
LAPPEENRANNAN TEKNILLINEN KORKEAKOULU
LAPPEENRANTA UNIVERSITY OF TECHNOLOGY

TIETEELLISIÄ JULKAISUJA 63
RESEARCH PAPERS

ANNELI PIRTTILÄ

COMPETITOR INFORMATION AND COMPETITIVE KNOWLEDGE MANAGEMENT IN A LARGE, INDUSTRIAL ORGANIZATION

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Thesis for the degree of Doctor of Technology to be presented with due permission for public examination and criticism in the auditorium of the House of Student Union at Lappeenranta University of Technology (Lappeenranta, Finland) on the 5th of December, 1997, at 12 o'clock noon.

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ABSTRACT

This thesis supplements the systematic approach to competitive intelligence and competitor analysis by introducing an information-processing perspective on management of the competitive environment and competitors therein. The cognitive questions connected to the intelligence process and also the means that organizational actors use in sharing information are discussed. The ultimate aim has been to deepen knowledge of the different intraorganizational processes that are used in a corporate organization to manage and exploit the vast amount of competitor information that is received from the environment.

Competitor information and competitive knowledge management is examined as a process, where organizational actors identify and perceive the competitive environment by using cognitive simplification, make interpretations resulting in learning and finally utilize competitor information and competitive knowledge in their work processes. The sharing of competitor information and competitive knowledge is facilitated by intraorganizational networks that evolve as a means of developing a shared, organizational level knowledge structure and ensuring that the right information is in the right place at the right time.

This thesis approaches competitor information and competitive knowledge management both theoretically and empirically. Based on the conceptual framework developed by theoretical elaboration, further understanding of the studied phenomena is sought by an empirical study. The empirical research was carried out in a multinationally operating forest industry company.

This thesis makes some preliminary suggestions of improving the competitive intelligence process. It is concluded that managing competitor information and competitive knowledge is not simply a question of managing information flow or improving sophistication of competitor analysis, but the crucial question to be solved is rather, how to improve the cognitive capabilities connected to identifying and making interpretations of the competitive environment and how to increase learning. It is claimed that competitive intelligence can not be treated like an organizational function or assigned solely to a specialized intelligence unit.

Keywords: competitive intelligence, competitor analysis, information management, knowledge management, cognition, schema, organizations, networks

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Lappeenranta, November 1997.

Anneli Pitkilä

" A good deal of the existing corporate planning is like a ritual rain dance; it has no effect on the weather that follows, but those who engage in it think it does. Moreover, it seems that much of the advice and instruction related to corporate planning is directed at improving the dancing, not the weather"

Russel L. Ackoff

COMPETITOR INFORMATION AND COMPETITIVE KNOWLEDGE MANAGEMENT IN A LARGE, INDUSTRIAL ORGANIZATION

1. INTRODUCTION

1.1. Approaches to competitor information management

Every firm operating in a competitive environment collects information about the competitive market situation in general and, usually, also about individual competitors. Accumulation and analysis of this information can be, and in many firms is, done systematically. In addition to systematic collection, accumulation of information is obviously done implicitly as well by the various groups and individual actors in an organization. This implicitly accumulating competitive information comes into an organization in a somewhat haphazard way in connection with other activities.

The traditional school of strategic planning (e.g. Ansoff, 1965; Ackoff, 1970) laid the foundation for a systematic analysis of competitive environment as an elementary part of strategy formation. Based on the conceptualization of formal strategic planning, Porter (1980, p. 47-74) created a framework for competitor analysis in his already classical book "The Competitive Strategy". He and other representatives of the formal strategic planning school do not just recognize but also emphasize the need for the systematic collection of competitive information. In Porter's (1980, p. 72) words:

"Compiling the data for a sophisticated competitor analysis probably requires more than just hard work. To be effective, there is the need for an organized mechanism - some sort of competitor intelligence system - to insure that the process is efficient."

This organized mechanism for collecting data for competitor analysis - competitor intelligence or competitive intelligence - has been widely discussed in literature (see e.g. Sammon et al, 1984; Lagerstam, 1988; Herring, 1988; Gilad, 1989; Gilad et al, 1993 or Bernhardt, 1993). Although the definitions and conceptualization of competitor intelligence vary a great deal, the same principal elements of competitor intelligence process can, however, be distinguished in almost all studies and discussions, even if emphases differ. In a competitor intelligence process a firm first defines the need for competitive information, then it systematically collects the information needed from various sources and analyses it and communicates the results to the relevant user groups. Competitor information is then used as input in planning and decision-making processes and finally necessary feedback is given to information need definition.

The view of competitor analysis and competitor intelligence as part of formal competitive strategy formulation and implementation is based on a hypothesis of a corporate organization as a completely rational and monolithic actor. This rational view does not take into consideration the sophisticated characteristics of an organization as a social system consisting of a number of individuals and groups, each of which is a subsystem within the total system (see e.g. Huse and Bowditch, 1973). Furthermore, the traditional approach to competitor analysis and competitor intelligence evidently assumes that decision-making in an organization takes place on a completely rational basis.

This obviously limited view in the discussion concerning competitor analysis and competitor intelligence is surprising, particularly as information processing and intraorganizational communication are essential phases in the intelligence process. In spite of the fact that organization theory offers a wide range of discussion and research of the complex communication and information processing characteristics of human organizations and despite many studies on decision-making patterns in organizations showing the shortcomings of the fully rational approach, these results have gained surprisingly little acceptance in the strategic planning and management literature - at least in the discussion concerning competitor analysis and competitor intelligence.

Based on this rational approach, systematic competitor analysis and competitor intelligence treat information as a resource principally in the same way as other resources like capital or raw materials. For example, Porter's framework of competitor analysis and competitor intelligence has a built-in hypothesis that information can be collected, compiled and distributed in much the same way as physical goods.

The most enthusiastic proponents have stated that the only thing that distinguishes information from physical resources is its ability to expand, not diminish when used (Burk and Horton, 1988, p. 14-15). The school of thought known as "information resources management" (see e.g. Horton, 1979) claims that in the exchange of information the amount of information increases while in transactions with capital the amount stays the same. If this argument is accepted, information would be a limitless resource.

The formal school of competitor analysis and competitor intelligence, as does information resources management, takes no notice of the fact that the value of money or physical goods is connected to its amount while the value of information is inevitably connected to its applicability - not its amount. Obviously information about competitors is not intrinsically valuable to corporate organizations. From the organization's point of view information is valuable only if it can be used in achieving the goals and objectives of the organization in an effective way. It can thus be assumed that the existent cognitive capabilities of the recipients

and the combination of these capabilities that exists on organizational level have an impact on the success of the competitor analysis and competitor intelligence process. The literature of systematic competitor analysis and intelligence has not, however, given much attention to these topics.

Furthermore, the rational approach ignores usage of information as a means of gaining power in an organization. A piece of information that is considered valuable from the organization's point of view is a manager's or a knowledge worker's personal resource and sharing this kind of information always means also sharing power (see e.g. Mintzberg, 1973, p. 178 or Mintzberg, 1983a, p. 163-170). It can be assumed that this is true especially as regards information about competitors since a lot of this information is in many cases hard to obtain and thus scarce.

It is not surprising that a lot of empirical studies have given examples of failures in applying the systematic competitor analysis and competitor intelligence framework (see e.g. Gilad, 1989 or Fuld, 1989a or Ghoshal and Kim, 1986, p. 49-58). Theoretical studies have tried to identify the blind spots in the analysis and collection of competitor information and to develop methods to improve these functions (see e.g. Zajac and Bazerman, 1991 or Gilad et al, 1993 or Prescott and Smith, 1987, p. 411-423 or Cartwright et al, 1995, p. 420-434).

A very interesting contribution to the discussion about competitor analysis and competitor intelligence has been made by several case-studies carried out in the USA. These studies have tried to examine the intraorganizational sources of competitor information. Even if a thoroughly disciplined methodology has not been followed in these empirical studies, the results provoke some interesting ideas and questions (see e.g. Rochester and Douglass, 1990, p. 1-12). According to these studies the biggest source of competitor information is the firm's own organizational network (see e.g. Fuld, 1989b, p. 84-87 or Fuld, 1991, p. 12-17). Furthermore, these same studies have observed that these intraorganizational information sources are in many cases underutilized.

On the other hand when management information sources have been studied, it has been shown that even if the information gained from peers and subordinates is only a fraction of the information gained from sources outside the organization, its value as input in the decision-making process is significantly greater than the value of outside information (see McLeod and Jones, 1987, p.87-104). Furthermore, Mintzberg has showed, based on empirical evidence, that managers prefer verbal media to written communication (see Mintzberg, 1973, p. 38-44). An interesting question that arises from this research is the role of communication networks inside an organization in the diffusion of competitor information

considered valuable by managers, the role of information stored in structured form, and finally the combination that these different patterns form in organizations.

The results of these studies are in fact one indication of the insufficiency of the formal approach to managing information about competitors in an organization. It is justified at least to assume that a significant amount of information about competitors considered valuable by managers or other relevant user groups is exchanged through channels of communication networks inside an organization. Likewise it is obvious that a great deal of this information is not likely to be found in structured form captured by the formal competitor analysis or competitive intelligence function.

Evidently even if an organization has a systematic competitor analysis and a sophisticated competitor intelligence system, relying completely on these organized mechanisms could prove to bring insufficient results in managing the competitive environment. Information about competitors is not valuable to a corporate organization if it is not in the right place at the right time. These "logistics" problems in the collection and communication of competitive information have not so far gained much attention in the literature of competitor analysis and competitive intelligence.

1.2. Scope and objectives

Strategic management research has mostly approached the area of competitive environment and competitor monitoring in an analytic manner. The existent literature of competitor analysis and competitor intelligence provides a consistent framework and a manifold of tools for a firm to plan and organize its competitor surveillance and analysis functions in a systematic manner. The focus of discussion has been prescriptive and the emphasis has been on improving the sophistication of methods in competitive intelligence and analysis of competitors.

Very little attention has been paid, however, to the processes in which organizational actors monitor the competitive environment and the processes in which this monitoring is converted to actions that affect achievement of organizational goals. In addition, there is very little empirical evidence of how firms *actually* monitor and make sense of the competitive environment i.e. how firms actually identify the competitive environment, how they collect and interpret competitor information, how this information is shared in the organization and to what purposes this information is actually used. These processes can be partly assumed to determine the success of competitive intelligence and competitor analysis

activities. In this way these monitoring and sense-making processes are, indeed, a relevant target of study.

Furthermore it is evident that, in addition to the systematic collection and analysis of competitive information, every organization accumulates competitive information also implicitly, knowledge about competition and individual competitors accrues without ever being recorded in structured form. Thus a more comprehensive outlook taking into consideration more than just the systematic approach is needed.

The ultimate aim of this study is not so much to replace the traditional systematic approach of competitive intelligence and competitor analysis, but rather to contribute by supplementing an information processing perspective to this systematic framework and in this way to provide a comprehensive view of how an industrial organization manages competitor information and competitive knowledge. The objective is above all to deepen our knowledge of the different intraorganizational processes that are used in an industrial organization to manage and exploit the vast amount of competitor information that it receives from its environment and discuss the management of accruing competitive knowledge. This study also contemplates and makes preliminary suggestions of how to organize and combine both systematically and unsystematically collected competitor information into a coherent organizational mechanism.

The overall objectives of this study can be presented more specifically as endeavoring to enhance knowledge of the following issues and answering the following questions:

- ***Identification of the competitive environment and individual competitors.*** How a large industrial organization perceives and identifies the competitive environment and individual competitors therein? The roles of both key decision-makers and various organizational groups are studied. The formation of an identification consensus on the level of the whole organization is discussed.

- ***Competitor information and competitive knowledge utilization patterns.*** To what purposes is competitor information and competitive knowledge used and in what kind of work processes is it utilized? What information sources are used?

- ***Formation of shared competitive knowledge.*** Does an industrial organization have shared knowledge structures on the level of the whole organization? How shared competitive knowledge structures are developing?

• ***Intraorganizational communication of competitor information and competitive knowledge.*** How competitor information and competitive knowledge is shared in an industrial organization? Intraorganizational networks as a means of sharing information and knowledge are discussed.

The target of study in this work is the organization as a whole and also the various organizational subgroups. This study does not, however, deal extensively with the perspective of an individual organizational actor. Even if the individual perspective is discussed e.g. in how organizational actors perceive or interpret the competitive environment, this is not, however, the focus of the study. The main reason for adopting the organizational level as the focus of study is that the aim of this study is above all to consider the phenomena from the standpoint of strategic management and analyze the implications from this angle.

This study approaches the subject area both theoretically and empirically. The aim of the theoretical discussion is to analyze the phenomena connected to perceiving the competitive environment and competitors therein, utilization and sharing of competitor information in an industrial organization and in particular to explain the role of cognitive structures and intraorganizational communication patterns in managing competitor information. In the theoretical discussion a conceptual framework is presented as a basis for empirical analyses. It should be emphasized that the aim is not to create a conceptual model, which would then be tested empirically.

Thus the empirical part of the study analyzes further the phenomena of competitor information management in a single-case study based on the concepts developed in the theoretical part. The case study is descriptive, trying to achieve a comprehensive view of the actual coordination and accumulation of competitive information in a multinationally operating forest industry company. The study also attempts to interpret the observed phenomena. Some results of this case study were partially reported in a previous study by the author (see Pirttilä 1995, p. 102-126).

In summary it can be stated that the emphasis of this study is on getting a holistic view of the formation of competitive knowledge and competitor information resources in a corporate organization, whereas the aim is not so much to concentrate on creating a normative, step-wise model for a firm to follow in order to design and implement effective competitor information and competitive knowledge coordination. The theoretical discussions and empirical analyses could, however, provide useful elements and guidelines for corporate organizations in planning and implementing practical applications, e.g. competitor information systems.

