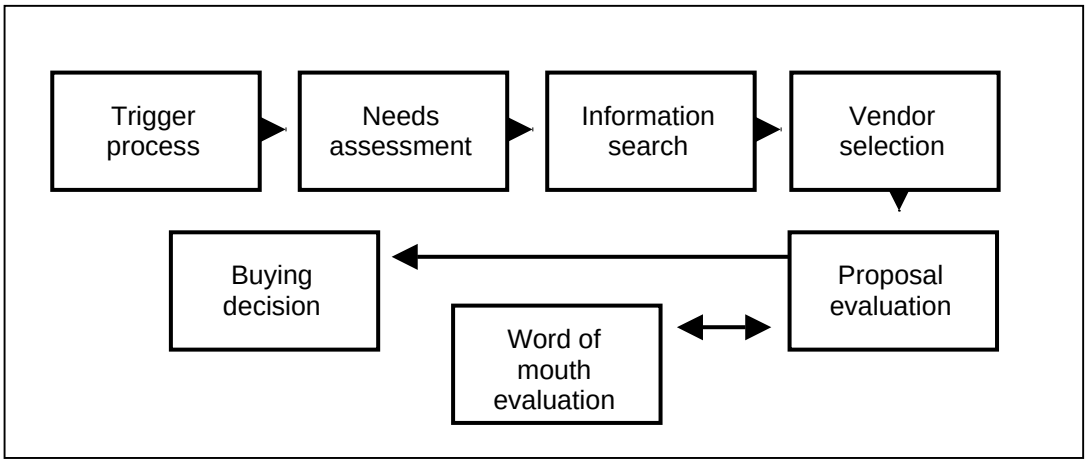

Figure 2.3. ***The Industrial buying process for high-tech markets*** **(Burger & Cann, 1995, pp. 92).**

Burger & Cann (1995) give following description of the phases:

Trigger process: One or several incidents usually begins the process, possible incidents can arise because of dissatisfaction with existing product such as failure or complaints by the users. This triggering event sets the decision machinery in motion.

Need assessment: As the DMU is created, discussions regarding the problem are initiated, often led by a leader that emerges and coordinates the following steps. At this step a requirements list or benefits sought are discussed and the dimensions of the final solution are assessed.

Information search: Information about potential vendors, information sources and opinion leaders are gathered. A wide variety (20 – 30) may be approached and initial contact with some of these can be established.

Vendor selection: The gathered, vendor specific, information is examined and understanding is obtained about such factors as:

- Vendor quality
- Service
- Availability
- Interest in making the sale
- Financial resources

These as well as other factors will make the DMU cut down the vendor list to a small group from whom proposals will be gathered.

Proposal evaluation: As each vendor has supplied and initial proposal, which is complete with all equipment, services and final requirements the proposals are compared and contrasted. Each vendor is informed

of areas where improvement can be made and a cycle of proposal refinement can occur.

Word of mouth evaluation: Information from previous buyers is informally solicited by the DMU.

Buying decision: When the DMU perceives an optimal candidate is found the final buying decision is made.

Furthermore Burger & Cann (1995) discuss the importance of post-purchase marketing for successful implementation and in order to handle the changes that a new high-tech product often implies. The changes can affect the various parts of the organisation such as its physical layout, the hiring or firing of personnel or even major reorganization of the company (ibid).

2.3. Buying Center

According to Webster & Wind (1972) IBB consists of all the activities organizational members perform when they define a buying situation. These are including; *evaluating*, *identifying* and *choosing* between brands and suppliers. The concept of the buying center implies to all those members being a part of the buying process (Dwyer & Tanner, 2002; Robinson, Faris & Wind, 1967; Vyas & Woodside, 1984). Johnston & Bonoma (1981) justifies that it was Robinson et al. who first used the term *buying center* in 1967.

2.3.1. Dimensions of the Buying Center

Johnston & Bonoma (1981) have also developed five structural and interactive dimensions of the buying center that can be specified and determined, these are shown below.

Vertical involvement: The amount of organizational levels exerting influence and communicating in the buying center.

Lateral involvement: The number of separate departments, divisions, or firm functional areas involved in the buying decision.

Extensivity: The total number of persons involved the buying process.

Connectedness: The degree of how much members in the buying center are linked to each other by direct communication.

Centrality: Degree of the buying manager's influence on the decision (ibid).

2.3.2. Roles in the Buying Center

There are several roles identified between the members in a buying center (Webster & Wind, 1972; Bonoma, 1982). These are; *initiator*, *influencer*, *decider*, *buyer*, *user* and *gatekeeper*. Bonoma (1982) describes these roles further (as defined below) and gives an example them when upgrading a telecommunication system in table 2.4.

- Initiators, the individuals within the organisation who first recognize the need for a service or product.
- Influencers, the individuals who affect a buying decision either indirectly or directly.
- Deciders, the individuals who have the authority to decide which supplier that will provide the product or service.
- Buyers, the individuals who will actually make the purchase.
- Users, the individuals within the organisation who will use the product or service.
- Gatekeepers, the individuals who control the flow of information into the buying center.

Bonoma (1982) continues to explain that the more complex a buying decision is the larger the decision unit gets, and the more careful the decision-making will be. The same individual can undertake many roles as well as any role can be carried out by several individuals[7] (Webster & Wind, 1972; Bonoma, 1982).

Table 2.4. ***Members of the buying center and their roles.*** **(Bonoma, 1982, pp. 113).**

Role	Example
Initiator	Division general manager proposes to replace the company's telecommunication system.
Decider	Vice president of administration selects, with influence from the others, the vendor the company will deal with and the system it will buy.
Influencers	Corporate telecommunications department and the vice president of data processing have important say about which system and vendor the company will deal with.
Purchaser	Corporate purchasing department completes the purchase to specifications by negotiating or bidding.
Gatekeeper	Corporate purchasing and corporate telecommunications departments analyze the company's needs and recommend likely matches with potential vendors.
Users	All division employees who use the telecommunications equipment.

[7] For a more detailed view on the factors influencing the number of individuals in the buying center see Appendix E.

2.4. Choice Criteria

In all above-mentioned models for describing IBB there is a point of choice between different alternatives (Bharadwaj, 2004; Robinson, Faris & Wind, 1967; Webster, 1965). In order to make the best choice and succeed in business, organisations should base their choice of supplier upon critical evaluation criteria (ibid). Four classical criteria are quality, delivery, price and service, seemingly the importance between these have changed during the years (table 2.5) (Bharadwaj, 2004; Lehmann and O'Shaughnessy, 1974; Matthyssens & Faes1985).

Table 2.5. The importance of different classical decision criteria across studies, 1= most important. (Bharadwaj, 2004, pp. 318).

Study	Rank order of decision criteria			
	1	2	3	4
Lehman & O'Shaughnessy (1974)	Delivery	Price	Quality	Service
Evans (1981)	Delivery	Price	Quality	Service
Lehman & O'Shaughnessy (1982)	Quality	Price	Service	Delivery
Wilson (1994)	Quality	Service	Price	Delivery

Lehman & O'Shaughnessy (1974) examined in their study the importance of different choice criteria (attributes). Their study was conducted on the base of 17 attributes (included in table 2.6.) that are a breakdown of the four classical choice criteria, and thus somewhat interrelated. The authors found that the relevance of the attributes is mainly dependent on product type, the buying situation at hand and the perception of the buyers. These findings were also supported by prior work from Kelly & Coaker (1976) where five of seven investigated choice criteria differed depending on organization as well as Dempsey's (1978) study of the importance of different attributes in industrial vendor selection (21 attributes where examined and are included in table 2.6.). Some researchers have found that generally the purely economical factors, (including delivery, capability, quality, price, repair service, technical capability and past performance) were the most significant factors (Dempsey, 1978; Kelly & Coaker, 1976; Lehman and O'Shaughnessy 1974).

Dempsey (1978) concludes that no single vendor attribute should get a unique level of importance and that the attributes found of mid-level importance might very well be the ones that make the final decision fall in a specific direction. Dempsey suggest the following five fundamental factors that are of the most importance in industrial buying (ibid):

1. Vendor stability
2. Basic economic criteria
3. Geographic affinity
4. Attendance services
5. Assurance mechanisms

Vyas & Woodside (1984) found in their inductive model of industrial choice process that the most frequently used qualifying criteria to get approved by buyers were capacity, location and quality (ibid).

- Uninterrupted shipment is very important thus the capacity and capability is a deciding factor.

- Transportation costs are significant with larger quantities, thus the location of mining, manufacturing or storage facilities was important. Local suppliers were preferred.
- The vendors' ability to supply quality products was frequently referred to their existing customers. When technically complex product the approval from other e.g. engineering and quality control departments was needed (Vyas & Woodside, 1984).

Table 2.6. ***List of common choice criteria in prior studies*** **(Bharadwaj, 2004; Dempsey, 1978; Lehman and O'Shaughnessy 1974; Kelly & Coaker, 1976).**

• Adjustment to your companys' needs	• Packaging capability
• Aid and advice	• Performance history
• Attitude toward buyer	• Post-sales (repair) service offered
• Bidding compliance	• Price
• Confidence in the salesman	• Production facilities
• Control systems	• Progress communications
• Convenience of placing order	• Quality
• Data on reliability of product	• Reliability of delivery date promised
• Delivery capability	• Reputation
• Ease of maintenance	• Spare parts availability
• Ease of operation or use	• Suppliers ability to fill emergency orders
• Financial position	• Suppliers accuracy in billing
• Financing terms	• Suppliers accuracy in order handling
• Geographical location	• Technical capability
• Labour relations record	• Technical specifications
• Management organization	• Training offered by the supplier
• Moral/legal issues	• Training time required
• Order cycle time (between order and delivery)	

Factors such as quality, delivery, price and service are often seen as significant buying criteria when choosing suppliers. Whether these are controllable or uncontrollable depends on the situation at hand. The emphasis of these factors changes depending on the buying organization, specific buying situation and the individuals involved in the buying decision (Bharadwaj, 2004; Robinson et al.; Webster, 1965).

Chapter 3. Problem Discussion and Frame of Reference

Based upon the theory in former chapter and discussions in the first chapter, further problem discussion and a frame of reference will be presented in this chapter.

3.1. Problem Discussion

Based upon many researchers industrious work, as stressed in former chapters of this report, industrial buying behaviour stands for an important part in the progress and success of businesses (Dwyer & Tanner, 2001; Kauffman, 1996; Kotler & Armstrong, 1994; Sheth, 1973; Robinson, Faris & Wind, 1967; Webster & Wind, 1972). Equal to its importance is the difficulty to create generally applicable formulas to describe the area, something that is indicated by the various models developed in the area of IBB (ibid).