1.3. Research strategy and methodology

When a research strategy was chosen for this study, it was obvious that a purely theoretical approach would not have been rewarding for examining the types of phenomena that are analyzed in this study. As the principal aim of this study has been defined as giving a comprehensive view of how competitor information and competitive knowledge is collected, accumulated, communicated and utilized in a corporate organization and also expanding knowledge of the factual ways that corporate organizations deal with the coordination of these activities, without empirical analyses the results would not have much relevance nor would they contribute much to discussion. That is why, in addition to creating a conceptual framework by combining the theories and discussions presented in many related disciplines, empirical analyses were considered necessary in order to achieve a deeper insight into the phenomena studied.

It was likewise clear that a positivistic approach would not be suitable for the types of phenomena studied (see e.g. Olkkonen 1994, p. 40, 52). The quantitative approach that is typical to positivism would not have been possible in studying these types of research questions, since the purpose here is to improve understanding of complex organizational processes. Thus, a hermeneutic approach was considered more appropriate. It would obviously not have been possible to use the statistically representative, large samples required by the positivistic approach. In addition questions connected with competitor information are usually burdened with confidentiality in a corporate organization and a large sample would obviously have been difficult to obtain.

It is slightly difficult to position this study in any particular classification of hermeneutic approaches, because instead of one particular way of advancing the subject multiple approaches are used in order to study the phenomena in question. In the literature of different disciplines there are various classifications for hermeneutic approaches. Using the in Finnish business economics research well-known typology of Neilimo and Näsi (1980, p.67) this study could best be described as using the action research approach. This classification could be justified, because the author was involved in a development process that was set in motion simultaneously with this study utilizing the preliminary results of the study and aiming to achieve a change or improvement in the management of competitor information and competitive knowledge (see e.g. Kasanen et al 1991, p. 317 or Olkkonen 1994, p.52). In spite of the descriptive and interpretive emphasis this study has a direct and substantial empirical connection and in this way also has normative features characteristic to the action research approach. But on the other hand the theoretical elaboration makes an attempt to approach the research question analytically and elaborate necessary concepts in order to

enhance knowledge of the phenomena studied. In Neilimo's and Näsi's typology (1980, p. 67) this would represent the concept analytical approach (translation from Neilimo's and Näsi's publication by the author).

Furthermore, this study discusses topics that involve a new area of research. For this reason there is no established discipline that could provide theoretical frameworks for understanding or analyzing the diverse phenomena of the accumulation and communication of competitive knowledge in an organization. Because of the novelty and complexity of the problem area and the explorative nature of the objectives of this study, the empirical part of the research was carried out by using case study methodology. Case studies are commonly considered an appropriate research strategy especially for new topic areas, where collection and analysis of qualitative data is necessary and where through a profound understanding of single cases even a new generalizable theory could be built (see e.g. Eisenhardt 1989, p. 532 or Yin 1984, p. 36-39 or Olkkonen 1994, p. 92). Furthermore, the research strategy applied in this study conform to the critical features that Yin presents in his definition of case study strategy: Namely that this empirical inquiry indeed

"investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used" (Yin 1989, p. 23).

This study was carried out as a single-case study with multiple units of analysis. The ultimate unit of analysis was the forest industry company as a whole and also various organizational groups inside the company were studied. The individual actors inside the organization were not the focus of this study, even if the roles of individual actors were investigated in the empirical part of the research. Thus even if the concepts adopted from cognitive psychology were used in the theoretical elaboration and also as a template in the discussion in the empirical research, the methods usually applied in cognitive psychology were not used in the empirical research. In addition, even if intraorganizational networks were identified in the empirical research, the meticulous methods of network analysis were not used in this study. As it was considered that this study analyzes the studied phenomena and their implications from the standpoint of strategic management, this procedure could be justified.

Following Yin's classification this design type can be called an embedded single-case study (Yin 1989, p. 46-50). As mentioned above the case company investigated in this study is a multinationally operating forest industry company. A company in this industrial sector was considered an especially interesting unit of study because in this industry monitoring of competition and even individual competitors is already vital. This is because even a single

investment by an individual competitor can significantly affect the market situation in the whole industrial sector.

The reliability and generalization of the results achieved by single-case or even multiple-case studies have often been considered questionable. The sharpest critics of the case study strategy even refer to the methodology used as giving "anecdotal evidence". According to Kasanen et al (1991, p. 301-329) generalization is a problem mainly from the point of view of positivism (see also Lukka and Kasanen 1993, p. 348-381). The aim and principal idea of case study research is to achieve a more profound and comprehensive view of the studied phenomena than is possible by collecting a large amount of material and the generalization in this type of research is achieved by the profound understanding gained at the level of an individual phenomenon. According to Yin the method of generalization in case study research is "analytic generalization" in which a previously developed theory is used as a template with which to compare the empirical results of the case study (Yin 1989, p.38).

Successful usage of the case study strategy requires a thorough theoretical analysis of the studied phenomena to be made and the case study is designed based on the theoretical framework created. This has been the procedure carried out in this study. The design of the research process has been illustrated in figure 1.1. The aim of this study has been to show the credibility and a certain generalizability of the conclusions made by a clear and explicit formulation of research questions and also by the substance of the achieved results.

Furthermore, when compared to Yin's criteria of choosing a single-case design (Yin 1989, p. 46-50), it can be argued that this study fulfills the distinctive characteristics of a situation where a single-case study is appropriate: This case can be characterized as revelatory according to Yin's criteria, because in this case the author had an opportunity to observe and analyze phenomena usually inaccessible to investigators by working in the studied company and thus being familiar with it and having trusting relationships with its employees. The issues connected to competitor surveillance usually include confidential material and a complete outsider would not have had an opportunity to gain access to this data. Also it can be argued that the studied company represents an extreme example (see Yin 1989, p. 47) in the management of the competitive environment and competitive data, since competition in this particular industrial sector is oligopolistic and thus monitoring of individual competitors is more meaningful than in most situations.

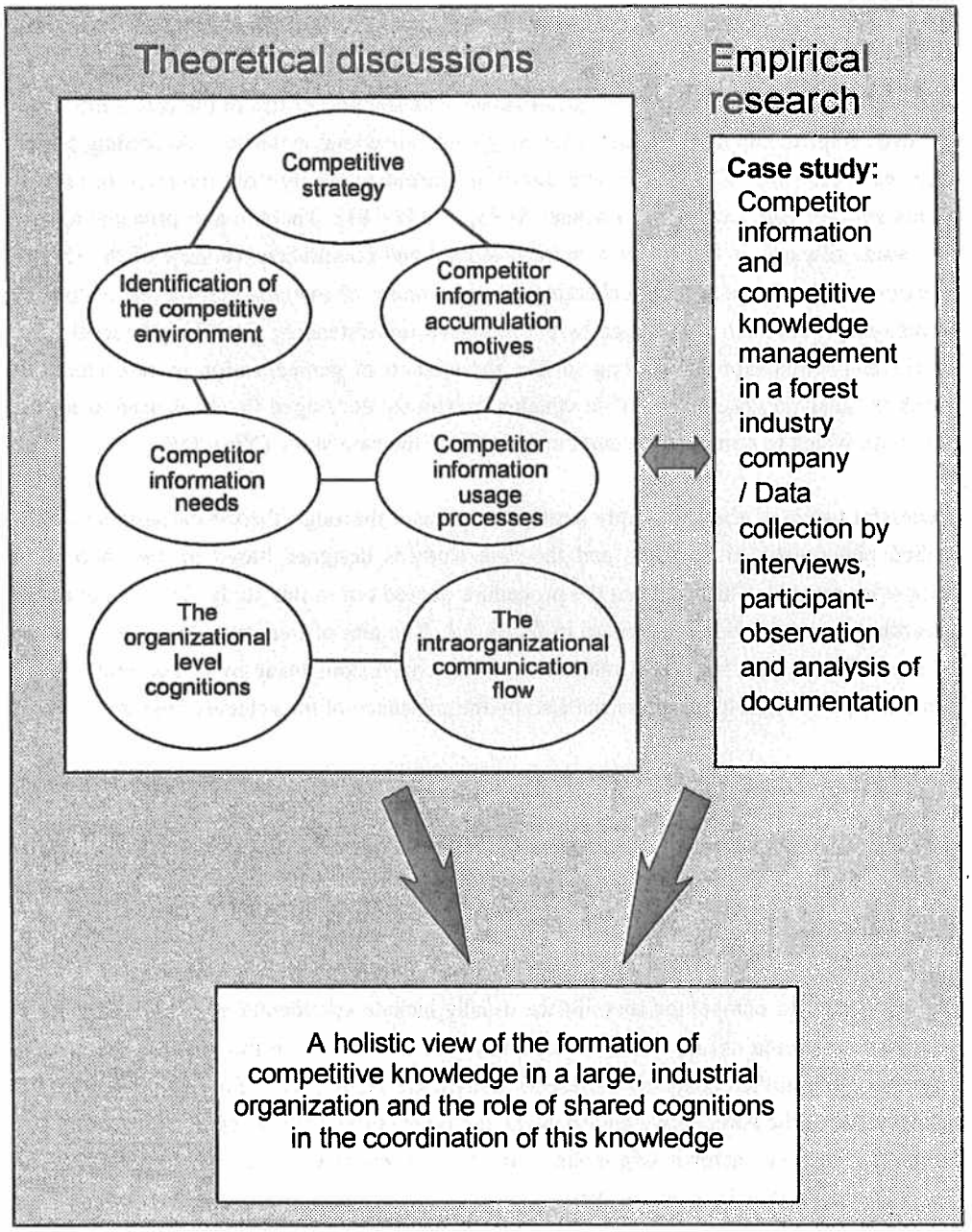


Figure 1.1. Design of the research process

Being an insider in the company studied is obviously not wholly beneficial when conducting a study that should preserve objectivity towards the studied object, even if being an insider has advantages as regards getting a profound understanding of the phenomena examined. It obviously creates problems of identification for the researcher. Is the researcher an actor or a participative observer in the studied case and if he inevitably has a role in the process, how can he distinguish his own experiences from those of the studied object. The author tried to be aware of the risks involved while carrying out this study.

1.4. Limitations

The formulation of competitive strategy - regardless of the fact whether the strategy is formulated explicitly or implicitly - is of course a relevant factor in the utilization and management of competitor information in an organization. The topics connected to competitive strategy formulation are not discussed in detail in this study as they were viewed in a previous publication by the author (Pirttilä 1995, p. 10-25). This study concentrates above all on the intraorganizational processes connected to the management of competitor information and coordination of competitive knowledge.

Furthermore, it must be noted that this study is limited to investigating large corporate organizations where, as a result of the division of labor, several functional groups exist and where the organization is so large that these functional groups do not have self-evident day-to-day communication with one another. In small or medium-sized organizations the coordination of competitive knowledge is not usually as problematic and the issues arising are different in nature. Thus this study contributes only to deepening the understanding of these phenomena in a relatively large organization. In addition as mentioned in the previous section the results of this study can not self-evidently be applied to whatever industrial sector, as the choice of the case company might limit the applicability. It should be remembered that forest industry is a long-established industrial sector and this can affect the overall results, even if the theoretical elaboration discusses the phenomena in a more general manner. In a more rapidly changing industrial sector the results of the empirical research might give different results.

In addition it must be noted that the questions discussed in this study might not be relevant in all kinds of corporate organizations because the surveillance of individual competitors is not essential in all branches of business. For example, in an industry where the number of competitors is vast and the firm size is relatively small, the surveillance of individual competitors might not be worthwhile and the collection of information about the competitive environment is reduced to acquiring general market data about competition. In this study, it

is assumed, however, that a corporate organization as well as being interested in the competitive market trends is also interested in the operations of individual competitors. This supposition restricts the applicability of the results of this study in some lines of business.

Furthermore, it should be noted that actual interpretation of competitor information, learning from it and ultimately implementing this information and accumulated competitive knowledge into action is not dealt in detail with in this study. The aim in this study is to explain and understand the processes in which organizational participants and groups manage and use information resources and not how these resources are implemented in operations in order to achieve organizational goals.

1.5. The structure of the study

The next four chapters (2-5) of this study create a theoretical background to explain the accumulation and communication of competitor information and competitive knowledge in a corporate organization. Chapter 6 is a concluding chapter and provides a summary of the theoretical discussions and framework elaborated in the preceding chapters. Chapter 7 presents the empirical part of the study. In this chapter the phenomena of competitor information management are analyzed further by utilizing the framework created in the theoretical part. Finally the last chapter (8) contains discussions and conclusions to be drawn from both the theoretical and empirical results of the study. Some recommendations for the management of competitor information in a corporate organization are also presented.

Chapter 2 deals with the primary phase of competitor information management i.e. competitor definition and identification of the competitive environment. The different ways used by different groups to identify competition and individual competitors are considered in this chapter. The concepts of "competition sensitivity", "competitor information access potential", "competitor information intensity" and "competitive knowledge capability" are also introduced in this chapter. In addition, there is a discussion of whether "competition sensitivity", "competitor information access potential, "competitor information intensity" or "competitive knowledge capability" differ between various groups in an organization, i.e. what groups in a corporate organization are more intense in observing and accumulating information about the competitive environment and individual competitors.

Chapter 3 enters into the issues of competitor information requirements and actual usage patterns. In this way, the motives for acquiring and accumulating competitor information are assessed. The diverse motives of different organizational groups are also discussed in this chapter.

The aim of chapter 4 is to contemplate what kind of formation and accumulation mechanisms assist the transformation of competitor information to a true organizational knowledge base of competitive knowledge. The cognitive structures and processes - of both individual actors and the organization as a whole - in which competitor information accrues into a corporate organization to form an organizational "memory" and also the processes in which this information is transformed into shared knowledge to form common schema are discussed.

The intraorganizational communication structures have great significance in both the coordination of competitive knowledge and the accumulation of this knowledge into an organizational knowledge base that can be utilized efficiently. Chapter 5 endeavors to examine the phenomena of intraorganizational communication by discussing the function of networks in the transfer of competitor information and knowledge. The potential of horizontal or lateral communication inside an organization is also considered. The role of the organizational groups that have a high "competition sensitivity", high "competitor information access potential" or a high "competitor information intensity" in the communication of competitive knowledge is also discussed.

In chapter 6 the theoretical discussion is summarized to a conceptual framework. This conceptual basis endeavors to give a comprehensive picture of the management of competitor information and competitive knowledge in a corporate organization. This concluding chapter introduces a cognitive approach combined with a network perspective in an attempt to understand the phenomena connected to competitor identification, competitor information processing and intraorganizational communication of competitor information and competitive knowledge.

Chapter 7 contains the empirical part of the study. In this chapter the phenomena of competitor information management are analyzed further in an embedded single-case study. The aim is to achieve an in-depth understanding of how a corporate organization actually identifies the competitive environment and individual competitors and to what purposes this information is in fact used and in what kind of work processes. The aim is also to find evidence of how a firm actually carries out the collection and communication of information about the competitive environment and competitors. Chapter 7 relates the case study made in a multinational forest industry company, where the phenomena connected to competitor knowledge accumulation, communication and coordination are described and analyzed.

Finally, chapter 8 gives a summary of the study and presents some general conclusions that can be drawn from the results of the theoretical and empirical analyses. In this chapter the

contribution and limitations of this study are also discussed. In addition some recommendations for competitor information and competitive knowledge management and coordination of these resources are advanced.

2. IDENTIFICATION OF THE COMPETITIVE ENVIRONMENT

2.1. Competitor definition - a blind spot in competitor analysis

Typically theorists of business economics have treated competition and rivalry as an environmental phenomenon and studied it from an external perspective in relation to the focal corporate organization. Competition and activities of competitors have been recognized as one of the most important determinants of a firm's outcomes and overall performance, but these factors have been seen and examined as external pressures that a firm is exposed to and forced to react to.

However, the basic question of why some organizations prosper in the competitive environment and others in the same industry do not has occupied a lot of discussion in strategic planning and management literature. A general consensus has been reached that firms execute a certain degree of strategic choice in adapting themselves to the competitive pressures of the corporate environment (see e.g. Oster, 1990, p. 3-5 or Hamel and Prahalad, 1994, p. 40). This implies that key decision-makers or possibly also other actors inside the organization have a significant role in the way an organization adjusts itself to its environment and successfully deals with competitive forces. Thus these actors also have an equally important role in the way a corporate organization monitors and makes sense of environmental phenomena and occurrences.

The question of how decision-makers and other relevant actors actually frame, or should frame, the corporate environment and define the key actors in this environment is of primary importance to the success of the whole organization. The systematic approach to monitoring the business environment represented by competitor analysis theorists has, however, treated these problems only in passing. Porter, for example, dedicates one page to this issue in his classic work "Competitive Strategy" (1980, p. 49-50). Porter states that a firm should adopt not only existing but also potential competitors as a target of analysis. In his normative prescription he does not in any way discuss the problems that might occur in determining who these existing or potential competitors are. Porter also states that a firm is in a way able to *choose* its competitors by choosing the strategic group in which to compete in the formulation of competitive strategy (1980, p. 149). Five years later in "Competitive advantage" (1985, p. 201-228) Porter states that a firm is able to choose its competitors by selecting the market segment in which to compete. According to Porter a firm should choose "good" competitors that strengthen the firm's position in the market instead of "bad"

competitors that do not stick to the unwritten rules of healthy competition and thus should be attacked.

Recent discussions by the theorists of strategic planning and strategic management have recognized the poor identification of competitors as a serious blind spot in systematic competitor analysis (see e.g. Zahra and Chaples, 1993, p. 12-15). The failure to define adequately competition and competitors is, above all, seen as due to the exclusive focus on already known firms and a faulty definition of industry boundaries ignoring potentially dangerous competitors. Some authors diagnose cognitive and perceptual factors as an essential element in the process of competitor definition by key decision-makers (see e.g. Porac and Thomas, 1990, p. 224-240 or Zahra and Chaples, 1993, p. 13). A disregard caused by limited cognitive capabilities (i.e. the capabilities connected to constantly evolving interpretation of data from the environment and also the preestablished knowledge structures that are used to select and interpret data and also to guide action (definition by Jelinek and Litterer, 1994, p. 3)) of either an individual or an organization results in a faulty definition of competitors and consequently in misjudged decisions and actions in the competitive environment.

The aim of this study is to concentrate on intraorganizational phenomena connected to the utilization of information concerning the capabilities and activities of competitors that have an effect on the success of the focal organization - the information that later in this research report is referred to as ***competitor information*** - and also the subsequent formation and accumulation of knowledge related to competitors - the knowledge that later in this research report is referred to as ***competitive knowledge***. Thus, if the question of how a corporate organization identifies and defines its competitors is crucial in the successful formation of competitive strategy and competitor analysis, it is undoubtedly significant seen from the information and knowledge laden focus of this study.

This chapter 2 studies the fundamental phase of competitor information management in a corporate organization, i.e. the processes in which the competitive environment is identified and competitors defined. The roles of key decision-makers and various other organizational groups in these processes are discussed.

2.2. The cognitive problems of competitor definition

Before decision-makers or other actors in a corporate organization can formulate a competitive strategy they must recognize and define who their competitors actually are and also to develop some kind of understanding of the competitive environment in which these

competitors are met. This is inevitable regardless of whether competitive strategy is formulated explicitly (see e.g. Ansoff, 1965) or in an implicitly evolving process (see e.g. Mintzberg, 1994, p. 23-29).

If a completely rational and systematic approach to defining competitors were accepted, this would entail a complete and perpetual assessment of all existing and potential competitors- their capabilities, goals and strategies - in the competitive environment, as prescribed by, for example, Porter (1980, p. 49-50). In many situations this could prove to be a difficult task not only because of the decision-makers' limited capacity to process information (see e.g. the notions of Lord and Maher on human information processing, 1991, p. 13-26) but also because competitive decision-making is inevitably always done without full information and knowledge of all the relevant facts (see Oster, 1990, p.1) regardless of how efficient the competitive intelligence activities of the organization might be.

In their behavioral theory of the firm Cyert and March (1963, p. 123-124) argued that in an organizational learning process firms learn to attend to some parts of their environment and ignore others. The research of Porac and Thomas (1990, p. 224-240) also gives evidence that in order to make sense of the vast amount of information about the competitive environment a corporate organization must find ways to simplify their conception of the environment and the actors therein.

Porac and Thomas (1990, p. 226) distinguish two a priori criteria that are traditionally used by economists in defining competitors and classifying them into competitive groups:

- *The industry criterion* according to which organizations compete with one another when they share similar technological attributes and can produce similar outputs. This kind of definition restricts competitors to those firms that operate within the same industrial sector, e.g. forest industry, steel industry or electronics industry.

- *The market criterion* which suggests that organizations compete with one another when their output attributes fulfill similar client functions and are thus substitutable. This definition permits a broader view of competition and, for example, in the case of the forest industry various kinds of electronic publishing media could be considered competitors because they satisfy the same demand as that met by, for example, newsprint paper used for publishing, i.e. the demand for daily news.

Porac and Thomas argue, however, that defining and classifying competitors using these criteria is unsatisfactory and insufficient as cognitive accounts for how decision makers *actually* engage themselves in competitive scanning and solve the dilemma of competitor

definition, even if the above stated criteria could be satisfying as an analytical tool for researchers or practitioners to simplify the interorganizational comparison involved in competitor definition and classification. Summarizing their own and much other empirical work Porac and Thomas found, for example, that the attribute of firm size was mentioned as a criterion of competitor classification by interviewed managers (see also Reger and Huff, 1993, p. 122-123). By deduction several other possible attributes that could be considered as a competitor classification criteria can be found, e.g., the solidity of financial position, geographical scope or location of competitors. These qualitative criteria do not fit into the traditionally used analytic approach.

Porac and Thomas show that decision-makers settle the dilemma of competitor definition by using simplified mental models to define rival organizations and by developing cognitive taxonomies i.e. classifications of their competitive environments, ***focusing on those corporate organizations that are similar to their own in goals and resources***. The foundation of Porac's and Thomas's theory is in ecological models (see e.g. Hannan and Freeman, 1989, p. 1-366) according to which organizations compete with one another because they are similar in form and require similar resources to survive. Critical resources are usually scarce and in this way similar organizations are often competitively interdependent as they are forced to share these critical resources.

Porac and Thomas thus suggest that strategists use what in cognitive psychology are called *cognitive structures* or also *schema* or *scripts* (see e.g. Miettinen, 1984, p. 103-109, Laukkanen, 1989, p. 1-298 or Jelinek and Litterer, 1994, p. 16-19). According to Jelinek and Litterer a schema is an organized, preexisting knowledge system about a concept or stimuli, its attributes and the relationship between those attributes that people use to interpret their world and generate appropriate behaviors. Porac and Thomas argue that using this kind of schema or cognitive taxonomy managers or strategists in a way create a subjective oligopoly in a situation where in actual fact no such oligopoly exists, and thus they simplify and reduce environmental uncertainty.

Thus according to Porac's and Thomas's theory strategists attempt to match the characteristics of their own organization to those of perceived organizational categories in order to comprehend their organization's position in the competitive environment and define the actors relevant from their own organization's point of view. Once a decision-maker has defined the relevant category, this classification provides the foundation on which much of the environment is understood. The mental model acts also as a subtle filtering device, removing anomalous data. Porac and Thomas present that a certain degree of cognitive inertia should be expected because of the fixation on a particular competitive boundary at a particular point in time, but also cognitive taxonomies develop over extended periods of time

and contain much of what is important about the competitive environment (Porac and Thomas, 1990, p. 234).

The discussion presented by Chen gives an interesting addition to the argumentation of Porac and Thomas. Chen namely presents that market commonality is a determinant of rivalrous behavior and of how firms identify their competitors (Chen, 1996, p. 100-134). Chen argues that firms recognize themselves as more severe rivals not only when they have similar resource endowments but especially when they at the same time share the same markets. According to Chen market commonality thus affects perception of competitors. Having "similar goals", as Porac and Thomas rather broadly refer to the basis of competitor identification, can be interpreted to include also market commonality.

The research by Reger and Huff (1993, p. 103-124) shows that participants in an industry simplify the complex cognitive problem of independently analyzing a large number of competitors by grouping them. They make a cognitive contribution to the discussion of strategic groups which holds that firms in the same industry are not de facto competitors but are inclined to form homogenous groups. According to this research, strategists share perceptions about strategic similarities among firms and that they cluster competitors into strategic groups in subtle ways not reflected in academic studies. Furthermore, Reger and Huff present that strategists working in the same industrial sector can be expected to develop shared perceptions of the competitive environment over time rather than each strategist holding unique perceptions of strategic group structure. Reger and Huff validated their theory by carrying out an empirical study in the Chicago banking sector.

To summarize the existent research, it can be argued that by using a cognitive classification managers in a corporate organization simplify the confusion caused by the overload of competitor information in order to conceptualize the competitive environment and also to be able to cope with the environmental uncertainty always present in decision-making. Porac and Thomas state that similar goals and resources are the natural basis of cognitive classification. Whether these classification criteria are valid or not can be argued, but nevertheless when identification and definition of competitors is considered from the competitor information and information requirements angle, the essence of Porac's and Thomas's argumentation is the notion of *simplification*. This is an important starting point, when the formation of competitive knowledge is studied.

Even if existing empirical studies have examined only cognitive structures and the cognitive processes of managers and strategists in defining and perceiving the competitive environment, it can be expected that also other actors, e.g. knowledge workers, especially those in *boundary functions* i.e. functions or groups that have regular contact with the corporate

environment, use the same kinds of procedures in identifying and defining competitors. It can be expected that these groups likewise have a pronounced need for competitor information and that they utilize it in their operative work. The next four sections take a closer look at the different ways various organizational groups identify the competitive environment and discuss also the differences that can be expected.

2.3. Competitor definition and identification by various organizational groups

The discussion concerning competitive strategy or competitor analysis has, at least implicitly, included a premise that competitor information is collected principally for the needs of top management, strategists and the marketing function to support them in decision-making concerning competitive moves and countermoves. This is evident, e.g., in the work of Porter in the way he defines the need for competitor analysis (see Porter, 1980, p. 47):

"Sophisticated competitor analysis is needed to answer such questions as "Who should we pick a fight with in the industry, and with what sequence of moves?" "What is the meaning of that competitor's strategic move and how seriously should we take it?" and "What areas should we avoid because the competitor's response will be emotional or desperate?""

The emphasis in this approach is clearly on the requirements of general management and marketing strategists while other functional actors - managers or expert workers alike - merely have an assisting role in finding and communicating relevant competitor information for these groups. (The questions of competitor information utilization and motives for collecting this kind of information in general management and in different functional groups is discussed in more detail in chapter 3). Consequently it can be asked, whether various functional groups other than marketing have any bearing on the way an organization defines its competitors or engages itself in competitor surveillance.