Wind & Thomas (1980) states that two of the most important parts of IBB are the buying process and the buying center. Another important issue in IBB are the criteria on which the buyers in industrial situations base their decisions on (Bharadwaj, 2004; Lehmann and O'Shaughnessy, 1974; Matthyssens & Faes 1985).

The importance of understanding these factors in different industrial markets have been emphasized as well here as in former chapters. The telecommunications industry, where a new rise is expected (Teknikbolagen, 2005), is naturally no exception and based upon this notion as well as previous discussion the purpose of this study is to be formulated.

3.1.1. Research Problem and Questions

The purpose of this thesis is to investigate how industrial buying behaviour can be characterized in the telecommunications industry. This formulates the research problem (RP.) that is concretised by the three research question (RQ. 1-3), which are illustrated in figure 3.1.

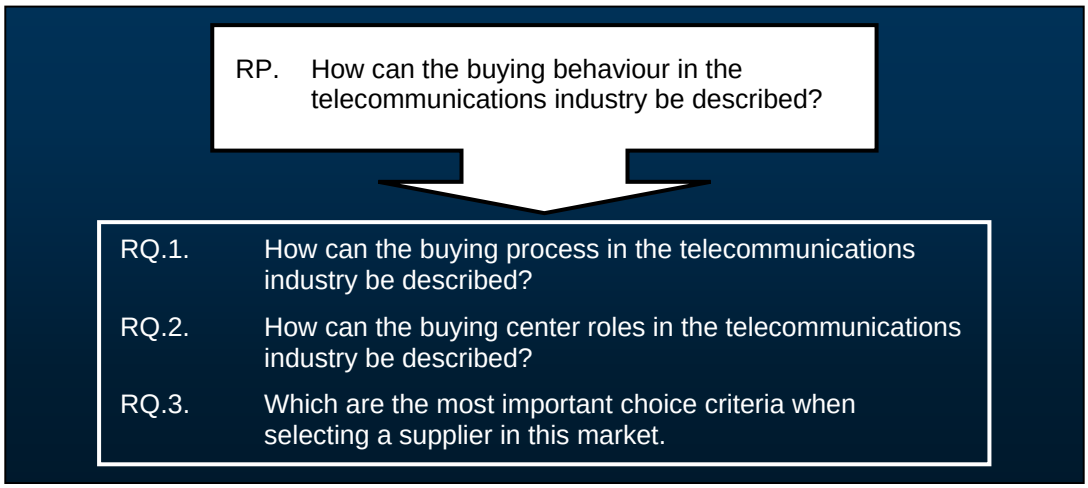

Figure 3.1. Research problem and questions.

3.1.2. Delimitation

It is not significant to broaden the research problem to include other industries since the buying behaviour and choice criteria is so different in each subject (Webster, 1965; Bharadwaj, 2004). Furthermore, as in most cases, the scope of this work is delimited by the time that can be invested thus the ambitions of this thesis cannot be to give a full answer to the research problem. The research is therefore limited two answer the above mentioned research questions.

3.2. Frame of Reference and Operationalization

Supported by the theoretical framework of chapter two a frame of reference for the above mentioned research question will be developed. Furthermore, the concepts in the frame of reference will also be operationalized in this section. Operationalizing a problem is making it measurable, quantifiable, and is the process of linking the theoretical concepts to possible empirical indicators (Saunders, Lewis & Thornhill, 2000; Wengraf, 2001).

3.2.1. Buying Process

The different procurement processes illustrated during the theoretical review are all important out of different perspectives. The Webster (1965) model explains in very few steps the basic concept of the buying process. The Robinson, Faris & Wind (1967) Buygrid framework can be viewed upon as one of the most influential theories in IBB, incorporating the different buying situations that might occur. Together with the Webster & Wind (1972) and Sheth (1973) models of IBB these models can all be viewed upon as classics in the area.

One process that is more recent is the Burger & Cann (1995) model (figure 2.3, chapter two) for high-tech markets. Since the telecommunications industry can be viewed upon as a high technology market this will be used as the theoretical base for the first research question. The steps to operationalization of the buying center are as follows in table 3.1.

Table 3.1. Operationalization of the buying process.

Dimension	Concept	Definition	Operationalization
Buying Process	Trigger process	A need that can be solved by a purchase is recognized.	Description of the activities that take place when a need is recognized.
	Needs assessment	The problem that comprises the needs are discussed.	Description of the activities that take place when a need is assessed.

Dimension	Concept	Definition	Operationalization
Buying Process	Information search	Information regarding solutions for the problem is gathered.	Description of the activities that take place when information is searched for.
	Vendor selection	More preferable suppliers are identified and proposals gathered.	Description of activities that take place when preliminary vendor selection takes place.
	Proposal evaluation	Proposals are refined and improved.	Description of activities that take place when improving proposals.
	Word of mouth evaluation	Informal information, casually or formally gathered from previous buyers.	Description of the involvement of word of mouth in the selection for final supplier.
	Buying decision	Final selection is made.	Description of the components of the final decision.
	Post-purchase activities	The activities that occur after the final decision of supplier.	Description of the activities that occur after the purchase.

3.2.2. Buying Center

According to Webster & Wind (1972) there are six different roles that build up the industrial buying center the initiator, influencer, decider, buyer and gatekeeper. These different roles can be acted out by as few as a single person or many more and to identify them will be the scope of this thesis. The steps to operationalization of the buying center are as follows in table 3.2.

Table 3.2. Operationalization of the buying center.

Dimension	Concept	Definition	Operationalization
Buying Center	Initiators	Individuals within the organisation who first recognize the need for a service or product.	Identification of the individual(s) who takes the initiative to buy the product.
	Deciders	Individuals who have the authority to decide which supplier that will provide the product or service.	Identification of the individual(s) who decides the selection of supplier.

Dimension	Concept	Definition	Operationalization
Buying Center	Influencers	Individuals who affect a buying decision either indirectly or directly.	Identification of the individual(s) who influences the selection of supplier.
	Buyers	Individuals who will actually make the purchase.	Identification of the individual(s) who will actually make the purchase.
	Gatekeepers	Individuals who control the flow of information into the buying center.	Identification of the individual(s) who control the flow of information into the buying center.
	Users	Individuals within the organisation who will use the product or service.	Identification of the individual(s) who uses the product.

3.2.3. Choice Criteria

As shown in the theoretical review researchers have brought up many different choice criteria in the past (Lehman and O'Shaughnessy 1974; Dempsey, 1978, Bharadwaj, 2004; Kelly & Coaker, 1976). Based upon discussions with tutors and the educated sales and marketing staff of Ericsson the eleven most important criteria have been chosen to be examined in this study.

- Data on reliability of product
- Technical capability
- Ease of maintenance
- Ease of operation and use
- Price
- Quality
- Order cycle time (time between order and delivery)
- Reliability of delivery date promised
- Delivery capability
- Geographical, individual presence of supplier
- Suppliers' ability to customize

The steps to operationalization of choice criteria are as follows in table 3.3.

Table 3.3. Operationalization of choice criteria.

Dimension	Concept	Definition	Operationalization
Choice Criteria	Choice Criteria	Criteria that are of great importance when selecting the final supplier.	Identification of most important criteria when choosing the final supplier.

3.3. Emerged Frame of Reference

Based upon a review of proper literature and in relation to the research problem and questions a frame of reference has emerged that follow:

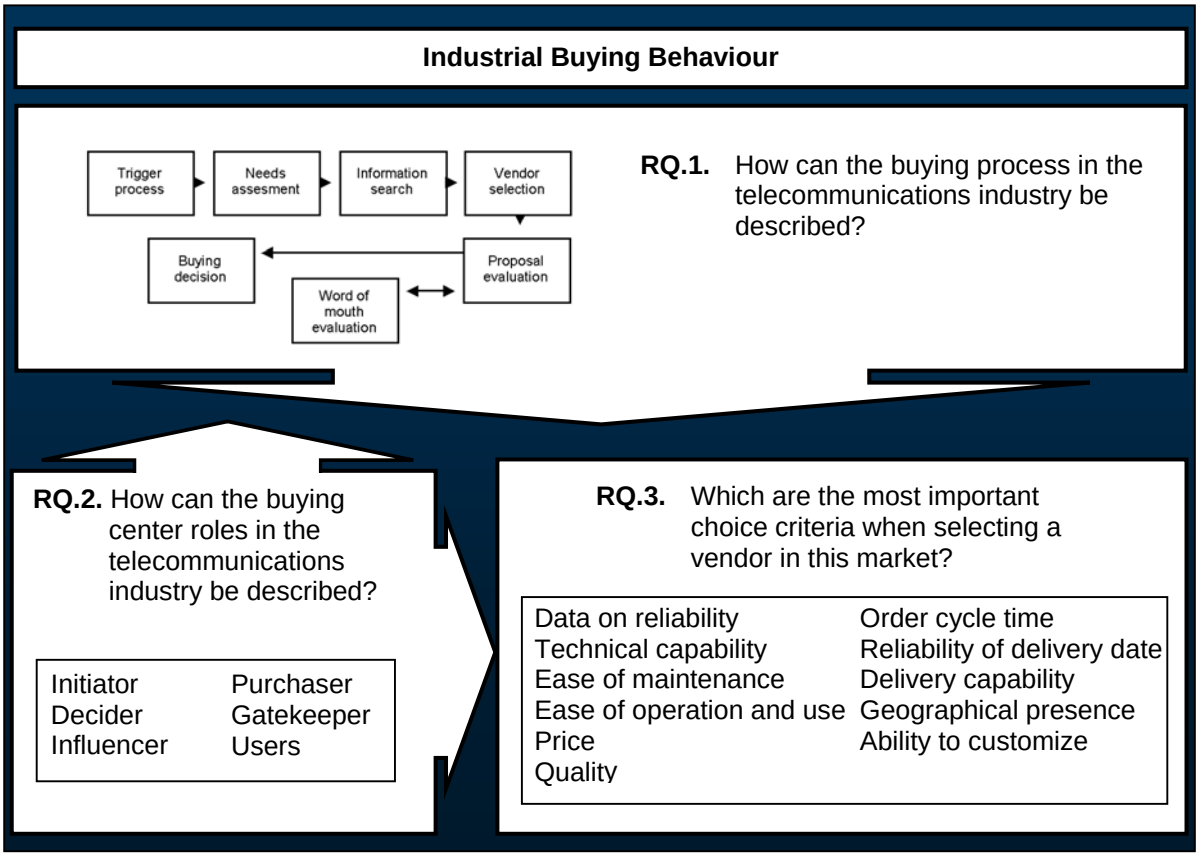

Figure 3.2. Emerged frame of reference.