When the role of various functional groups in competitor identification and scanning is being assessed, it is worthwhile first to discuss and determine, how and where in an organization competitive strategy is either formulated or evolved and also where it is implemented. According to Lahti (1988, p.52), the complexity of strategic management tasks leads to problems not being solved immediately and in a centralized manner, but instead in processes that are decentralized into several hierarchical management levels. There is a consensus in strategic planning literature (see e.g. Mintzberg, 1994, p. 61 or Johnson and Scholes, 1984, p. 9- 10 or Hofer and Schendel, 1978, p. 27-29 or Lorange and Vancil, 1977, p. 10) that the hierarchy of strategies exists at three levels: *corporate*, *business* and *operational or functional* strategies. Competitive strategy is mainly formulated or evolved at these hierarchical

levels and then implemented at business unit level and at the level of different functions, while overall corporate strategy is formulated and implemented at the level of the whole enterprise.

At the *business unit level* competitive strategy defines how a firm competes in a certain business sector or in a certain product/market segment. Competitive capabilities or competencies and the creation of competitive advantage are the most important elements of strategy at this level. The purpose of the functional strategy, on the other hand, is to maximize the performance and productivity of resources. At this *functional level* the development of competitive capability is essential.

When these hierarchical levels of strategy are examined, it is obvious that the entirety of competitive strategy is operationalized as a sum of functional strategies. Various functional groups consequently implement competitive strategy. Thus, when competitive strategy is looked at from the strategy implementation angle competitor surveillance can also be seen in a new way. As Pfeffer (1994, p.19-23) argues in his approach to organizational decision-making:

"..a decision by itself changes nothing." ... "We must wait for the decision to be implemented and for its consequences to become clear".. "We almost invariably spend more time living with the consequences of our decisions than we do in making them" and continues *..."we need to be somewhat less concerned about the quality of the decision at the time we make it and more concerned with adapting our new decisions and actions to the information we learn as events unfold."*

Also Lares-Mankki (1994, p. 39-41) presents in her summary of various approaches to strategy implementation that by most strategy doctrines "personnel" is considered to have a critical role in strategy implementation - especially so in the case of approaches that consider strategies to evolve as a sum of the actions of the individuals working in an organization (see Lares-Mankki, 1994, p. 37).

Hence in the case of competitive strategy, various functional groups obviously have at least some kind of role in the implementation phase, i.e. in the development and creation of competitive capability within their functional expertise areas. It can be assumed that various functional groups adapt their operation based on competitor information received from the environment and change their actions accordingly in order to either maintain or improve their competitive capability. Thus it is not surprising that many functional groups - functional managers and knowledge workers alike - have increasingly been occupied with, e.g., such popular undertakings as benchmarking activities. Unfortunately there is, however, no

reliable empirical evidence of the role of various functional groups in competitor surveillance and utilization of competitor information and therefore no evidence either of the way these groups identify the competitive environment and define competitors. The focus of attention in research has mainly been on general management and marketing functions. The empirical part of this study endeavors to increase knowledge of these questions and examines the role of different functional groups in collecting and accumulating competitor information and discusses also their cognitions in competitor definition.

As various functional groups apparently monitor competitors in the process of competitive strategy implementation, can it be assumed that awareness of competitors and the subsequent identification of the competitive environment and definition of competitors is similar everywhere inside the organization? Or could the diffusion of this awareness differ between general management and between various functional groups?

According to the traditional approach to competitive strategy and competitor analysis, both the rival and the focal organization are assumed to behave as a homogenous and monolithic actor. Indeed, not only the competitor analysis literature but also the plethora of strategic planning and management literature typically refer to organizations in the third person singular. Although the singular is certainly used for reasons of convenience, it reveals, however, at the same time that the emphasis has traditionally not been to perceive an organization as consisting of different groups with different objectives and different interests - also in competitor scanning and competitor identification - but to stress that an organization operates coherently as a single actor.

If an organization is considered as a complex social system with different groups and subgroups, it is justified to assume that some functional groups have greater awareness and higher sensitivity to the competitive environment and the activities of competitors than others. Consequently it can also be assumed that some groups in an organization collect and utilize competitor information and accumulate competitive knowledge more than others. Likewise, it can be presumed that different groups and subgroups have dissimilar reasons and motives for monitoring competitors and therefore acquire different information. Thus, there are likely to exist both *quantitative* and *qualitative* differences in competitor surveillance activities inside an organization.

2.4. Sensitivity to competition and competitor information processing

In order to be able to analyze the differences that apparently exist between various organizational groups in sensitivity to competition and competitor information processing

patterns, some concepts describing these phenomena are introduced here. The following four concepts are used later in this study to describe the attributes or behavior of either an individual actor or a whole organizational / functional group:

• ***Competition sensitivity*** is an attribute that describes *how alert or aware* an actor or a group is to occurrences and events in the competitive environment. If an individual or an organizational group is very aware of the competitive environment and actors therein and monitors their activities closely, an individual or an organizational group is said to have *high competition sensitivity*. In the opposite case an individual or an organizational group has *low competition sensitivity*.

• ***Competitor information access potential*** describes how easily obtained competitor information is for an individual or an organizational group. Access potential depends mainly on how regular and active the connection an individual or a group has with the competitive environment.

• ***Competitor information intensity*** describes *how much*, i.e. *the amount* of, competitor information an individual or an organizational group processes and accumulates. Competitor information intensity depends on *what possibilities* an actor or a group has *to access* competitor information that is relevant to ensure successful operation i.e. competitor information access potential. Also at the same time competitor information intensity depends on *how actively* information about individual competitors is collected and accumulated, i.e. competition sensitivity. An individual or an organizational group is said to have a *high competitor information intensity*, if an individual or an organizational group keenly monitors the competitive environment and the activities of individual competitors, collects and has, due to interorganizational or intraorganizational communication channels, the potential to seek and constantly access competitor information that is relevant in order to ensure successful operation or development of competitive capabilities of either an individual, an organizational group or the organization as a whole. In the opposite case an individual or an organizational group has *low competitor information intensity*.

• ***Competitive knowledge capability*** is a quality that describes how well an individual or an organizational group is able to exploit competitor information in their own work processes in an effort to achieve organizational goals or how effectively an individual or a group is able to communicate competitor information to relevant users elsewhere in the organization. In this way competitive knowledge capability is a concept describing *how sophisticated the cognitive capabilities* and *how sophisticated the subsequent competitive knowledge structures* of an individual or an organizational group are. An individual or an organizational group is said to have *high competitive knowledge potential*, if an individual or an

organizational group has the capability to realize the value and relevance of accessible competitor information and also the capability to utilize available competitor information in order to ensure either their own successful operations or the development of competitive capabilities or to ensure and develop these qualities in the organization as a whole. In the opposite case an individual or an organizational group has *low competitive knowledge potential.*

Competition sensitivity is apparently a primary prerequisite enabling an individual or an organizational group to generate interest in competitor surveillance. On the other hand, in order for an individual or an organizational group to become sensitive to competition an actor or a group is usually required to be to some extent *vulnerable* to changes in the competitive environment or to possible effects that the activities of competitors have. Vulnerability creates the *motivation* to monitor the competitive environment and individual competitors. Vulnerability and the subsequent motivation lead to *awareness* and alertness, i.e. to a state of proactive attentiveness to environmental signals. According to Auster and Choo (1994, p. 206-225) many studies have found that managers who perceive greater environmental uncertainty tend to do more environmental scanning. It must be noted that vulnerability is not a necessary precondition for competition sensitivity to develop. For example job rotation might cause a situation where an individual is transferred from a competition vulnerable function to a non-vulnerable one, yet competition sensitivity might remain.

Competitor information intensity is a concept that indicates an individual's or a group's ability to participate in competitor surveillance and to accumulate exploitable competitor information. This concept includes both the *possibility of accessing* competitor information, i.e. competitor information access potential, and also the *activity* of doing so, i.e. competition sensitivity. An individual or a group can have constant access to competitor information, but not sufficient motivation to collect this information, or vice versa, have motivation, but not access. Therefore both these elements are not necessarily parallel. In order for high competitor information intensity to develop, an individual or an organizational group must, however, inevitably have both access to competitor information and at the same time activity to monitor and collect this information. Competitor information intensity describes the *quantitative* aspect of competitor information accumulation, i.e. the possibility of collecting and the interest to collect and store a large amount of relevant information, whereas competitive knowledge capability describes the *qualitative* aspects of competitor information accumulation and use.

If an individual or an organizational group has high competitor information intensity, competitive knowledge capability can evolve. This concept includes the *sophisticated cognitive capabilities* and *competitive knowledge structures* connected to competitor surveillance and

information utilization. In order for a high competitive knowledge capability to develop, an individual or a group must have the competence to recognize the *value and relevance* of competitor information, either from their own standpoint or that of the organization's. Also they should have the capabilities to *utilize* this information, either directly in their activities or in developing their operation or in recognizing the need for this information elsewhere in the organization. If an individual has access to valuable competitor information but does not comprehend its relevance from his own standpoint or that of the organization's, this competitor information is useless for the organization. It is noteworthy that from an organizational standpoint *both* the insight of value and relevance and also the capability to utilize are essential. If an individual or an organizational group comprehends the value and relevance of a piece of competitor information, this does not have any significance for the organization, if this perception does not actualize into utilization.

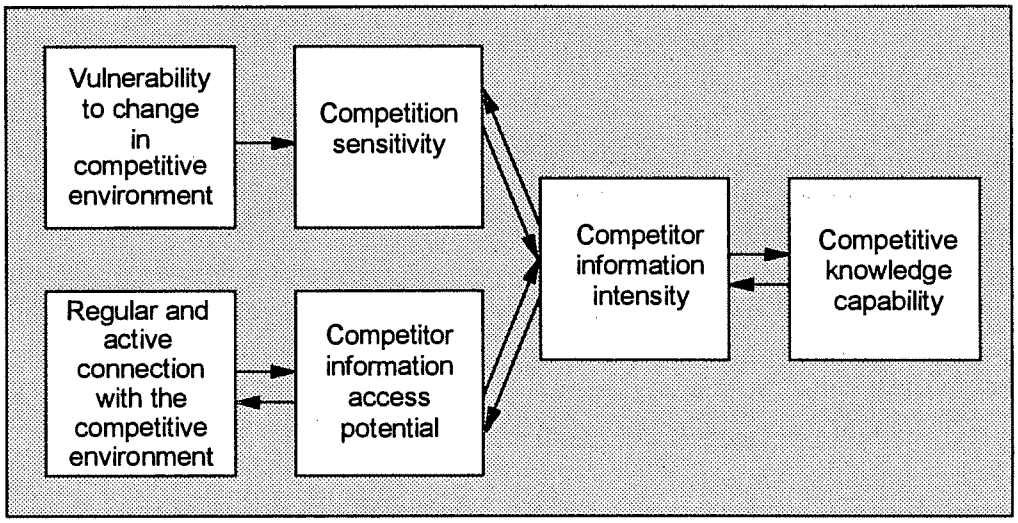


Figure 2.1. The interrelations of competition sensitivity, competitor information access potential, competitor information intensity and competitive knowledge capability

The four concepts introduced here cover the most important cognitive capabilities and processes connected to managing competitor information in a corporate organization. Competition sensitivity describes the cognitive process of perceiving the competitiveness of the environment and the activities of competitors. Due to this perception an individual or a group can develop high competitor information intensity, if they at the same time have

access to competitor information, and constantly evolve their interpretation of the received information in order to achieve learning, i.e. to improve the sophistication of one's competitive knowledge structures. The interrelations of these four concepts are illustrated in figure 2.1.

2.5. The role of boundary groups in identification of the competitive environment

It can be expected that individuals and functions occupying *boundary roles* in an organization have higher competition sensitivity and better access to competitor information and therefore higher competitor information intensity than other individuals or organizational functions. Miles defines boundary roles as those roles occupied by individuals and units whose function is to transact or negotiate with other organizations and in this way to scan their environments, monitor potentially relevant events, interpret what they see and translate and communicate findings to their decision-makers (see Miles, 1985, p. 316 or also Katz and Kahn, 1978, p. 87-88). Those organizational functions that have boundary roles are called *boundary groups* later in this study.

The most commonly identified boundary group that has constant transaction with the competitive environment is the marketing function (see e.g. Katz and Kahn, p. 87). According to Simon (1993, p. 140) marketing is not solely a function of selling and distributing products to customers but equally a function of acquiring information about the markets and in this way obviously of the various rival actors therein. Furthermore Simon presents that research and development functions are windows to the technical development of the discipline in question and thus subsequently also to the operations of competitive firms in this area. Also Tushman has studied boundary roles in the research and development process (see Tushman, 1977, p. 587- 605). Other such boundary groups are clearly at least financing, human resources management and also such logistics functions as physical distribution and purchasing.

It should be noted that all these boundary groups can not be expected to be competition sensitive and thus relevant in competitor surveillance, even if they transact with the competitive environment. Marketing, research and development, physical distribution and purchasing evidently either dispose outputs to or procure inputs from the same markets as competitors or also try to help the organization to survive or adapt to the competitive environment (see Katz and Kahn, 1978, p. 87-91). To some extent also the human resources management procures inputs i.e. personnel from the same labor market as competitors, but not necessarily. Likewise financing competes for funds also with firms from all other industrial sectors in the economy, not just with firms that are identified as competitors.

Despite the commonly recognized boundary roles of the above-mentioned organizational functions, it must be noted that the significance of different boundary roles, the relative emphasis between the different boundary groups and their composition can be expected to vary in different types of organizations. For example, if a firm is operating in a high technology industry, the boundary role of research and development function is clearly give more emphasis and importance than in firms operating in more traditional industries. Therefore it is not possible to indicate consistently those functional groups whose boundary role would be in all organizations more pronounced than other groups. In the same way it is not possible to specify consistently the competition sensitive or competitor information intensive functional or other organizational groups that would be similar in all organizations and consequently it is not possible either to create a theory to that effect.

The functioning and emphasis between the boundary spanning roles of different functional groups thus varies in organizations. Miles (1985, p. 339 - 342), however, has studied the factors affecting the creation and management of organization boundary roles and units and his notions are useful when considered from the focus of competition sensitivity. He presents that all organizations engage to some degree in boundary spanning activities and have boundary roles, even if only at the level of chief executive officer, but these activities are not necessarily formalized into full-time positions and permanent units and they may exist in conjunction with more conventional internal organizational activities on an informal, ad hoc basis. The participants in boundary groups occupied in boundary spanning activities might not even be aware of doing so, i.e. the boundary role might be either deliberate or unintentional. Miles distinguishes three antecedent conditions that affect the design of - or it could be expected the implicit formation - boundary spanning groups or roles:

- *Organizational size*
- *Organizational technology*
- *Organizational environment*

These determinants presented by Miles are also suitable for analyzing the formation of competition sensitivity, competitor information access potential, competitor information intensity and subsequently also competitive knowledge capabilities of different boundary groups. Organizational size is a self-evident factor: the larger the organization the more complicated the composition of boundary roles and groups occupied in environmental scanning and monitoring. Also it can be expected that the larger the organizational size, the more formalized and functionally differentiated the boundary roles are- also those connected to competitor surveillance. But as this study deals predominantly with large firms, or at least firms with

various functional groups, organizational technology and organizational environment are the most interesting determinants of boundary group emphasis and composition.

Evidently *the nature of the technology*, as introduced by Miles, is a factor that affects competition sensitivity and competitor information intensity of different functional groups. Miles argues that organizations with mediating technology instead of long-linked or intensive technologies, i.e. organizations that mediate or link clients or organizations with one another (e.g. wholesalers, newspapers or maritime freight forwarders), have a higher proportion of boundary roles because in mediating organizations boundary roles are line not staff. Therefore, it can be expected that in these organizations a larger number of organizational groups have competitor information access potential. On the other hand, organizations with long-linked (a long manufacturing chain) or intensive technologies (e.g. hospitals or universities) attempt to buffer and protect their technological or competitive core of environmental influence and boundary roles are fewer.

However, from the viewpoint of competitor surveillance it can be argued that the more *dependent or vulnerable* (the more easily imitated or the more open to attack by new innovations) the organizational technology - whether mediating, long-linked or intensive - is to the activities of competitors, the more competition sensitive and usually also more competitor information intensive *all* boundary groups of the focal organization are. From the viewpoint of competition sensitivity and competitive information intensity the vulnerability of the organizational technology can be considered the essential factor, not so much the mediating or long-linked nature of the organizational technology. To extend the conclusions by Miles it can be stated that if the organizational technology includes a long-linked chain of activities and at the same time is vulnerable, the organization has fewer boundary roles, but at the same time more competition sensitive and competitor information intensive these boundary groups are likely to be and furthermore the need for this sensitivity and intensity is in order to ensure successful operation is more pronounced. This is the case in many firms operating in the manufacturing industry - both in sectors of high technology and also in industries using more traditional technologies - and thus in the kinds of firms that are the principal focus of this study.

In addition, Miles (1985, p. 341-342) presents that *features of the external environment* of the organization or unit obviously exert an important influence on the types of boundary-spanning activities and structures that are required. If the external environment is highly complex, unpredictable and turbulent, organizations are bound to have a higher proportion of boundary roles in order to adapt successfully than those operating in stable or simple environments. Therefore the more turbulent and competitive the organizational environment, the greater the number of individuals or organizational groups occupied in boundary

spanning roles dealing with competitor scanning and monitoring and thus naturally the greater the amount of competitor information intensive individuals and groups. Furthermore it can be expected that high environmental turbulence also increases this sensitivity, information access potential and intensity and consequently possibly also competitive knowledge capabilities in the boundary groups involved. And vice versa - if for example the external environment is not turbulent, there is no need to adapt, and the number of competition sensitive groups is small and information access potential, sensitivity and intensity are lower.

Miles notes that "complexity demands complexity" also in organizational design i.e. the structure of the organization should correspond to the complexity of the external environment. According to this an organization increases the *functional differentiation* of its overall structure and so also the differentiation of its boundary spanning structure. Furthermore Miles states that a highly dynamic environment encourages the formation of nonroutine boundary spanning activities demanding boundary role autonomy and flexibility and thus giving the boundary spanner more power and increased decision-making autonomy.

Miles's argument about the increasing functional differentiation and increasing power and autonomy of boundary groups in a turbulent environment is interesting from the viewpoint of competitor information management. While making organizational adaptation more efficient, increasing functional differentiation affects the way various actors or groups identify the entirety of the organization and the way they identify the corporate environment. According to Ansoff (1980, p. 25), managers in the lower hierarchy consider organizational goals principally from the viewpoint of their own functional position - not so much from the viewpoint of the whole organization - and assume that the prosperity of the whole organization is maximized, if the operation of their own function is optimized. Thus, in turbulent environments, competition sensitive and competitor information intensive boundary groups are increasingly functionally differentiated, but at the same time this job specialization decreases perception of the entirety. When considered from the viewpoint of the whole organization this can easily lead to problems in successful competitor information management.

2.6. Competitive environment identification patterns by various groups

As various general managers or functional groups - in these groups managers and expert workers alike - carry out different tasks according to an agreed division of labor in the organization, they have many different ways of viewing and perceiving the phenomenon of competition, since, obviously, reasons for surveying competition and competitors differ. Therefore, even if a common consensus or a shared cognition of the definition of an

organization's competitors were to prevail, these competitors would nevertheless be looked at from different angles - in many cases from functional standpoints.

Porac and Thomas (1990, p. 225) stated that managers focus on those competitors that are *similar in goals and resources*. Various groups and subgroups in organizations can have differing views of what the organization's goals are. As theories of organizational behavior explain, these goals might be conflicting, but even if this were not the case, different functional groups contribute to the realization of shared organizational goals in different ways. Thus it can be expected that various groups perceive competitors' goals that conflict with theirs in different ways. For example, marketing might perceive a competitor's goal of selling products in their own important market area a threat. On the other hand, research and development might perceive a competitor's significant investment in an extensive research program to be competition conflicting with their own goals. In both cases the focal company and competitor have similar goals, but the viewpoints of the different organizational groups differ. The basis for these differences, i.e. different motives for competitor surveillance, is discussed in detail in chapter 3.

Some common patterns can be expected to exist in the way different organizational groups identify competition and consequently view individual competitors. These identification patterns obviously depend on what dimensions the organizational groups compete with other firms, i.e. what are the goals that conflict or coincide with those of the competitors'. In the literature of business economics some patterns emerge that reflect the different approaches to competition and competitors. At least two approaches - the product- market approach and the resource-based view - are apparent.

In strategic planning (see e.g. Ansoff, 1965, p. 97-101) or marketing management literature (see e.g. the classic work of Kotler, 1980, p. 48-49 and p. 84-85) a firm is seen to compete in a *product-market* space. A firm's competitive positioning requires a firm to decide what kind of products to offer to the target market in relation to competitors' offers. According to Kotler a firm should make an effort to learn what competitors are offering in the target markets and what customers really want. On the basis of these findings a firm is ready to choose a competitive position.

In addition to this product-market view of a firm and competition, the literature of strategic management also presents an approach that emphasizes a firm's *resource position* - its strengths and weaknesses - rather than products as an element in competition (see e.g. Peteraf, 1993, p. 179-191 or Collis and Montgomery, 1995, p. 118-128). This resource aspect is evident in many approaches, even if it may not be emphasized. For example, Porter (1980, p. 29-30) recognizes capabilities, i.e. the capacity to deploy resources, as a

component of competitive strategy formulation. (The difference between the concepts "resource" and "capability" are discussed in chapter 3, section 3.1., when a distinction is made between competitor information resources and subsequent capabilities.) According to Porter, a firm should endeavor to match its strengths and weaknesses, particularly its distinctive competence, to the opportunities and risks in its environment. A more recent work of Hamel and Prahalad also recognizes that firms compete on capability, especially on "core" competence (1994, p. 203), and argues that competition between firms is as much a race for competence mastery as it is for market position and market power.

This resource approach is best summarized by Wernerfelt, who advanced a resource-based view of a firm (1984, p. 171-180). According to Wernerfelt, resources and products are two sides of the same coin. Most products require the services of several resources and most resources can be used in several products. In Wernerfelt's theory a firm is considered a bundle of resources, and strategy is phrased in terms of the resource position - the strengths and weaknesses. It is noteworthy that Wernerfelt defines resources as those *tangible or intangible* assets that at a given time are tied semi-permanently to the firm. Therefore Wernerfelt mentions also, e.g., in-house knowledge as a resource along with the traditional machinery and capital.

These two ways of looking at a firm and consequently also at competition are not so much conflicting but complementing and reflect differences in interests and viewpoints. This duality of aspects is also mentioned by Chen who proposes two constructs, *market* commonality and *resource* endowment in explaining rivalrous behavior and "pre-battle" tension between opponents (1996, p. 100-134). These two perspectives are also a possible explanation for attitudes towards and perception of competition and competitors. In fact, when the strategic planning and management literature dealing with rivalry, competitive strategy and competitor analysis is studied, these different perspectives are evident, even if they have not in most cases been explicitly mentioned. Based on these two views of a firm and its competitive positioning at least the following identification patterns of the competitive environment can be distinguished:

- ***Competition as a hostile game***
- ***Competition as a cooperative game***
- ***Competition as striving towards superior capabilities / competencies***

When competition is examined from the product-market perspective, it is principally seen as ***a game***. Using game theory to discuss competitive strategy or competitive decision-making is not a novel approach in business economics (just to mention a few, see e.g. Porter, 1980, p. 88- 107 or Oster, 1990, p. 219-231 or Zajac and Bazerman, 1991, p. 38-39 or Chen and

Miller, 1994, p. 85-102 or Brandenburger and Nalebuff, 1995, p. 57-71). In these approaches, competitive strategy is considered in the same way as traditional war or political strategies as an interactive game where the operation of one party has specific, partly predictable effects on the operation of another party. According to Zajac and Bazerman the game theory approach has been increasingly taken into consideration especially in studying strategic behavior of oligopolies, where each firm's strategic decisions are interdependent with those of the other firms in the industry. Oster (1990, p. 219-231) presents that the game theoretic approach is especially useful in situations, where a variety of firm interactions is studied in a formal analysis of conflict and cooperation among intelligent and rational decision-makers. By using game theory the likely reactions of organizations to the competitive moves of other firms can be traced.

When competition and interaction with competitors is identified as a game, it must be noted that this ***game can either be seen as a hostile zero-sum game or as a co-operative game***. Both these views are discussed in the literature (see e.g. Nielsen, 1988, p. 475-492). According to Porter, especially in oligopolistic situations, firms aim to avoid instability and warfare that could prove to be costly to all parties. Nevertheless they strive to improve their situation compared to competitors (see Porter, 1980, p. 88-89). Oster discusses also "repeated games" and "the extensive form" of a competitive game, i.e., it is assumed that as firms repeatedly encounter in the marketplace, the possibility of retaliatory action controls behavior in the game. Furthermore based on empirical evidence Sierilä (1991, p. 83-85) discusses cooperation in the Finnish forest industries and argues that cooperation in the forest industries is extensive and manifold and takes place both at the national and international levels.

The cooperative view of competition and competitors is also discussed by Fusfeld and Haklisch (1985, p. 60-70 and p. 74-76) and Sinha and Cusumano (1991, p. 1091-1106) who consider joint research and development activities between competitors. Penrose also predicts that the spreading phenomenon of interfirm networks creates a new way of competing that is very different from that analyzed for firms in so-called free markets (see Penrose's foreword to the third edition of her classic book "The Theory of the Growth of the Firm", 1995, p. xix-xx). In addition Hamel et al (1989, p. 133-139) and Miles et al (1993, p. 164) discuss the beneficial effects of competition and mutual gain taking from a dynamic industry-level perspective according to which competitors in an industrial sector more or less co-evolve rather than tear each other to pieces in a useless zero-sum game. Tyler and Steensma even debate that shrewd industry participants recognize that collaboration is competition in a different form (1995, p. 43).

It must be reminded that none of these approaches is more appropriate than another and they are not mutually exclusive either. Competition can be simultaneously seen as a hostile and a cooperative game. This is obvious if the firm-level aspect is extended to industrial sector-level: Firms can, for example, share the same customers and markets and consider competition in this respect a hostile game, but on the other hand in all other respects their interests within the same industrial sector are similar and it therefore pays to cooperate.

However, when competition is considered from the resource-based view, firms are considered to ***compete for superior capabilities and competencies*** rather than customers and markets. This identification pattern has been evident in so called benchmarking studies, where a firm compares its own capabilities or core competencies, i.e. those competencies that are crucial for successful performance, to those of the most important competitors. (It must be noted that benchmarking can also be done with firms in other industrial sectors, if these firms are considered to represent the best performance in the functional area in question (see e.g. Karlöf and Östblom, 1993, p.7-199). This alternative is not, however, interesting from the viewpoint of this study that concentrates on competitor comparisons.)