Chapter 4. Methodology

This chapter is presenting the research technique and methodology used for this study. It is describing the procedure the authors went through when gathering data and information required for analysing the research questions. First this chapter covers the theoretical research- approach and strategy, then data collection and the way of analysing results, and finally it describes problems with methodology. Each section ends with an explanation of the adapted design used in this study.

4.1. Research Approach

Saunders, Lewis & Thornhill (2000) claims that practically all research is including some numerical data or information that are being used to help researchers examine their research problem. When researchers are gathering and approaching the information it is done in either a *quantitative* or a *qualitative* manner. To give a short explanation, the quantitative method is based on collecting and measuring numerical information in an objective view. Whereas the qualitative methods of investigation is, in a subjective theoretical view, seeking a deeper understanding of the topic. Saunders have developed a frame for the significant distinctions between qualitative and quantitative data, see table 4.1 (ibid).

Table 4.1. *Distinctions between qualitative and quantitative data* (Saunders Lewis & Thornhill, 2000, pp. 381).

Quantitative data	Qualitative data
Based on meanings derived from numbers.	Based on meanings expressed through words.
Collection results in numerical and standardized data.	Collection results in non-standardized data requiring classification into categories.
Analyses conducted through the use of diagrams and statistics.	Analysis conducted through the use of conceptualisation.

Taylor & Bogdan (1998) is giving a description of how the way qualitative researchers are observing their studies:

"Qualitative researchers are concerned with the meanings people attach to things in their lives" (Taylor & Bogdan, 1998, pp. 7)

4.1.1. Research Approach for this Study

The authors have chosen to approach this study with a qualitative research point of view. This is due to the research problem and questions. These are to be answered with a method representing a deeper understanding rather than measuring quantitative data. The approach to this study led to that the gathered information was expressed through words with non-standardized data and was analysed using existing concepts, see table 4.1.

4.2. Research Strategy

According to Saunders, Lewis & Thornhill (2000) research strategy is the general plan of how the researcher will go when answering the research problem and questions, containing clear research objectives, and detailed information about the sources from where the information was collected. The constriction of significant factors, like limits of time, should also be considered. Saunders et al. also mentions different kinds of research strategies. Four commonly discussed strategies are case studies, surveys, experimental, and desktop research (Lekvall & Wahlbin, 1993; Kotler & Armstrong, 1994; Saunders et al.).

Robson (1993) is describing *case study* as the development of detailed, intensive knowledge about a single case. This strategy is beneficial when the researcher wishes to gain a deeper understanding of the concept of the research and the process being examined Robson (1993). Saunders et al. states that the information collection methods might differ between case studies, for example methods like questionnaires, interviews, observation and documentary analysis are being used. Saunders et al. also argues that case study is a valuable manner to investigate existing theory. Simple, but well composed case studies, can make it possible to challenge existing theory and become a base for new hypothesis as well (ibid).

Kotler & Armstrong (1994) are notifying that *survey* research is the best approach for gathering information when the problem area is already studied and research problem is somewhat structured. The major advantage of surveys is its flexibility where it can be used to gather many different categories of information in many different marketing circumstances. Most commonly, it is also the fastest and cheapest alternative to obtain large amounts of data. The negative aspects of research surveys are the unwillingness to respond, or dishonest answers to please the researcher (ibid).

According to Kotler & Armstrong (1994) the purpose of *experimental* research is to explain cause and affect relationships. Lekvall & Wahlbin (1993) claims that this is done with an experimental variable, trying to find existing provable relationships. Sometimes the researcher finds it enough to solve the investigated problem through existing literatures and studies. Researches that are made by with existing literature and former studies are called *desktop researches* (ibid).

4.2.1. Research Strategy for this Study

The research questions answered in this study are of the nature that they are varying between situations and industries. Therefore the authors were in need of a research strategy that gave them industry specific information to gain deeper understanding of the concept and processes being examined. Due to Robson (1993) the ‘case study strategy’ can be used beneficially under these circumstances. According to earlier mentioned statement from Robson (1993) and the contribution brought up earlier by Saunders, Lewis & Thornhill (2000) the choice of research strategy was case study.

Case Study Object

When choosing an appropriate case study object, the authors got the possibility to investigate the fast growing high-tech market. One major driving force in the high tech market is

telecommunication industry. As the usage of telecom technologies increase, so does the need for capacity throughout the existing networks providing data exchange. One example is the increased use of 3G that compared to second-generation mobile phone systems is demanding much more capacity. For the telecom operators to satisfy their customers it is inevitable to expand the reach and capacity throughout their networks. Upgrading their networks, operators have the choice of hardwired cable networks or creating the same by wireless alternatives. The wireless solution offers the transmission and transport of signals and data in designated leaps wireless between masts, not involving labour work for digging the cable connections. Ericsson AB is with its product MINI-LINK the world leader in this market, thus having a large variety of industrial customers. Ericsson has a growth rate that has increased by 17% in network equipment compared with last year (Ericsson, April 2005). This was about 9% better than the average industry index.

The Business unit for Transmission & Transport Networks (BTTN) is a business unit within Ericsson that, amongst others, offer this worldwide leading solution for wireless network transmission, MINI-LINK. An agreement was made with Ericsson, BTTN, to investigate the research problem on their clients.

4.3. Data and Information Collection

Saunders, Lewis & Thornhill (2000) explains that when gathering data and information to meet the objectives for the research questions there are two options to face, primary- and secondary data (ibid).

Lekvall & Wahlbin (1993) together with Kotler & Armstrong (1994) declare that *secondary data* are information collected from former existing studies and literatures, gathered for another purpose. Kotler & Armstrong (1994) continues to explain that the main advantage from secondary- compared to primary data is that it is fairly inexpensive (ibid).

According to Kotler & Armstrong (1994) *primary data* is information collected for the specific purpose at hand. Primary data can be collected through questionnaires, telephone/ personal interviews, observations, and experiment. Lekvall & Wahlbin (1993) mentions two comprehensive methods for collecting primary data, field- and laboratory researchers.

Mason (1996) declares different kinds of possibilities when searching for primary data sources to use, one of them is interviewing adequate persons. The benefits when choosing interviews are that people can contribute with knowledge, experience, interactions, memories, thoughts, ideas, and feelings that are not reachable in other ways of collecting information. When gathering primary data through interviewing Wengraf (2001) stresses four types of main points (ibid):

- Research interview is designed for the purpose of improving knowledge.
- It is a special type of conversational interaction, with particular features to understand.
- It has to be planned and prepared for as other forms of researches, it is a co-production by the interviewer and the respondent.
- It is supposed to go in depth into matters.

Lekvall & Wahlbin (1993) contributes that interviewing can be done in three different ways; personal interviewing, telephone interviewing and interviewing through written letters. The significant differences between these three ways are assembled from Lekvall & Wahlbin (1993) below.

To accomplish the interviews, written letters are the most *time-consuming* and telephone the fastest while personal interviewing is somewhat in between the earlier two (Lekvall & Wahlbin, 1993). The *risk for reduction* is high through written letters and the most reliable way is through telephone or personal interviewing. The same proportion is true for the *control of who is answering* where written letters lack this control. Another important aspect is the *flexibility* and the *ability to restructure* questions through the interview, here personal interviewing is a bit better than telephone while interviewing through letters does not support this at all (ibid).

A brief summary of the statements from Lekvall & Wahlbin (1993) conveys that telephone interviewing is giving almost all the benefits as personal interviewing offers. Telephone interviewing is also often faster and cheaper than personal interviewing (ibid).

4.3.1. Data and Information Collection in this Study

When collecting data and information for investigating the research questions the authors have chosen telephone interviews as primary data source. This was because of intricate research area and the qualitative research approach, hence interviewing became a natural way of gathering primary data. Contact through telephone was chosen mainly because of the distance to the respondent, the ability to record it, and the fast response. To enable contact with possible interview respondents the selling department of Ericsson was conducted, first via an introduction e-mail describing the purpose of this study and later on through personal meetings. Through these meetings the most suitable respondent was located. An interview guide was developed together with the academic supervisor and the supervisor at Ericsson[8]. The interview was performed and recorded from the marketing unit at Ericsson BTTN through a speakerphone with one of the authors asking the questions while the other one was documenting the answers. This represented the base of information that was later on analysed, through comparison of the empirical findings with the chosen theory, and finally concluded with the findings of this report. The respondent was a strategic transmission planner at HI3G Access AB and the interview time with him lasted for about one hour and 20 minutes. He also referred to the companys' webpage for complementary information.

The literature research and secondary data research has been made primary at the Luleå University Library. The foremost article databases accessed online was EBSCOhost, Emerald-library and JSTOR. The initial words used in the search-span were; industrial/organizational buying behaviour, choice/selection criteria, buying criteria/decision. The articles found here led through their references to further, even more relevant, findings. An introduction to the industry and the chosen market to study was given in four lectures by a supervisor allotted by Ericsson with additional contribution from the marketing manager. The authors received printed materials, power points and other data formats containing information about the market from these persons as well. Ericsson's intranet and its belonging search engine Business Intelligent Central (BIC) for articles were also used to build an

[8] The guide used by the authors in the telephone interview is found in Appendix F.

understanding. The printed materials obtained from Ericsson were brochures and earlier made reports and investigations about the product and market in matter. This information was used to gain knowledge about the market situation and business activities that industrial buyers face in this industry.

4.4. Quality Criteria

When gathering information used to draw scientific conclusions, meanings from the data should be tested for plausibility and ability to truthfully confirm its consistence (Miles & Huberman, 1994). Saunders, Lewis & Thornhill (2000) contributes that to reduce errors and receiving the wrong answers, attention has to be emphasized on two particular research devises; *reliability* and *validity.*

The validity describes how well the collected data covers the actual area of investigation (Lekvall & Wahlbin, 1993). Zikmund (1994) claims that validity is the ability to measure what is intended to be measure. Reliability on the other hand is the degree to which evaluated data is free from arbitrary errors (ibid).

Zikmund (1994) illustrates and describes the relationship and correlation between reliability and validity, see figure 4.1.