Identifying competition in the competitive environment principally as a struggle for superior capabilities or competencies can be expected to be the prevailing identification pattern, especially at functional level (see e.g. the notion of Amit and Schoemaker, 1993, p. 35, who claim that capabilities are often developed in functional areas). Benchmarking activities have typically been targeted at comparisons of various functions or operations (see e.g. Fifer, 1989, p. 18-23 and p. 26-27). This is a notable difference compared to identifying competition as a game as in the case when competing firms are seen as monolithic, rational actors. When competition is seen as striving for superior capabilities at a functional level, the perspective is internally focused and competing firms are considered to include diverse and separate activities and functions.

Obviously it is not possible to establish competitive environment identification patterns that would be consistently characteristic or identical in various organizational groups or functions in all corporate organizations. Identification patterns can be expected to vary in different organizations since organizational size or structure and functional composition also varies. However, in general it can be assumed that the boundary position of either individual participants or organizational groups is likely to affect the way that the competitive environment is perceived. The product/market approach to competition has been discussed particularly in strategic management literature in connection with general management or marketing, i.e. the externally oriented groups, while development of capabilities is usually considered to be the domain of other specialized and more internally oriented functional

groups. In figure 2.2. the different identification patterns of various organizational groups are outlined to provide a sketch of different groups' views towards competition.

In figure 2.2. it is interesting to note that the position of the research and development function differs somewhat from that of other staff functions. The research and development units are in many organizations characteristically boundary units since they transact and negotiate with external constituencies. They very often have, e.g., joint research projects with research institutes or universities or they compare technical solutions with experts in competing or other firms.

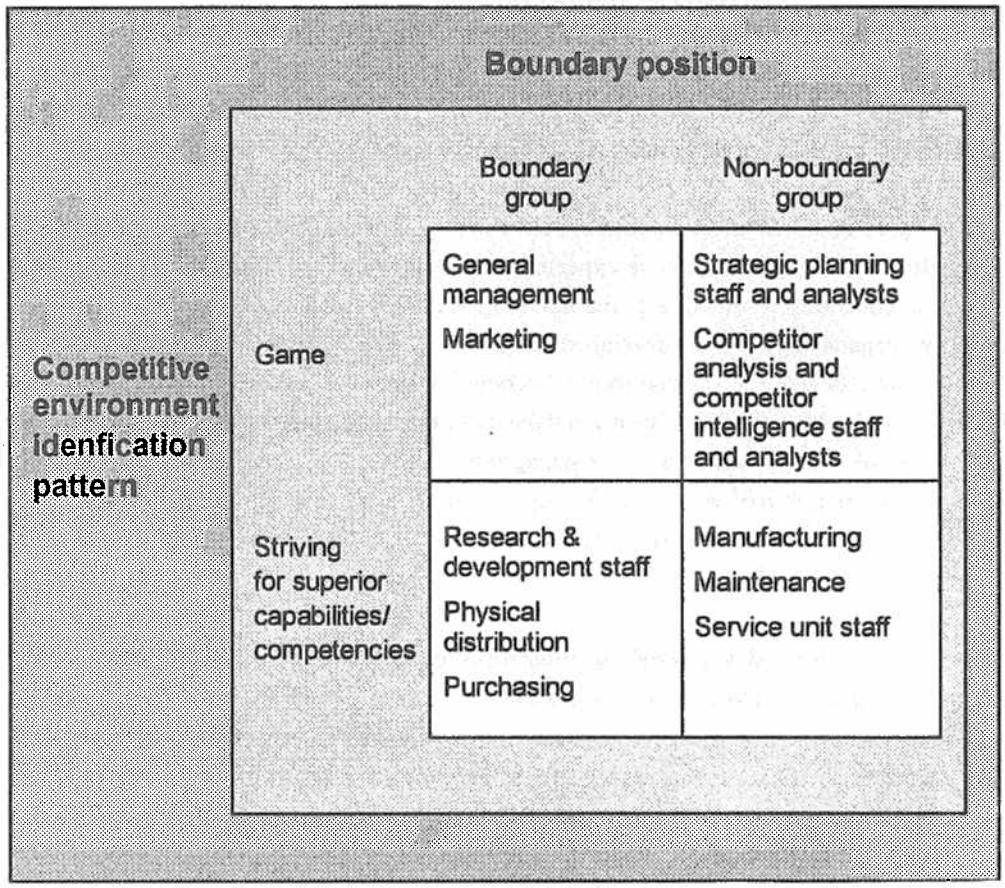


Figure 2.2. An example of different competitive environment identification patterns by various organizational groups in a corporate organization

On the other hand, such staff functions as strategic planning analysts or competitor analysis and intelligence units do not have similar intrinsic work constellations with external constituencies as the research and development function and in general they can be considered to be non-boundary. Even if, for example, the competitor analysis units deal with competitiveness in the product/market space, they do not have a natural working relationship with the corporate environment in spite of the externally oriented nature of their specialized tasks.

In spite of the boundary position and externally oriented nature of the research and development function, its work is primarily aimed at building capabilities and superior competencies for the focal organization, while the role of competitor analysis or competitive intelligence activities is usually considered to be assisting strategic decision-making, where competition can be expected to be seen as a game.

It can be concluded that in game and capability perspectives the ultimate purpose of competitor surveillance and thus utilization of competitor information is different in character. Competition can be expected to be seen as a game above all in decision-making situations - involving either strategic or operative decision-making - whereas competition can be expected to be perceived above all as a struggle for capabilities when striving to improve performance and learn from rivals and also in technical problem-solving situations. If these two identification patterns are thus considered from the information utilization angle, one apparent difference is the time perspective. In specific decision-making situations, when interaction with competitors is seen as a game, typically decisions have to be reached faster than in most cases involving problem-solving or when trying to improve performance. Therefore, in game situations information needs are usually more acute and the time-span of interest shorter than in problem-solving or in attempts to improve performance or learn from competitors.

Finally an ***absence of competition identification*** is a pattern that can not be ignored or left unmentioned, even if it represents a non-event. Inkpen and Choudhury (1995, p. 313-323) argued that strategy absence is a legitimate phenomenon of interest in business economics research and conclude that these non-events can be either due to deliberate action or unintentional. They emphasize that researchers must be especially sensitive to non-events in the strategy field, where there has been a tendency to ascribe linearity and rationality to complex organizational phenomena. From the viewpoint of this study, the ideas presented by Inkpen and Choudhury are especially interesting and provoking as the very aim is to gain a thorough understanding of the intraorganizational phenomena connected to competitor information and knowledge.

Following the ideas presented by Inkpen and Choudhury it can be argued that in some cases a firm might not have a competitive strategy, neither explicit or implicit. Or even if a firm were to have a competitive strategy, absence of competition identification could be the prevailing pattern in some organizational groups. In this identification pattern either the whole organization or an organizational group has a very low or practically nonexistent competition sensitivity. The most natural cause for identification absence would be a benign or at least relatively unturbulent competitive environment in the focal industrial sector. In this case, the organization as a whole or different functional groups, do not have an imminent perception of vulnerability to changes in the competitive environment. Another possible explanation at functional level could be a long-driven functional differentiation and job specialization that in some cases could be expected to cause low competition sensitivity.

It must be emphasized that absence of competition identification does not *necessarily* imply bad or unsuccessful behavior. As Inkpen and Choudhury argue, absence of strategy and thus analogously absence of competition identification is simply the opposite of presence and presence of identification is not essential or necessary in all situations to achieve successful performance.

In conclusion, it can be stated that recognizing the different patterns that various organizational groups have in identifying the competitive environment and competitors is useful when accumulation of competitive knowledge and the communication or transfer of this knowledge is discussed. As these patterns have been deduced from the approaches presented in literature, it can be questioned whether these patterns reflect the *actual* ways different organizational groups identify the competitive environment. The empirical part of this study attempts to give further evidence of the validity of these identification patterns.

2.7. The formation of identification consensus - shared cognitions

As has been outlined in this chapter, when identification and perception of the competitive environment or competitor information processing patterns are discussed, it is not meaningful to treat an organization as a homogenous and integrated whole. Thus, if it is necessary to view an organization as differentiated functions and operations, it can with due course be asked, whether there is any reason to study the phenomena connected to identification of the competitive environment on an *organizational level* at all. Especially as it has been studied that competition sensitivity, competitor information access potential and competitor information intensity are probably determined by the boundary or non-boundary positions of individuals or organizational groups and that identification of the competitive environment

and likewise definition of competitors is done by using *individual level* cognitive taxonomies.

It can be, and indeed, has been argued, whether individual level cognitions and cognitive processes can be extended from individual to organizational level, i.e. to what extent cognitions are shared by the various organizational members. Some organization theorists argue that cognition and learning are concepts that are relevant only at an individual level, whereas others claim that these phenomena can also be applied to the aggregate level more or less analogously i.e. to the level of various organizational groups or even the organization as a whole.

Jelinek and Litterer (1994, p. 3-41) make an advance towards a cognitive theory of an organization and argue that organizational members are conditioned by their membership in the organization and that their actions are at least partly determined by events external to themselves. The basis in Jelinek's and Litterer's theory is in the notion that viewed from an organizational perspective autonomous individuals are constantly deliberately choosing behaviors to achieve coordinated action and an organizational *outcome* and in this way produce *collective behavior*. They argue that coordinated behavior is reached because organizational members have a set of *shared cognitions*. Thus also shared cognitions can develop among organizational members in the same way as shared actions, even if the set of cognitions becomes larger and more complex as the common goal is subdivided and as functional tasks become more differentiated.

Jelinek and Litterer present that organizational participants are likely to share the same organizational reality or *context*, i.e. what organizational members believe their immediate situation to be. This is by and large due to the fact that an organization has a major impact on what data participants have at their disposal as well as the cues and the stimuli that will organize and interpret the data selected and the set of *schema* available for interpretation. Jelinek and Litterer argue that even if in the real organizations all members may not possess the same schema, i.e. the preexisting knowledge structures that people use to interpret their environment, these schema nevertheless are likely to be sufficiently similar to be recognized as "the same." Therefore knowledge structures may be limited in scope (e.g. limitations caused by a high level of functional differentiation), but according to Jelinek and Litterer, some general level schema like for example organizational identity or strategy are usually shared. This theory is supported also by Walsh and Ungson (1991, p. 61) who argue that an organization may preserve knowledge of the past even if key organizational members leave and postulate that organizational "memory" is *both* an individual- and organizational-level construct.

This cognitive theory of an organization undeniably has features that make it a useful tool in explaining many organizational phenomena connected to utilization of competitor information and accumulation of competitive knowledge. This theory, for example, accounts for the stability of organizational attributes and behavior, even if individual participants come and go. Shared cognitions are discussed in more detail in chapter 4, when the formation of the organizational base of competitive knowledge is discussed.

Similarly it is reasonable to expect that managers and knowledge workers develop some kind of a shared cognition or *a common consensus of the competitive environment* and actors therein. Or at least it can be assumed that their cognitions have common features. Some empirical evidence of this is provided by e.g. Reger's and Huff's study (1993, p. 103-124), which claims that participants in the same industry share similar views of strategic groups. If participants within an industrial sector share cognitions, strategists in the same organization are evidently likely to do so also. The research findings of Daniels et al (1994, p. s21-s29) suggest that homogeneity of mental models or beliefs may be higher among managers with similar functions and those who belong to the same firm. This entails that although identification of the competitive environment occurs through individuals, a shared organization-level identification is likely to be preserved over time as participants are conditioned by their membership and as identification evolves in constant interaction with other members. However, some contradictory findings have also been presented. According to Ginsberg (1994, p. 157) these contradictions might be the result of differences in functional specialization.

It must be reminded, however, that a shared cognition or a shared consensus of the competitive environment and competitors is not simply a cumulative sum of the organizational members' perceptions and interpretations. Daft and Weick (1984, p. 285), for example, assume in their model of organizations as interpretation systems that managers constitute the organizational interpretation system by which an organization perceives and interprets its environment, even if Daft and Weick recognize that many participants span the boundary with the external environment, i.e. managers interpret the environment for other organizational participants (1984,p. 294). Even if this assumption were practical in constructing a model, it can, however, be considered inadequate, when the focus of study is how organizations and also their members *actually* perceive and interpret the competitive environment.

Therefore, in this study, identification of the competitive environment and the actors therein is assumed to occur *both at an individual or functional group level and also at an organizational level.* Furthermore, it is assumed that all these levels have significance when an organization as a whole perceives or identifies and interprets its competitive environment. Also it is presumed that some kind of identification consensus is likely to be achieved by organizational participants and that this consensus is formed as *a convergence* of the various

participants' and subgroups' identification of the competitive environment and competitors therein. Thus, Daft's and Weick's assumption of one group interpreting the environment for other organizational participants is not considered to be applicable in this study.

3. UTILIZATION OF COMPETITOR INFORMATION AND COMPETITIVE KNOWLEDGE

3.1. Competitor information as a resource

The primary phase in the process of competitor information management, i.e. perceiving and identifying the competitive environment, was outlined in chapter 2. The aim of chapter 3 is to introduce an organizational perspective to competitor information management by discussing why competitor information is required and competitive knowledge accumulated and also to what purposes it is actually utilized in a corporate organization. Before going into competitor information utilization motives and patterns it is first worthwhile to contemplate, what properties competitor information has as a resource. This is significant mainly from an organizational viewpoint but is also relevant from an individual actor's point of view.

The discussion about information resources and their optimal exploitation began with the rapid development of information processing and telecommunication technology in the 1980's. This progress encouraged an optimistic discussion of an information-oriented society and "information age". The most enthusiastic proponents of the information society were even inclined to assume that information is more or less a resource similar to physical assets and could be treated likewise (see e.g. Horton, 1979 or Burk and Horton, 1988, p. 14-15 or Pao, 1989, p. 5).

In the case of competitor information this development resulted in an increasing focus on competitive intelligence activities as an essential part of competitor analysis - especially when an increasing supply of commercial data bank services in the latter half of 1980's and in the beginning of 1990's made competitor information more readily available and developing technology enabled easier and quicker ways of storing, transfering and communicating competitor information. The plethora of literature on competitive intelligence gives as many descriptions and definitions of these activities as there are authors on the subject. Almost all authors establish, however, that an intelligence process consists of *a systematic process* during which "raw" data or information received from various sources is screened, compiled, analyzed and finally communicated to different parts of the organization (for a summary of existing literature and a detailed definition see a previous publication by the author, Pirttilä, 1995, p. 26-31 or also Lagerstam, 1988, p. 20-47). A summary of the typical phases of a competitive intelligence process are illustrated in figure 3.1.

In many works in this competitive intelligence literature, competitor information resources are credited with the attributes of an almost limitless asset - this is especially true in the normative competitive intelligence literature (see e.g. Bernhardt, 1993 or Fuld, 1995) that arises from the approach usually referred to as "information resources management" or IRM (The most distinguished representative of this approach is Horton. See e.g. Horton 1979 or Marchand and Horton, 1986 or Burk and Horton, 1988.). According to this approach, competitor information has an ability to expand and not diminish when used. For example, if capital is transferred, the deliverer loses or exchanges the resource in the transaction, whereas in the case of competitor information transfer both parties have after the transaction the same asset, which has thus been doubled. Furthermore, in this approach competitor information is considered as an input in systematic information processing, where the output is a strategic plan or a strategy. The process is considered to be straightforwardly rational and possible to be more or less anticipated. Nevertheless, it can be argued that this fully rational and systematic approach to competitive intelligence overlooks and ignores some properties of competitor information as a resource both from the individual and also from the organizational viewpoint.

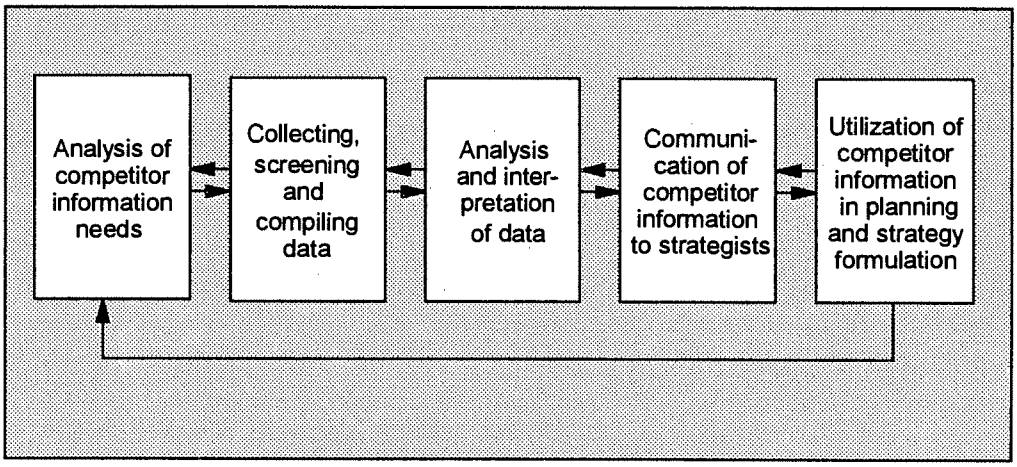


Figure 3.1. The phases of competitive intelligence process

When discussing competitor information as a resource, it is necessary to define, what is meant by resources, and also to make a clear distinction between resources and capabilities, as these concepts are often confused in discussion. A clear definition is provided by Amit and Schoemaker 1993, p. 35-36) and analogously in the case of competitor information these concepts can be defined as follows:

• ***Competitor information and knowledge resources*** are stocks of available competitor data, information or knowledge that are owned or controlled by a firm. These resources include both tangible and intangible resources, i.e. information in structured form (e.g. databases), and tacit untransferable information and knowledge.

• ***Competence or capabilities*** on the other hand refer to a firm's capacity to deploy resources , i.e. data, information or knowledge. In the case of competitor information and competitive knowledge, these capabilities refer to a firm's capacity to utilize competitor information and knowledge resources by using organizational processes to effect a desired end, i.e. ultimately an individual's or the whole organization's capacity to learn from the competitive environment. These capabilities are part of an individual's or an organizational group's competitive knowledge capability (see the concept introduced in chapter 2 (section 2.4.)).

Even if competitor information can undoubtedly be considered a resource, it has, however, properties which make it difficult to treat it in the same way as other resources. When the properties of competitor information are considered, the first problem is connected to the value of information from the organizational viewpoint. The value of, for example, capital is always connected to its amount. Competitor information obviously lacks this property because, particularly from an organizational viewpoint, information does not have an intrinsic value. The value of competitor information is inevitably connected to its *applicability* and *exploitability*. The amount of information is not essential, but crucial is, how effectively competitor information can be *utilized* in endeavoring to achieve organizational goals and objectives. Therefore, from an organizational viewpoint competitor information has value only, when it has relevance and usability for the organization and only when it can also be adjusted to meet the needs and interests of organizational participants. This entails that a new piece of information is always proportioned and evaluated from the basis of the information and knowledge already existing in the focal organization, i.e. *the schema or existing cognitive structures*. Managing competitor information and competitive knowledge in an organization can be considered to be above all a cognitive process involving interpretation of the environment and learning processes (These issues are discussed in more detail in chapter 4).

Consequently, when this applicability or usability connected to competitor information as a resource is considered, it can be concluded that a piece of competitor information is useful for an organization only *when the "right" or relevant piece of information is in the right place at the right time* (see also Cowan, 1991, p. 288-294). In this respect analogies with a flow of physical goods in a logistics chain are evident, even if comparisons with physical

resources would otherwise be misleading. Thus, not only the cognitive viewpoint but also the *communication* and *the timing* perspectives are essential and closely connected to the value and utilization of competitor information. (The issues of communication are discussed in more detail in chapter 5). For example, in strategic decision-making a piece of competitor information has relevance and value only when it has been duly communicated to the right decision-maker and when the decision-maker has perceived its value and has been able to interpret and exploit this information in decision-making.

Introna (1993, p. 36) has summarized the properties of information as a resource for a corporate organization by presenting an analogy between a logistics system and an information system. According to Introna, a logistics system involves processing materials into products, which have value to customers. Correspondingly, an information system processes "raw" data into information (by adding value) that has relevance and meaning to users. Using this analogy, the processing of competitor information can be presented in the same way as a logistics system and, at the same time the particular properties of competitor information as a resource can be taken into consideration (See figure 3.2.). The aim of this graph is not to indicate causal relationships in processing of competitor information, but rather to illustrate the process of competitor information and competitive knowledge management.

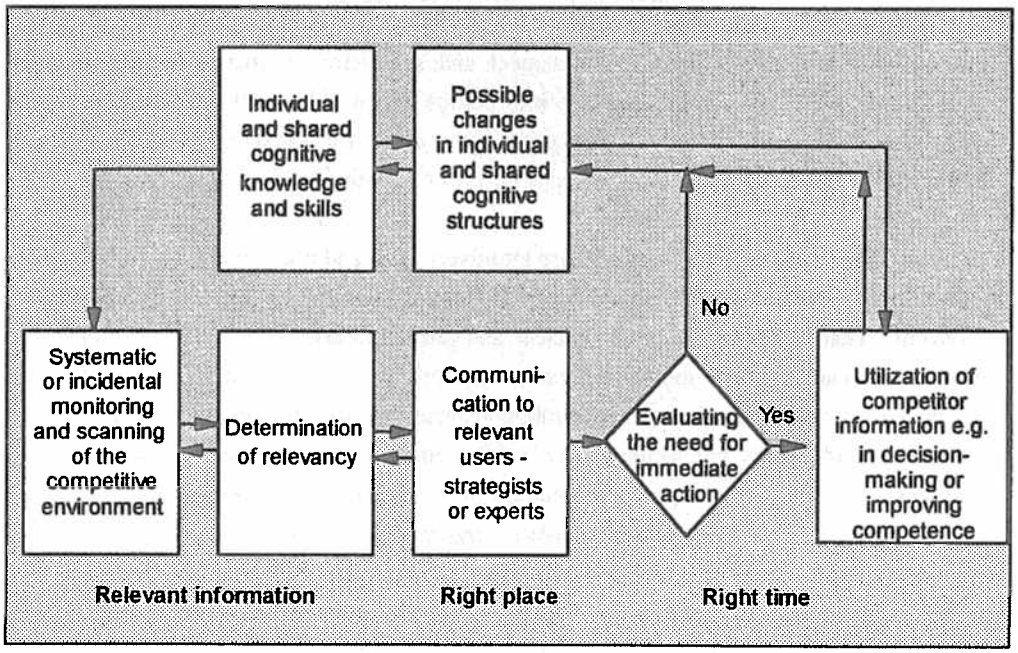


Figure 3.2. The processing of competitor information as a logistics chain.

When the processing of competitor information is examined in this way as "a logistics chain", the approach takes better into consideration the specific properties of competitor information resources than the approach usually presented in competitive intelligence literature. The competitor intelligence process as presented in figure 3.1. ignores *the role of existing cognitive structures* in information processing and *the significance of the temporal element* as it assumes that collecting data about competitors, screening, compiling, analyzing and communicating this data can be accomplished and managed more or less in the same way as whatever organizational function. Due to the cognitive problems connected to perceiving, interpreting and learning from the competitive environment and also because of the conditions dominating action in the situations where the competitor information is actually utilized, this approach describes inadequately the actual intelligence process practiced in organizations. Thus, it is evident that it is problematic to manage competitor surveillance and coordination of competitive knowledge using the same kinds of procedures for the division of labor as those used when organizing traditional functional units.

Consequently, it is evident that competitor information resources are difficult to operationalize because of the intangible nature of these resources. That is why in information science and also in the literature of information resources management distinctions between the different concepts "data", "information" and "knowledge" are made (see e.g. Pao, 1989, p. 10). This is an attempt to manage better the phenomena connected to information utilization. According to many theorists, refinement and sophistication increases and value is added when "raw" data is processed into information that is able to carry ideas and, when finally, the "raw" data is turned into processed information, i.e. knowledge that produces a change in the intellectual framework of learning within an individual.

Obviously in many cases these concepts are intuitively clear and it is difficult to make a clear distinction between these different concepts all referring to different stages of information processing. That is why in this study a clear and unambiguous distinction of the different forms of information is not considered necessary. Both the concept of *data*, which adapted to competitors would include sets and symbols representing captured evidence of activities, transactions and events connected to the competitors, and the concept of *information*, which in connection with competitors would be an instrument carrying ideas or selected and manipulated data about competitors' activities, transactions and events, are referred to as ***competitor information***. A distinction between these is not deemed necessary, because the principal aim of this study is to study organizational phenomena connected to the contact between competitor information and individuals or organizational groups or the organization as a whole. In this context it is not essential to distinguish whether information is raw data or information carrying meaning, but rather to understand the mechanisms of how

contact between data or information and individuals and organizational groups result in the acquisition of ***competitive knowledge***, i.e. processed competitor information, which has produced a change in the cognitive structure or schema of an individual actor, organizational group or, ultimately, the entire organization.

3.2. Competitor information needs and demand

Generally, the success of competitor information transfer and thus, utilization depends largely on how accurately the available information meets the *latent* or *articulated* needs of the organizational participants. The formation of motivation, competition sensitivity and consequently competitor information needs has been recognized as the first step in the competitor information utilization process, especially in the systematic competitive intelligence approach.

Competitor information need is, however, a vague concept and difficult to operationalize because needs typically can be either *conscious* (perceived) or *unconscious*. Organizational participants are therefore not necessarily able to articulate or express their true competitor information needs, even if sophisticated methods were to be employed to examine or determine these needs. Pao (1989, p. 41) presents that, in general, work related information needs may arise when an individual recognizes that his or her current store of knowledge is insufficient to cope with the task at hand or to resolve conflicts in a subject area or also to fill a void in some area of knowledge. In addition it should be noted that, in some cases, the perception of need might be *absent* in an organizational participant or a group, even if competition sensitivity and consequently perception of competitor information needs could be expected to exist in order to ensure successful performance.

The vagueness and indefinability of information needs have caused difficulties both in planning of competitive intelligence activities and also in information systems design. Due to the problems connected with defining information needs, one possible solution recommended by some authors is to concentrate on expressed preferences, i.e. information demand instead of information needs. These two concepts - need and demand - and their relationship can be specified as follows:

- ***Competitor information demand*** is an organizational group's or an individual participant's explicitly expressed request to receive competitor information or an observable pattern of competitor information utilization. Competitor information demand is always conscious and measurable and can be said to reflect an individual's or an organizational group's viewpoint.

◆ ***Competitor information needs*** are more latent in character. They can be said to represent the organizational viewpoint rather than the individual angle. Competitor information needs can be defined as those either articulated or tacit information requirements that organizational groups or individual participants must have in order to achieve organizational goals or to produce improved performance.

It has been argued that even if demand is a poor substitute, it can nevertheless be determined. Information needs are, however, ambiguous (see e.g. Pao, 1989, p. 41). The reasonableness of need assessment has also been considered questionable by pragmatic approaches because all the competitor information needed can never be supplied, either due to insufficient availability or because procuring the required information would not produce sufficient benefits compared to the costs accrued. Due to these limitations imposed by *availability* and *cost-benefit-considerations*, decision-making or problem-solving in organizations is practically always based on imperfect competitor information (see e.g. Oster, 1990, p. v-vi). Likewise, it has been argued that relying solely on articulated competitor information demand can bring considerable bias into competitor information management and this approach encourages maintenance of the status quo instead of striving to improve organizational information-processing behavior.