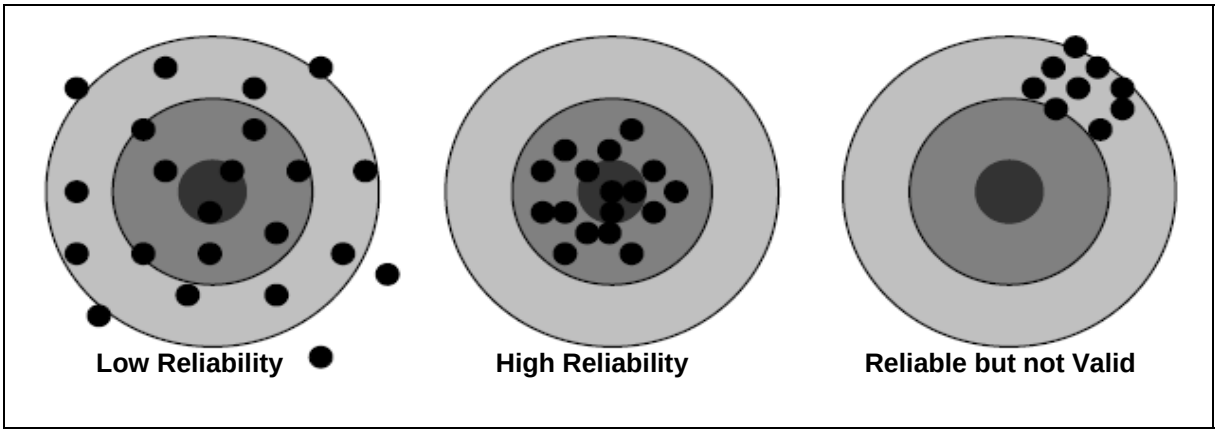

Figure 4.1. *Reliability and Validity* (Zikmund, 1994, pp. 359).

4.4.1. Quality Criteria for this study

The interview guide was sent in advance to the respondents before the actual interview[9]. This was done so the respondent could get a reflection to the content and be prepared for the interview questions. A Ph. D. Candidate at Luleå University of Technology acknowledged the questions academically before they were sent out. An online investigation about the interviewed company was made before the actual interview, primary from their own website but also through their annual report. The (telephone) interview method gave the authors the opportunity to further explain and clarify questions that were unclear to the respondent, which

[9] The interview guide sent to the respondent is found in Appendix G.

did happen. Additionally to the writing documentation during the interviews, the authors also recorded the discussion to later on make sure that nothing was missed. At the end of the interview, the respondent was asked to answer possible complementary questions at a later stage.

Naturally increased credibility would be achieved if not for the constraints, mentioned in the delimitations, e.g. more primary data sources.

Chapter 5. Empirical Data

This chapter will present the theoretical data collected through telephone interview with a telecommunication customer to Ericsson. When deciding which customer to interview, the most suitable appeared to be one who had considered to buy telecom equipment or had done this type of business before. Furthermore this chapter will give the reader a short introduction of the supplier Ericsson and its market as well as the interviewed customer and their business. The structure of this chapter is mainly according to the interview guide made to facilitate for the respondent. The chapter will end by presenting the empirical findings.

5.1. Ericsson Corporation and their Market

For all existing systems around the world in the Internet, broadband and mobile industry is Ericsson supplying service providers and operators with end-to-end solutions. Ericsson is the largest supplier of mobile systems and supports all primary standards for wireless communication. The position of Ericsson in this market can be exemplified by the fact that 40% of all world wide mobile calls are made through their system. The headquarters are located in Stockholm but Ericsson has been functioning worldwide since 1876 and is today active in more than 140 countries. Ericsson has a vision to be the main driver in an all-communicating world.

5.2. Case Study

When evaluating the industrial buying behaviour characteristics of telecom equipment the authors investigated one customer to Ericsson in Sweden. The investigated company is highly topical in the third generation (3G) telecom networks and is named HI3G Access AB, also known as 3. As seen in the authors interview guide[10] the interview is divided into three fundamental sections; introductory information, buying process/center and with choice criteria and concluding questions. The following part will give a detailed account of these sections according to the respondent at the company 3, who also referred some of the introductory answers to their website for more detailed information.

5.2.1. Introductory Information about 3

The company 3 is a telecom operator with a core competence to supply their customers with the third generation of telephony and its belonging features. They have 700 employees in Sweden and Denmark and approximately 500 of these are working in Sweden. Furthermore they exist globally on markets such as in Hong Kong, England and Italy. The company's objective in a short-term perspective is to raise the capacity in their existing telecom network. In a long-term perspective 3 is discussing to reach 'high speed data package access' (HSDPA), which is a kind of network upgrading where the end customer can be able to use

[10]The guide used by the authors in the telephone interview is found in Appendix F.

mobile ADSL, or in other words a form of broadband access. Another goal that reaches over both short- and long-term point of view is to convert existing customers from the earlier mobile generation network (GSM) to use the third generation mobile technology instead. 3 uses an organizational structure that is of traditional manner and consists of five linear sub-organizations; marketing, sales, customer service, engineering & operations, and finally IT. These are further explained below.

- The role of *marketing* is to analyse the market to the next generation of mobile telephony. They are also defining market segments and ensure that these are satisfied through offerings and communication from 3.
- *Sales* consist of a sales channels network, including stores, retailers, online shop etc. Sales primary task is to see that the selling through these channels is running smoothly.
- *Customer service* has as main function to give service to their customers. They are focused on reaching out to the customers who needs support.
- *Engineering and operations* can be divided and described in the following way: The engineering department is internally called 'network-engineering' and has the main function to support the extension of the network. The other department called operations have as primary function to manage operation and functions of the network. Generally the network-engineering unit handling the telecom transmission are also responsible for the purchasing of transmission equipment.
- *IT*, or information technology, is developing and supplying solutions of services to their customers.

These above-mentioned parts of the organization are supported by the staff-departments; finance, organizational development, and legal. Furthermore the respondent added the procurement department as an important actor in their organization.

In the Scandinavia 3 is located in Stockholm, Gothenburg, Malmö and Copenhagen. Due to the fact that the company is building their own infrastructure in Sweden, as well as leasing lines, the importance of transmission equipment is very high to them. The general opinion towards microwave transmission is positive because it is a vital part to their networks and has been used from the start of the business. 3 has a need for purchasing transmission that is about 40% of their total investments, estimated on the Swedish market. This percentage is calculated from the fact that they have built 250 network lines in this year and leased about 400 lines. Hence, their total investments in transmission is 650 and 250 of these are purchased and wholly owned, which is examined to approximately 40%. All of the 250 lines are built by microwave transmission.

When 3 is purchasing microwave transmission they are buying 'one size' per order, this means one transmission connection between two standpoints per order. The frequency of purchasing transmission products on a yearly basis is 250 orders and is spread equally over the different locations in Sweden.

The interviewed person from 3 was a network engineer working with transmission equipments. He has worked with the company for nearly four years and has experience in the business before that as well.

5.2.2. The Buying Process and Buying Center of 3

The people planning new locations for network lines identify the initiation to a purchase of microwave transmission equipment. They trigger an internal process of buying the new transmission equipment. This need is derived form the overall need expanding the companys' capacity as their subscribers and services expand. The transmission planners are responsible of supplying the network with transmission and perform capacity evaluations as the need is recognized. The criteria specified when evaluating the product are primary technical aspects (formulated in an request for (RF) document[11]) and are followed by price. The departments involved in evaluating this are the procurement, legal and the engineering departments and conclude to approximately three individuals.

The information regarding different suppliers are collected through contacts with other companies and direct connection with the different suppliers to get specifications and presentations. During previous microwave transmission offers, the company have had about five different suppliers they evaluated between. Ericsson is their microwave supplier today, but they have used some occasional equipment from [COMPANY X] to some special solutions. In one situation Ericsson used [COMPANY Y] links when they could not deliver all the links from their own production, but these was replaced as soon as they could cover it. The persons involved in evaluating suppliers are a transmission engineer, one from the legal department and one from the procurement department.

To be considered a potential supplier to the company 3, an adequate technical solution must be proved. In the long run is price as well as delivery also very important. About four to five suppliers are normally contacted for proposals. When considering the different offers 3 first consider the technical features and conducts a discussion to get a wider aspect of which equipment that especially fits their need. Sometimes they borrow equipment to see if it really works and sometimes they use customer references to evaluate offers. Improvements of offers from a supplier are also discussed with other competitive suppliers. The departments involved when evaluating and testing these aspects is legal, engineering and procurement.

Proof of reliability about the suppliers company and its microwave transmission products is very important for 3 as a customer when choosing the final supplier. The extra technical capability in addition to the basic functions is not so important because 3 uses the network after the specified fundamental functions. The ease of maintenance is not so important either when evaluating supplier but the ease of operation and use are on the other hand important.

The price of the products is really important, together with quality it represents the most important factors. One rule of thumb is to get as low price as possible to the best quality as possible. The delivery time is extremely important when choosing amongst suppliers. If the supplier cannot deliver during the desirable time they will lose the deal. This happened with the supplier [COMPANY Z] once, although not in a contract with 3, as they could not deliver according to their time frame and lost the deal. Another example is when Ericsson utilized equipment from [COMPANY Y] when they could not fully deliver their orders themselves. Due to the fact that Ericsson solved this problem internally, they did not lose the deal.

The geographical presence of a supplier is not important for 3 at all. If it were needed, all the potential suppliers are willing to give an introduction at the local place to the customer

[11] RF documents can be either request for index (RFI) or request for quote (RFQ).

anyway so this is not very advantageous. The ability to upgrade microwave transmission when the needs are increasing is known in the industry as ‘pay as you grow’. This incitement is also important for the company 3 when buying microwave transmission.

5.2.3. Choice Criteria

When asking the respondent from 3 to rank the four most important criteria for choosing a supplier, *price* is placed first followed by *delivery*. At third place is *service* and ranked last is *quality*. The respondent adds that the big components in a buying decision are price, technical evaluation, delivery, form of payment, and time committed to a contract. The word-of-mouth phenomena have affect when it comes to the selection of suppliers. Technicians are talking to technicians in the technical manners, which is an important factor to get information in different aspects. General product and supplier information is also spread between customers and by their relationship with others near them.

It is not always the same person from the different departments who perform the evaluations of the different aspects and factors when choosing amongst suppliers. At the legal department there are a few persons who investigate the legal aspects of the contracts and deals. But at the procurement department there is one person responsible for the purchasing of microwave transmission equipment, another for other solutions. Generally there are no formalized roles amongst the members in the department and the individuals’ performing the evaluations differs between the situations.

5.2.4. Concluding Questions

When evaluating the decision of supplier the company 3 are performing product tests after the sale, this is to make sure that all functions that have been promised really works. The tests have in previous deals first been made in theoretical cases and later on tested in practice. The transmission engineers from 3 and representatives from Ericsson performed the tests. Once every month the supplier and 3 arranges a technical meeting to discuss urgent matters, complications or problems. These meetings are primary between the network transmission engineers from 3 and the technical support from the supplier.

The company 3 have formalized processes of performing their purchases. For business security reasons are these not open to the general public. Time length of the total buying process is estimated to 1-2 months for the company.

The respondent thinks that the engagement from Ericsson regarding microwave transmission is good, especially Ericsson Sweden who is their present supplier. Ericsson is, for example, always alert and prepared to inform 3 about their new technologies, which is appreciated by the customer.

Chapter 6. Analysis and Findings

In this chapter the empirical data presented in former chapter will be analysed. Similarities and differences between theory and empiric will be brought up and discussed in the same order as the research questions.

6.1. Buying Process

As theory explains the initial phase of the buying process is some kind of triggering that sets the process in motion. The respondent identified this very clearly, and indicated that as the need for capacity increases so does the need for transmission. In short, increased need for transmission can occur if the company expands to new geographical areas, e.g. new mast might be set up and transmission to these is necessary. It can occur if the existing areas need more capacity, e.g. more subscribers or introduction of new services. Or, it can occur if the existing transmission equipment is unsatisfactory in any way.

It is in this initial stage that a small discrepancy between Burger & Canns' (1995) model and the empiric findings can be observed. The assessment of need and the incident that triggers the process of buying seem to be much more interconnected that theory suggests. But it should be noted that this is something that is discussed in theory as different models of industrial buying suggest that the sequentially illustrated steps of the buying processes can occur simultaneously.

Even though conducted simultaneously, it is evident that a small unit of employees, from different departments, makes an assessment of the need. They define the basic elements that need to be satisfied and are gathered in the, often rather formalized, RF documents. These fundamental criteria involve technological demands that are to be met, followed by price estimation.

Truly, in compliance with theory, some search for information is made regarding different suppliers but these are not at all as many as suggested by Burger & Cann (1995). Only a few suppliers, such as five, are contacted for an initial approach. Additional difference with the theoretical reference is that this initial contact is clearly affected by word of mouth as the 3 personnel gather this partially from 'company contacts'. Furthermore this phase is more relationship building as deeper contact often is made and the different suppliers can come to present their offerings through personal presentations.

The supplier selection phase follows theory in a high extent and the most important factor in order to be considered a potential supplier is a good technical solution, given this price will be of great importance. The difference from theory is that in this case most of the suppliers' offerings, identified in the information search, are adequate. Rarely more than one, if any, of the potential suppliers are excluded from being further considered in the buying process as proposals are gathered from these. Thus most of the possible vendors will be selected, which in Burger & Canns' (1995) model means that proposals are gathered from these. Something

that is not very surprising or strange since the potential suppliers are fewer than generalised in the mentioned theoretical model.

The fifth phase in the model is referred to as proposal evaluation and here 3 initiates deeper discussions with the potential suppliers. With the aim of getting a deeper understanding of which equipment that especially fits their needs, the companys' action matches well with the theoretical model. In addition to pure proposal evaluation, 3 will if necessary borrow equipment for product evaluation and testing. In theory as well as in the case with 3, naturally, a choice is made after the evaluations with the major components being the final negotiations of price, form of payment, technical aspects and time committed to the contract.

The Burger & Cann (1995) model shows the importance of word of mouth when it comes to high technology markets, something that was strengthened by the empirical findings. As shown in former chapter the technicians internal discussions are viewed as an important information source and seen as an important factor. The major difference in comparison to theory in this phase is that the influence of word of mouth is found evident in other phases as well. Additionally an interesting notion is that general product and supplier information is spread between the different buyers (i.e. 3 and its competitors).

In this case, 3s after sales product tests were conducted together with Ericsson, which indicates in this way a more than pure transactional perspective. This, in compliance with theory as the testing of the products, was developed in relationship between the companies. Additionally the monthly meetings between the technicians of the companies further enforce this. Further developing this notion, these post sale activities can encourage new triggering in the buying companies as needs can be made apparent.

Further analysing, the authors find that some of the discrepancies found between the chosen theory and the case of 3 would be avoided with a larger frame of reference. One example is that some phases are perceived as more compact than suggested in the Burger & Cann (1995) model, some even felt to happen almost simultaneously. As described in the theoretical review, highlighted by other researchers, the phases of a buying process is not to be only seen as sequential, rather they can occur as in the case of 3. Furthermore, the influence of the Buyclasses, also discussed in the theoretical framework, would possibly explain some of the empirical findings.

6.2. Buying Center

The six buying center roles as identified by Webster & Wind (1972) and Bonoma (1981) are found somewhat unstructured in the case of 3. When it comes to these kinds of purchases, the roles are seemingly carried out by different members of the three departments procurement, engineering and legal. It is in particular these department that are involved in the purchase of these kind of equipment that can be viewed to be a balance of two very important factors, price and technical aspects, as well as being able to close the deal from a legal perspective.

According to theory the initiators will reveal that a need has aroused in the company. In compliance with this, the empirical data clearly indicate an individual or a small group of people that are the initiators and trigger the procurement process. In this case the people

planning the network, such as network planners and transmission planners, are the ones that will uncover the need for transmission in the company. The network planners might be the initiators in the case of new mast being set and the transmission planners might identify the need through capacity evaluations.

The person that is influenced by others and makes the final decision is in this case probably the same as the purchasers, but here is a possibility that a formal decider exist and is involved in larger purchases.

The by Webster & Wind (1972) defined role of the influencer is that of an individual or group that influences the decider. There is often one person from each of the departments' procurement, legal and engineering departments involved in evaluating the different alternatives. These, often three, individuals have the major influence in which solutions is to be chosen. Whether the head of the different department influences, and in what extent, cannot be supported by the empirical data. The individuals from engineering and procurement seems to influence the final decision the most since these are, in a high extent, involved in most of the phases of the company's buying process. Since the transmission planners have the formal assignment of providing the network with transmission these will have a strong influence in the purchase.

In accordance with theory there is one person at the procurement department that is responsible for the purchases of microwave transmission. This person decides upon the final solution together with the individuals from engineering and legal departments. The composition of this group will vary depending on the expertise required in each case, e.g. a specific person from the legal department will be involved when purchasing from suppliers from different countries.

Since offering a good technical solution is a prerequisite for being a supplier the technicians that define what a "good" solution is will be seen as gatekeepers. Furthermore the individuals that affect the buying process by word of mouth can be considered information holders and thus gatekeepers. These are as well internal, employees, as external such as company contacts and other buyers. Possibly the technicians should be viewed upon as the most gatekeeper-characteristic group as they are discussing, in technical manner, different product and suppliers in their everyday environment. To exemplify, a rumour regarding a specific product will fast travel inside the organisation but also in between different companies. Thus these individuals will block or pass through information regarding some suppliers.

As the need of buying new transmission equipment is mainly derived from the increased demand set by the end consumers it is possible to define these as the users. The empirical data indicates that it rather should be the field technicians, from the operations and engineering department, which install the product who should be viewed upon as users.

Further analysing, buying center involvement of other departments such as marketing, IT, sales or customer service was not evident during the interview. This is found somewhat out of the ordinary since, e.g. the marketing department is imagined to be a gathering and structuring point of customer needs in the organisation. Possibly the customer service and sales departments can be seen as the interface for this. It is neither unthinkable that the IT department in response to customer needs develop more demanding service that would increase the demand of capacity throughout the network.

6.3. Choice Criteria

As discussed in theory major choice criteria are quality, time, price and delivery. In the case of 3 the single most important of the investigated factors was price, given that the product can manage the minimum demands set on the solution. This since most of the technical demands preset by the company were essential for them, and if not met by the supplier, they would not be considered, no matter price.

Evidence, proof that the product is reliable is very important for 3. This is not surprising since this kind of technology is directly related to the core business of the company and every non-operational minute is disastrous. Given this, it is also rational that the criterion of being easy to operate is highly ranked. These aspects amplify the importance of quality, which is together with price perceived as the most important factor. Interesting notion is that given the distinct option of choosing amongst price, quality, delivery and service. Quality appeared as the least important, but as mentioned this criteria appeared as top ranking when questioned about as an isolated factor. This paradoxical behaviour can perhaps be explained from the perspective that the different suppliers on the market has products that are, from a minimum capability point-of-view, essentially similar.

Further developing this notion, and combining it with the importance of these products in the core business of 3 it is rational that factors regarding delivery are very important. If suppliers have trouble delivering in specified time or specified volume they will quickly be disregarded in the buying process.

Service related issues such as being flexible, adjusting to the company need, and ‘getting the job done’ seem to be valuable in the case of 3. The impression is given that Ericssons’ benevolence in e.g. acquiring products from their own competitors in order to satisfy 3 are given a more long run value but not highly ranked in the short run ranking. Furthermore, adjusting to the company needs is emphasised as the importance of ‘pay as you grow’ functions are valued. This aspect was not clearly defined from the beginning but can be seen upon as a development from the assimilated ‘customer customisation’ criteria.

Chapter 7. Conclusions and Recommendations

Based upon analysis and findings, this final chapter will include conclusions of the studied buying characteristics in industrial buying behaviour. It will also consist of recommendations for marketers in this industry as well as for further research. The buying behaviour investigated in this study is acting in the expanding mobile operating segment and were customers are currently purchasing network solutions, including the product MINI-LINK, from their supplier Ericsson. For marketers facing these customers it is very important to be aware of their buying process, buying center (and the roles that might arise here) and choice criteria. The awareness and understanding of this can efficiently simplify the selling process and facilitate the product presentations and better meet the customers' needs and values.

7.1. Buying Process

Concluding the empirical findings and analysis a model similar to Burger & Canns (1995), where a few modifications is suggested, and illustrated in figure 7.1 (a small version of the original model is inserted in the figure for easier comparison). Differences are mainly found in the initial phases that are more integrated in character. The influence of word of mouth is as clear in the information search as the proposals evaluation. Finally the influence of post purchase activities is made visible and their possible effect on triggering new purchases is illustrated by the dashed line.

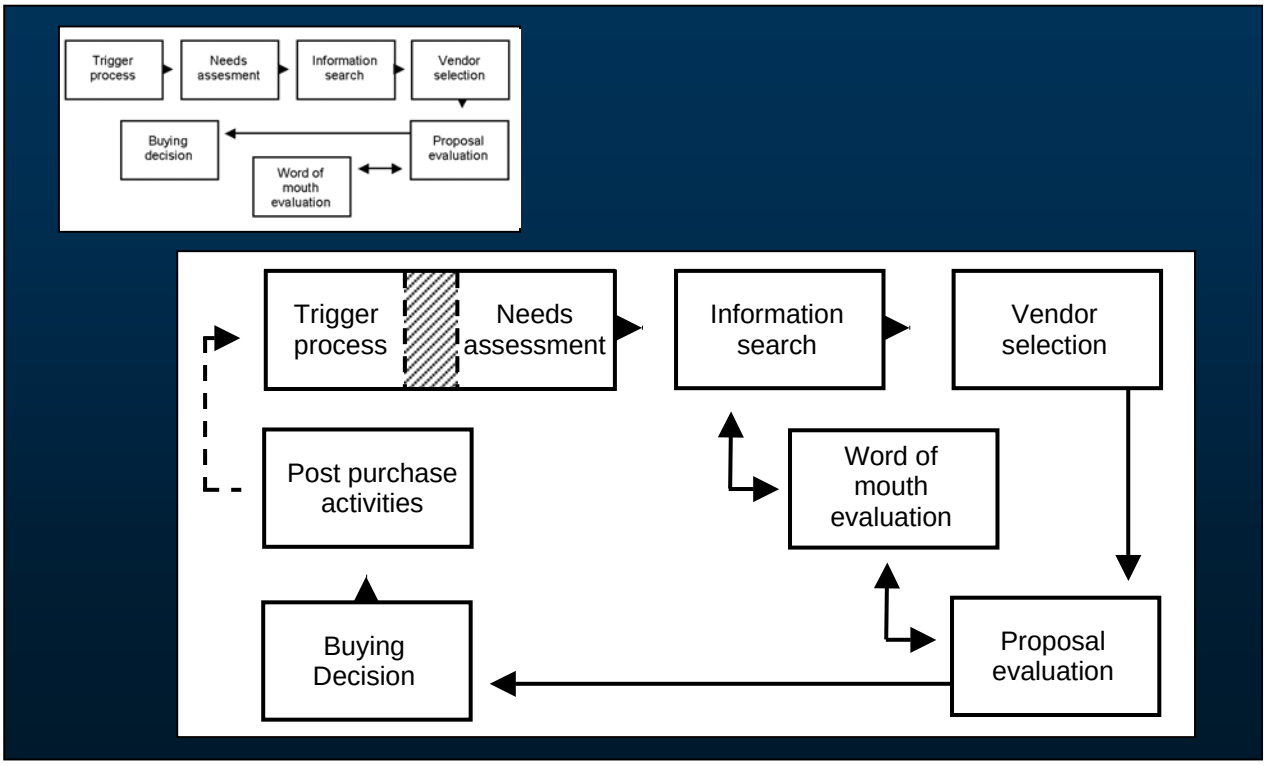

Figure 7.1. Emerged buying process in the telecommunication industry.

Further, concluding the buying process in these situations, it is observed to be a rather compact, fast moving procedure. From triggering to reaching a buying decision can be as fast paced as one to two months. The importance of word of mouth should be emphasised, as sayings regarding suppliers will travel between buyers through this channel. How a need arises in the buying organisations should be considered critical information and stimulating this is strongly recommended. In particular in these types of relatively short buying processes it is extra important for the supplying organisation to become involved in an early stage. Additional factors encouraging the early involvement in the buying process is that of the few suppliers considered in this market are offering similar products. This movement towards commodity product will increase the importance the relationships and trust building between the organisations. This relationship and trust building perspective implicates the high importance of post purchase activities, something that clearly has been identified by the research community and is practised in the industry.

7.2. Buying Center

Since the importance of getting involved at an early stage in industrial buying already has been concluded. It is obvious that an important role for the marketer to understand and take into consideration is who, amongst the customers, which is the initiator and first discovers the need for buying microwave transmission. When operating, customers are in a phase of expansion, the individuals who initially find the demand for microwave transmission are the network planners, belonging to the engineering and operations department. Even though it is believed that these products are moving towards becoming commodity like, it is the belief of the authors that the engineering community is best addressed through outstanding technical capability.

Another very important position in the buying center are the influencer and purchaser. These roles are represented by individuals from the three departments; procurement, engineering and legal. The legal aspects are of course important but when it comes to the final decision, the two most considerable influencers are individuals from the engineering and procurement departments. Hence it is important for a marketer to turn towards these with the right timing and right information to satisfy their needs and values in the best possible way. In doing this the authors estimates the chances to prevail a deal will increase. Since actors within these two departments have such diverse roles, they are assumed to have different needs. Therefore it is the suggestion of the authors to clearly address each role through different messages with emphasis on the initial and end phase of above mentioned buying process.

The role of a gatekeeper is analysed to be kept internally by the technicians. Therefore it is of great importance for a marketer to meet these well and supply them with their required information. Due to the fact that the buyers and their surrounding companies (including competitors) are continuously sharing information, this will not only affect the customer company in matter, but also related businesses. These statements are also valid for the role described as user. If the marketers are addressing these roles well, the authors assess an increased interest amongst further potential buyers.

7.3. Choice Criteria

The single most important criteria when choosing supplier in the microwave transmission market for expanding mobile operators is price, given that the solution can manage the minimum technical standards required by the customers. The basic technical demands set by the customer are seen as compulsory and if a supplier cannot fulfil these they are not even considered in the selection process, no matter what price is offered. To get information about different suppliers technical performance and capability, an RF document is sent out. With the technical information gathered, the suppliers that can attain the basic demand, will continue in the selection process.

Statistical evidence and proof of the product reliability is very important as well as the ease of operation and use when choosing among suppliers.

The quality aspect is of course important when evaluating choice criteria, but all the current suppliers available reaches adequate quality and hence all are generally accepted.

'Pay as you grow' criteria can perhaps be argued as not based upon earlier research in comparison with the chosen frame of reference. The authors argue that the way of seeing this criteria is an evolution of customer adaptation. At any rate, serious consideration should be given into 'pay as you grow' pricing since buyers find this beneficial and is a pricing strategy that they often use towards their customers and therefore might be easy to accept. The main idea of this will be to be able to lower the price in initial stages, thus becoming as competitive as possible on the criteria that in the end settles the deal.

7.4. Final Thoughts and Recommendations

7.4.1. For Ericsson and Marketers

[CONFIDENTIAL]

7.4.2. For Further Research

The area of IBB is enormous, and as most parts are as important as they are interesting, many topics for further research can be mentioned. In combination with the fact that it is of essential interest to investigate each industry for full depth it is made clear that prioritisations must be made.

Related to the scope of this thesis the authors clearly feel that time frames have made it difficult to view fundamental areas such as the role of relationships, influence of buying situations and the importance of risk of industrial buying in this market. All these aspect as a part of a frame of reference would shed new light and generate deeper understanding on some of the empirical findings. These niches of research would give additional empirical data to, something that might conclude even more accurate findings and offer more significant generalisations.

As it has been stated, the product that became the object of this study is moving towards a price-pressured situation. During the course of this study the authors have several times came in contact with the severe influence of electronic marketplaces on pressuring prices. So called e-auctions undifferentiate the product as they basically take only one criteria into consideration, namely price. Investigating the buying behaviour on and the influence of e-auctions in the telecommunications industry is an interesting recommendation for further research.

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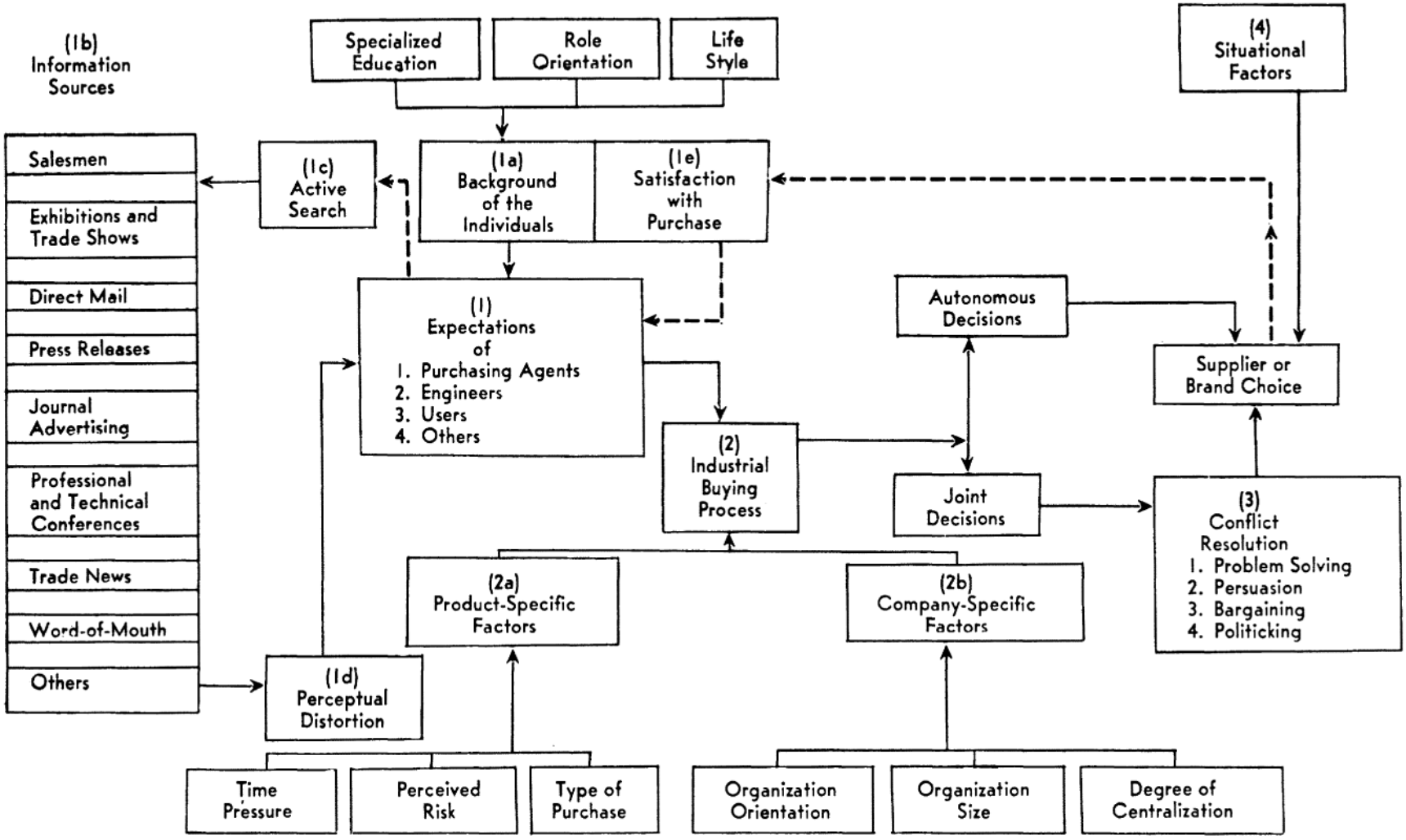
Telephone Interview

Jutterström, Lars; 2005-05-19, Network engineer at HI3G Access AB, the interview took place at 9 am.

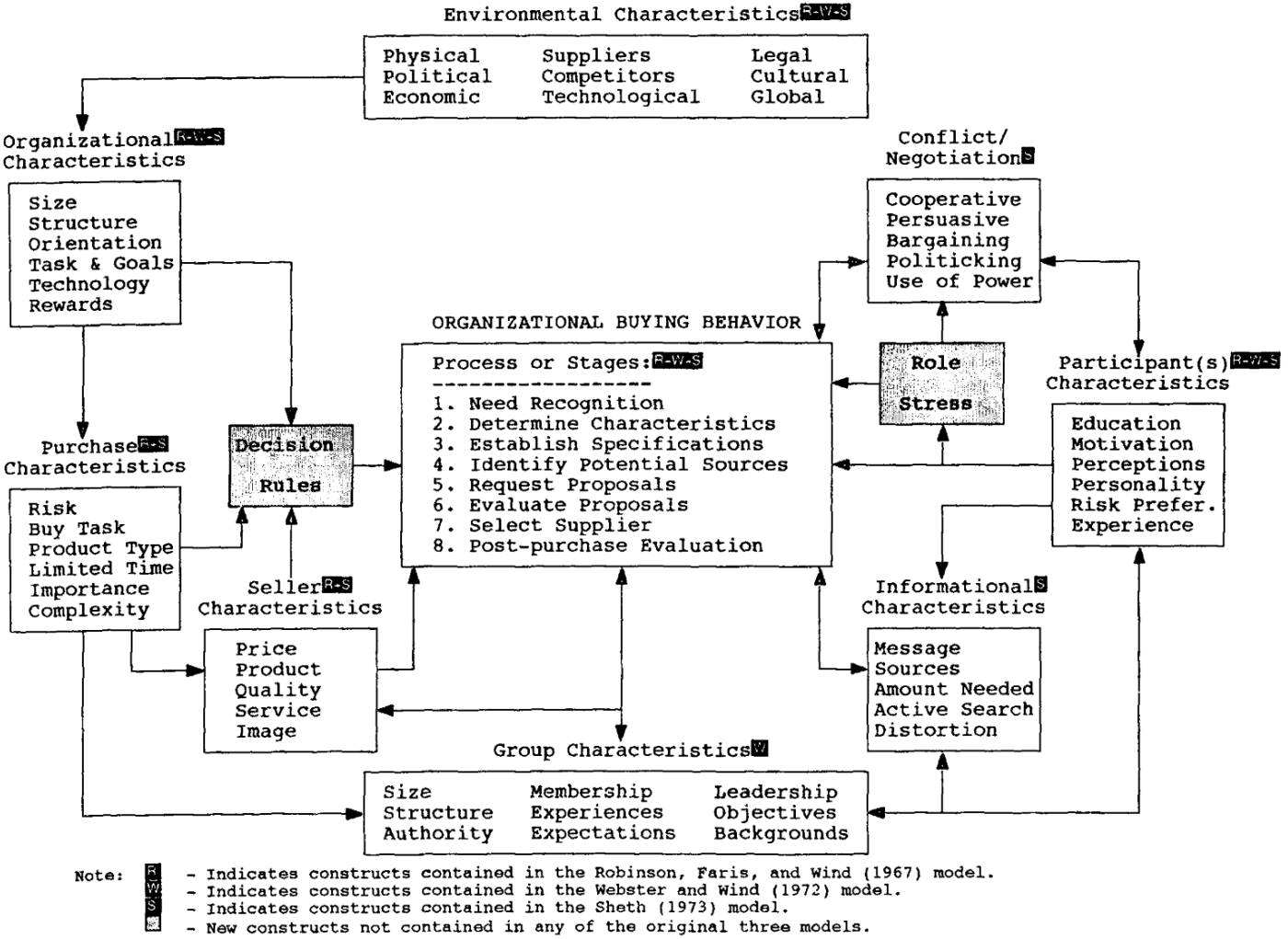
Appendix A – An Integrative Model of Industrial Buyer Behaviour

Source: Sheth, 1973, pp. 51



Appendix B – An Integrated Model of Industrial Buying Behaviour

Source: Johnston & Lewin, 1996, pp. 3



Appendix C – Industrial Buying Processes

Source: Kauffman, 1996, pp. 97-98

		Influence category and research stream											
		Individual				Group		Organizational	Environment	Process		Product/Martket	
Year published	Authors	Individual effects	Perceived risk	concept	structure	Membership influence	communication	structure/ roles	Environmental situation	Process	Consumer-organization	Market segment	Product attritbutes
1965	Webster									×			
1967	Robinson *et al.*			×		×		×	×	×			
1970	Webster						×						
1972	Webster and Wind	×					×	×		×			
1973	Sheth								×	×			
1976	Grashof and Thomas					×							
1976	Gronhaug								×				
1976	Sweitzer						×						
1977	Calder												
1978	Wind					×							
1979	Bellizzi					×				×			×
1979	Spekman					×		×	×				
1979	Spekman and Stern				×				×				
1979	Zaltman and Wallendorf										×		
1980	Choffray and Lilien											×	
1980	Fortin and Ritchie					×		×			×		
1981	Johnston				×		×	×		×			
1981	Johnston and Bonoma				×					×		×	
1982	Crow and Lindquist	×											
1982	Johnston and Spekman									×			
1982	Lehmann and O'Shaughnessy												×
1982	Moriarty and Bateson					×							
1982	Silk and Kalwani					×		×					
1982	Thomas	×				×							
1983	Kennedy					×				×			
1983	Moriarty					×					×		
1984	Fern and Brown										×		
1984	Jackson *et al.*					×			×				×
1984	Leigh and Rethans									×			
1984	Naumann *et al.*					×							
1984	Thomas					×							
1985	Banting *et al.*					×				×			

(*Continued*)

		Influence category and research stream											
		Individual		Group			Organizational	Environmental	Process		Product/Martket	
Year published	Authors	Individual effects	Perceived risk	concept	structure	Membership influence	communication	Structure/ roles	Environmental situation	Process	Consumer-organization	Market segment	Product attributes
1985	Cheron and Kleinschmidt										×	×	
1985	Crow and Lindquist					×			×				
1985	Matthyssens and Faes									×			
1985	Puto *et al.*		×										
1986	Abratt												×
1986	Ghingold					×			×	×			
1986	Moller and Laacksonen								×				
1986	Patton *et al.*	×						×					
1986	Spekman and Gronhaug			×						×			
1987	Deshpande and Zaltman										×		
1987	Hawes and Barnhouse		×										
1987	McCabe				×				×				
1987	Woodside and Vyas	×				×				×			
1988	Kohli and Zaltman					×							
1988	Lichtenthal							×					
1989	Kohli					×							
1989	McQuiston								×				×
1989	Qualls and Puto	×											
1989	Ronchetto *et al.*				×	×		×					
1989	Shaw *et al.*												×
1990	Bunn			×						×			
1990	Brown and Brucker									×			
1991	Barclay								×				
1991	Wilson *et al.*		×						×				
1992	Rangan *et al.*											×	
1993	Henthorne *et al.*		×										
1993	Weiss and Hyde								×				
1994	Drumwright												×
1994	Kauffman												×

Appendix D – Comparison of Industrial Buying Processes

Source: Wind & Thomas, 1980, pp. 243

Robinson & Faris (1967)	Ozanne & Churchill (1971)	Webster & Wind (1972)	Kelly (1974)	Bradley (1977)	Wind (1978)
(1) Problem (need) recognition	(1) Awareness	(1) Identify needs	(1) Recognise need	(1) Purchase initiation	(1) Identification of needs
(2) Determine characteristics (3) Describe characteristics		(2) Establish specifications			(2) Establish specifications
(4) Search for sources	(2) Interest	(3) Identify alternatives	(2) Information search	(2) Survey of alternatives	(3) Search for alternatives
(5) Acquire proposals					(4) Establish contact
(6) Evaluate proposals	(3) Evaluation	(4) Evaluate alternatives	(3) Evaluate alternatives	(3) Supplier short-listing	(5) Set purchase and usage criteria
					(6) Evaluate alternatives
			(4) Approval of funds		(7) Budget availability
					(8) Evaluate specific alternatives
					(9) Negotiate
(7) Select order routine	(4) Trial	(5) Select supplier	(5) Decision	(4) Award contract	(10) Buy
	(5) Adoption				(11) Use
(8) Performance feedback					(12) Post-purchase evaluation

Appendix E – Factors Influencing the Number of Buying Influences in Buying Organisations

Haas, 1995, pp. 181

Factor	Effect on Number of Buying Influences
Breadth of use of a product/service being purchased.	As the number of departments using a product/service increases, the number of buying influences tends to increase.
Complexity of a product/service.	Fewer people may be able to understand a very complex product/service, and the number of buying influences may decrease.
Size of the buying organisation.	As size of buying organisation increases, there are more people who may become involved in the purchasing process.
Technical abilities of buying organisation's purchasing department.	As buyer become more specialised and more technically competent, they may tend less to rely on others within the organisation, and the number of buying influences may decrease.
Perceived risk of buying a product/services.	As the buyer's perceived risk of buying increases, there is a tendency to involve more people in the decision.
Price/cost of a product/service purchase.	The higher the price/cost of a purchase, the more likely that the number of buying influences will increase as more people become involved.
Buyclass of the purchase.	There will typically be more buying influences involved in new task purchases than in straight rebuy purchases; in modified rebuys, the number may change of the perceived risk of the purchase.
Importance of the purchase to the buying organisation	The more important the purchase is to the buying organisation, the more likely the buying organisation number of buying influences will increase.
Urgency of the purchase	The more urgent the purchase, the fewer buying influences are likely to be found because of time constraints.

Appendix F – Authors Interview Guide

The authors used following guide to carry out the telephone interviews.

Introductory Information

- Please, specify your name, position and years with the company.
- What is the total number of people working with the company?
- What are the main products/services[12] and markets of your company?
- What are your company's objectives in a short-term perspective and in a long-term perspective?
- What is the organizational structure of the company? [13] (Appendix if yes)
- What is the number of employees located at the purchasing department?
- Is your company geographically located to different locations or is it centralized to one place? (If yes, then how many)
- Is your company's purchasing of transmission handled by your unit?
- What is the importance of transmission equipment for your company?
- What is your company's general opinion on microwave transmission?
- For how long have your company used microwave transmission?
- What is your total need for transmission at this time? (% of total purchases)
    - How much of this will be solved by microwave solutions? (% of above)
- What is the purchase volume for transmission equipment per purchase?
- What is the frequency of purchasing data transmission products (on a yearly basis)?

Buying Process and Buying Center

Trigger process:[14] Can you please tell us what initiates a purchase of microwave transmission equipment, how is the need recognized?

E.g. Dissatisfaction of current solution, customer, image, extending core business, competitors.[15]

BC: [16] In which department was the need first perceived? Which individual(s) are usually involved in recognizing the need?

E.g. Technical, Customer Service, Sales, Market, Company Management, derived from customers, derived from suppliers, derived from competitors.

Need assessment: What criteria do you specify (in your RFIs) and it what way? (Appendix, if possible)

[12] Depending on company.
[13] Check if it exists on the web before the interview.
[14] The phase name will not be presented to the interview object.
[15] This will not initially be brought up with the interviewee but it might be useful to lead the discussion.
[16] The phase name will not be presented to the interview object.

E.g. Group discussions formal/informal, low tariffs, high transaction rate

BC:	Do you have formal groups when doing this? (Appendix if yes) Which individual(s)/departments are usually involved in specifying the product? How many people are involved in this?
Information Search:	How do you find information regarding potential suppliers? How many potential suppliers are usually considered? Do you have any existing suppliers? If so, which ones?
BC:	Which individual(s) are involved in this?
Vendor selection:	What are the prerequisites in order to be considered a supplier? How many suppliers are usually contacted for proposals?
BC:	Which individual(s) are involved in this?
Proposal evaluation:	How are offers considered before final selection? Do you discuss improvement of offers with any/all of suppliers that offerings have been gathered from? How important is ..... when choosing the final supplier for microwave transmission? (scale 1-10) How do you grade following suppliers regarding this criterion? (fill in table below)

1. Data on reliability of product
2. Technical Capability
3. Ease of maintenance
4. Ease of operation and use
5. Price
6. Quality
7. Order cycle time (time between order and delivery)
8. Reliability of delivery date promised
9. Delivery capability
10. Geographical, individual presence of supplier
11. Suppliers' ability to offer 'pay as you grow' features

Question/Supplier	1	2	3	4	5	6	7	8	9	10	11
Alcatel											
DMC											
Ericsson											
Harris											
NEC											
Nera											
Nokia											
Siemens											

BC: Which individual(s) are involved in this?

Word of mouth: Does the influence of word-of-mouth affect the selection of suppliers?

BC: Do you actively discuss vendors with other colleagues and acquaintances than the ones directly related to this specific product? If so, with who?

Ex. At home, colleagues, friends, business acquaintances.

Buying decision: What are the components of a buying decision?

E.g. financing terms, long term agreements etc.

BC: Which individual(s) are involved in making the final decision?

Post-purchase evaluation: How do you evaluate your decision after the purchase?

How do you interact with the chosen supplier after the purchase?

BC: Which individual(s) are involved in this?

Concluding Questions

- Which are the most important criteria when choosing a supplier? In order of importance, rank the following (1 = most important):
  Price, Quality, Service, Delivery
- Is the buying process formalized in any way? (Written down, Appendix if yes.)
- What is the length of (in time) the buying process from that the purchase has been initialized to the buying decision?
- How do you regard the engagement of Ericsson regarding marketing microwave transmission?

Appendix G – Respondents Interview Guide

This guide was sent to the interview objects before the actual interview.

Please answer following questions.

1. Please, specify your name, position and years with the company.
2. What is the total number of people working with the company?
3. What are the main products/services and markets of your company?
4. What are your company's objectives in a short-term perspective and in a long-term perspective?
5. What is the organizational structure of the company? (If documented, please add it)
6. What is the number of employees located at the purchasing department?
7. Is your company geographically located to different locations or is it centralized to one place? (If yes, then how many)
8. Is your company's purchasing of transmission handled by your unit?
9. What is the importance of transmission equipment for your company?
10. What is your company's general opinion on microwave transmission?
11. For how long have your company used microwave transmission?
12. a. What is your total need for transmission at this time? (% of total purchases).
    b. How much of this will be solved by microwave solutions? (% of above)
13. What is the purchase volume for transmission equipment per purchase?
14. What is the frequency of purchasing data transmission products (on a yearly basis)?
15. a. Can you please tell us what initiates a purchase of microwave transmission equipment, how is the need recognized?
    b. In which department was the need first perceived?
    c. Which individual(s) are usually involved in recognizing the need?
16. a. What criteria do you specify (in your RFIs, Request For Information) and in what way? (If documented, please add it)
    b. Do you have formal groups when doing this? (If documented, please add it)
    c. Which individual(s)/departments are usually involved in specifying the product?
    d. How many people are involved in this?
17. a. How do you find information regarding potential suppliers?
    b. How many potential suppliers are usually considered?
    c. Do you have any existing suppliers? If so, which ones?
    d. Which individual(s) are involved in this?
18. a. What are the prerequisites in order to be considered a supplier?
    b. How many suppliers are usually contacted for proposals?
    c. Which individual(s) are involved in this?

19. a. How are offers considered before final selection?
    b. Do you discuss improvement of offers with any/all of suppliers that offerings have been gathered from?
    c. Which individual(s) are involved in this?

20. Following questions should be answered in a **scale from 1-10** (10 = very important, 1 = not important). Each question is followed by a grading of how capable suppliers are regarding each criterion (10 = excellent, 1 = poor).

    a. How important is **data on (proof of) reliability** of product when choosing the final supplier for microwave transmission? …..

        - How do you grade these suppliers regarding this criterion?
            ….. Alcatel
            ….. DMC
            ….. Ericsson
            ….. Harris
            ….. NEC
            ….. Nera
            ….. Nokia
            ….. Siemens

    b. How important is **technical capability** when choosing the final supplier for microwave transmission? …..

        - How do you grade these suppliers regarding this criterion?
            ….. Alcatel
            ….. DMC
            ….. Ericsson
            ….. Harris
            ….. NEC
            ….. Nera
            ….. Nokia
            ….. Siemens

    c. How important is **ease of maintenance** when choosing the final supplier for microwave transmission? …..

        - How do you grade these suppliers regarding this criterion?
            ….. Alcatel
            ….. DMC
            ….. Ericsson
            ….. Harris
            ….. NEC
            ….. Nera
            ….. Nokia
            ….. Siemens

d. How important is **ease of operation and use** when choosing the final supplier for microwave transmission? …..

   - How do you grade these suppliers regarding this criterion?
     ….. Alcatel
     ….. DMC
     ….. Ericsson
     ….. Harris
     ….. NEC
     ….. Nera
     ….. Nokia
     ….. Siemens

e. How important is **price** when choosing the final supplier for microwave transmission? …..

   - How do you grade these suppliers regarding this criterion?
     ….. Alcatel
     ….. DMC
     ….. Ericsson
     ….. Harris
     ….. NEC
     ….. Nera
     ….. Nokia
     ….. Siemens

f. How important is **quality** when choosing the final supplier for microwave transmission? …..

   - How do you grade these suppliers regarding this criterion?
     ….. Alcatel
     ….. DMC
     ….. Ericsson
     ….. Harris
     ….. NEC
     ….. Nera
     ….. Nokia
     ….. Siemens

g. How important is **order cycle time** (time between order and delivery) when choosing the final supplier for microwave transmission? …..

- How do you grade these suppliers regarding this criterion?
  - ….. Alcatel
  - ….. DMC
  - ….. Ericsson
  - ….. Harris
  - ….. NEC
  - ….. Nera
  - ….. Nokia
  - ….. Siemens

h. How important is **reliability of delivery date promised** when choosing the final supplier for microwave transmission? …..

- How do you grade these suppliers regarding this criterion?
  - ….. Alcatel
  - ….. DMC
  - ….. Ericsson
  - ….. Harris
  - ….. NEC
  - ….. Nera
  - ….. Nokia
  - ….. Siemens

i. How important is **delivery capability** when choosing the final supplier for microwave transmission? …..

- How do you grade these suppliers regarding this criterion?
  - ….. Alcatel
  - ….. DMC
  - ….. Ericsson
  - ….. Harris
  - ….. NEC
  - ….. Nera
  - ….. Nokia
  - ….. Siemens

j. How important is **geographical, individual presence of supplier** when choosing the final supplier for microwave transmission? …..

- How do you grade these suppliers regarding this criterion?
  - ….. Alcatel
  - ….. DMC
  - ….. Ericsson
  - ….. Harris
  - ….. NEC
  - ….. Nera
  - ….. Nokia
  - ….. Siemens

k. How important is **suppliers' ability to offer 'pay as you grow' features** when choosing the final supplier for microwave transmission? …..

- How do you grade these suppliers regarding this criterion?
  - ….. Alcatel
  - ….. DMC
  - ….. Ericsson
  - ….. Harris
  - ….. NEC
  - ….. Nera
  - ….. Nokia
  - ….. Siemens

l. Which individual(s) are involved when evaluating above mentioned choice criteria?

21. Which are the most important criteria when choosing a supplier? In order of importance, please rank the four following (1 most important and 4 least important):
    Price ….. Quality ….. Service….. Delivery …..

22. a. Does the influence of word-of-mouth affect the selection of suppliers?
    b. Do you actively discuss vendors with other colleagues and acquaintances than the ones directly related to this specific product? If so, with who?

23. a. What are the components of a buying decision?
    b. Which individual(s) are involved in making the final decision?

24. a. How do you evaluate your decision after the purchase?
    b. How do you interact with the chosen supplier after the purchase?
    c. Which individual(s) are involved in this?

25. Is the buying process formalized in any way? (If documented, please add it)

26. What is the length of (in time) the buying process from that the purchase has been initialized to the buying decision?

27. How do you regard the engagement of Ericsson regarding marketing microwave transmission?

Thank you for your participation.