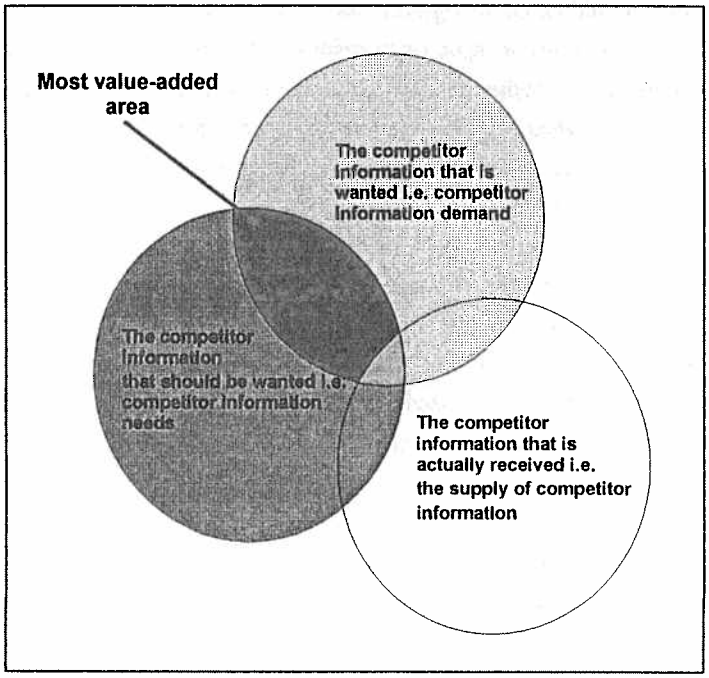


Figure 3.3. The relationship between competitor information needs, demand and supply.

The problematic relationships between competitor information needs and demand - especially in the case of management - and their connection to competitor information supply has been discussed in many works (see e.g. Ghoshal and Kim, 1986, p.56-57 or Aalto and Jarenko, 1983, p. 70-72). Typically, the relationship between these concepts has been illustrated as in figure 3.3.

In summary, it can be noted that the determination of competitor information needs approaches the utilization of competitor information from an organizational angle. The needs in fact describe what competitor information it would be beneficial to have or what information a manager or a knowledge worker should want in order to achieve organizational goals. It has been attempted to take the organizational angle into account, especially in information systems design, by developing information need assessment methods that are based on organizational aims. Thus, instead of asking managers or expert workers directly by survey methods what information they need, information needs are assessed, e.g., by analyzing the decision-making process and determining an individual's or a group's principal areas of responsibility and decision-making (see e.g. Munro, 1978, p. 36-39). In this way, all decision types and their corresponding decision-making processes are analyzed and a decision-model and the information required is derived for each decision type. Furthermore, the critical success factor method (CSF -method) developed by Rockart (see e.g. Rockart, 1979, p. 81-93 or Henderson et al, 1984, p. 1-37) determines information needs by defining those few critical areas where an organization must succeed for the business to flourish and then the critical decisions and critical information needed for these decisions can be defined.

Consequently, it should be emphasized that actual competitor information needs can be assessed fully reliably only with hindsight. What would have been beneficial to know e.g. as regards a past decision-making situation concerning a reaction to a competitor's action can be evaluated. In advance this assessment can in the worst cases be limited to mere guesswork (see e.g. Goretsky, 1982, p. 7). In addition, however sophisticated the method of assessing competitor information needs from the organizational viewpoint, it is difficult to fully eliminate the subjective bias inherent in human estimation.

Competitor information demand, on the other hand, describes, how an individual participant or an organizational group recognize or perceive their own competitor information needs and thus looks at the utilization of competitor information from either a functional viewpoint or from a totally individual, subjective angle. Competitor information demand can be more easily anticipated than competitor information needs.

Ghoshal and Kim (1986, p. 56-57) have discussed these problematic issues of need, demand and supply. They, to a certain extent, settle the discrepancies by presenting that in practice the best result can be achieved by focusing efforts on the shaded area in figure 3.3., where information demand and needs overlap but are not being met by supply, rather than concentrating on converting interpretation systems so that managers get what is really needed for the well-being of the organization. Ghoshal and Kim pass as naive the assumption that managers will realize the usefulness of the information they really need even if they did not want it in the first place. And indeed this supposition can be argued to overlook the sophistication of cognitive issues underlying a managers' or other organizational participants' ways of utilizing competitor information. The diversity of competitor information utilization patterns and motives is discussed in the next sections, 3.3., 3.4. and 3.5.

3.3. Competitor information collecting and utilization motives

As stated previously, the value of competitor information for an organization is determined by the organization's or its members' ability to utilize this information to achieve organizational goals. Thus, examining the actual ways of utilization and collection and utilization motives is one way of approaching the problem of assessing organizational competitor information needs.

By adapting the approach developed by Galbraith (1977, p. 36-39) it can be argued that competitor information utilization motives originate from task uncertainty. Galbraith defines task uncertainty as the difference between the amount of information required to perform a task and the amount of information already possessed by the organization. The greater the amount of task uncertainty the more decision-making and information processing is required of an organization and its participants. From the basis of the research problem in this study, it is interesting to note that according to Galbraith greater functional diversity, i.e. more sophisticated division of labor, is one factor that increases task uncertainty and thus the amount of information processing.

Competitor analysis and competitive intelligence researchers typically consider the ultimate motive of competitor information utilization to derive from various decision-making situations. Task uncertainties are assumed to arise in decision-making, either in the context of the strategic planning process or in operational and tactical decision-making (see e.g. Prescott and Smith, 1987, p. 411-412). Furthermore, competitor information requirements and utilization processes are typically seen as the domain of managers - either general or functional managers - and not so much the concern of subordinate experts in different organizational functions.

The empirical study by Ghoshal and Westney (1991, p. 17-31) provides an interesting argumentation into the discussion of competitor information utilization. This study was conducted in three large multinational companies and in semi-structured interviews respondents were asked about the actual usage situations of competitor analysis. This question was posed since it had been discovered in an earlier study (Ghoshal and Kim, 1986, p. 49-58) that even if managers often say that environmental intelligence is extremely important for their firms and their own jobs, they experience considerable difficulty in identifying specific instances of their own use of such intelligence. Ghoshal and Westney found that besides the principal focus of most studies and normative prescriptions - decision-making by line management and strategic planning - competitor analysis was also used in at least four additional ways:

• ***Sensitization*** of the corporate organization to threats in the competitive environment or - to use the concept introduced in chapter 2 - increasing the competition sensitivity of the organization and its participants. The information produced by competitor analysis increased the organization's perception that it is facing significant and formidable competitors to whom it must respond, i.e. the perception of vulnerability is built up. In some cases, competitor analysis was also seen to change the definition of the most significant competitor or of the most crucial dimensions of competition, i.e., it produced a change in the identification of the competitive environment.

• ***Benchmarking***, which provides a set of specific measures comparing the firm's performance and capabilities with those of its competitors on a set of key variables such as, e.g., capital investment, productivity or quality. In the same way as sensitization, benchmarking also challenges basic assumptions about the own organization and its competitors and thus possibly changes the perception of competitors and competitive environment.

• ***Legitimation*** in justifying certain proposals or decisions and persuading organizational members of the feasibility and desirability of a chosen course of action. Competitor analysis was used to legitimation especially in situations when the organization planned to take action that is in conflict with the interests and beliefs of influential internal members or external constituencies.

• Providing ***Inspiration*** in searching and generating new ideas. In problem-solving situations the managers identified what other firms have done in similar circumstances. According to Ghoshal and Westney, competitor analysis was not so much used to imitate or copy the solutions of competitors, but rather to give reference and suggest methods that can be

adapted to own organizational context (see also Park's and Smith's approach to competitive analysis, which views competitors as sources of learning, 1986, p. 1-17).

Even if the principal use of competitor analysis was found in Ghoshal's and Westney's study to be the widely advocated traditional "assisting in the formal planning process and contributing to decision-making" use, the results suggest that utilization of competitor analysis and thus also of all competitor information is much larger and wider than has been proposed in the strategic planning and management literature. It must be remembered that the findings of Ghoshal and Westney concern the utilization of the competitor analysis produced by a firm's *formal analysis* function. When the utilization of all available competitor information - whether produced by formal procedures or otherwise obtained - is discussed, it can be argued that considering competitor information merely as an input in planning and decision-making processes is too narrow a view to approach the issue. Also it can be expected that competitor information is utilized not only by managers, but by other organizational groups as well.

The empirical findings of Ghoshal and Westney can be considered pioneering and they suggest that ***task uncertainties in decision-making*** are not necessarily the only motives for collecting and utilizing competitor information. When Ghoshal's and Westney's results are examined more closely, it can be observed that one obvious motive for utilizing competitor information is the ***striving towards superior capabilities or competencies***. For example, benchmarking, which Ghoshal and Westney distinguish as a way of using competitor analysis, is not an activity that would have intrinsic value - the ultimate motive being obviously to improve capabilities or competencies. In the same way, using competitor analysis as a means of sensitization can also be ultimately aimed at improving capabilities. It is interesting to note, by the way, that the definition of task uncertainty by Galbraith obviously implicitly includes in "information required" and subsequent information processing, also the building of capabilities, and thus not only information used for decision-making. The definition at least allows such an inclusion.

These two different motives derive from the different ways of perceiving and identifying competition and the competitiveness of a firm (see the discussion presented in chapter 2, section 2.6.). When competition is perceived as a hostile or co-operative game, task uncertainty in decision-making or acute problem-solving is likely to be the basic motive for collecting and utilizing competitor information. If on the other hand firms are seen to compete for resources rather than in a product/market space, the basic motive for collecting and utilizing competitor information can be expected to be a long-term effort to build superior capabilities and competencies by learning from rivals or task uncertainty in non-acute

problem-solving like trying to solve technical problems connected to improving performance, where the aim is also to learn from rivals' solutions.

As different ways of perceiving competition are not mutually exclusive, these differing competitor information collecting and utilization motives can be expected to complement and reflect different utilization situations in different parts of the organization at different times. Building superior capabilities and competencies can, however, be expected to be the prevailing motive for collecting and utilizing competitor information at a functional level, where competitive capabilities or core competencies are often developed (see chapter 2 or also e.g. Amit and Schoemaker, 1993, p. 35). Task uncertainty in decision-making and acute problem-solving, on the other hand, can be expected to be the prevailing utilization motive in general management, as has traditionally been recognized in strategic planning and management literature.

It should be reminded, however, that in addition to these *organizational uses* of competitor information, it is also likely to be an instrument with which organizational members ***pursue influence and power.*** In spite of the negative connotation of this power aspect of information, it would be naive to ignore the fact that organizational members or different organizational groups also have individual or subgroup objectives that are sometimes in conflict with overall organizational objectives. This has been widely recognized in organization research (see e.g. Katz and Kahn, 1978, p. 623-626 or Pfeffer, 1992, p. 33-110 or Cyert and March, 1963, p. 26-34 or also Huse and Bowditch, 1973, p. 185-187). Hastings (1993, p. 67) identifies individualism and "intrapreneurism" as a characteristic feature of organizations consisting of knowledge workers (The concept "knowledge worker", here adopted from Drucker, 1977, p. 271, refers to both managers and experts) and one of the barriers to effective organizational networking and thus information transfer. Even if this *individual motive* for collecting and utilizing competitor information goes beyond the scope of this study, where the principal aim is to examine competitor information management as an organizational phenomenon, it can not be totally ignored or left unmentioned, as the consequences of "intrapreneurism" are an organizational phenomenon and affect the utilization and communication of competitor information.

Information, knowledge and "expertise" have indeed been commonly recognized as a source of power (see e.g. Mintzberg, 1973, p. 178 or Mintzberg, 1983a, 163-170 or Zand, 1981, p. x and 26-27 or Cooper et al, 1964, p. 142-144). Competitor information can in particular be expected to be a source of power for different organizational participants or groups as it is in many cases difficult to obtain. Cooper et al (1964, p. 142) argue that especially for participants at lower hierarchical levels, information and expertise is an effective way of achieving power since access to information and skills creates dependence. Also Hersey and

Blanchard (1988, p. 208-211) recognize "information power" (access to certain information) and "expert power" (an ability to understand and utilize information due to expertise) among other things as a basis of power. Furthermore, Ghoshal and Kim (1986, p. 50) present that "business intelligence" information is a means of gaining recognition from superiors or colleagues and also a means to gaining access to intraorganizational, informal communication networks.

The motives for collecting and utilizing competitor information have been outlined here based on existing research and literature. The empirical part of this study (in chapter 7) tries to give further evidence of the actual ways that competitor information is used by various organizational groups and individual participants.

3.4. Competitor information utilization patterns in managerial work

Besides developing an understanding of the different motives for competitor information collection and utilization when competitor information management and coordination of competitive knowledge is discussed, it is also essential to recognize the nature of the work processes in which competitor information is actually utilized in corporate organizations. This is necessary if a normative, "top-down" approach to competitor information management is to be avoided, as is the aim of this study.

As far as management is concerned, information utilization and information processing has been extensively studied. The discussion has above all concentrated on whether decision-making and subsequent information processing is done wholely on rational basis or whether it has any "irrational" or at least unsystematic elements. Different approaches in strategic planning and management literature can be roughly divided into two groups:

- ***Systematic and analytical utilization and processing of information***

The traditional approach to strategic planning, of which competitor analysis and competitive intelligence are derivatives, assumes that ***information is used in fully rational or at least boundedly rational, systematic decision-making processes*** either in the context of strategic planning in formulating strategies or in operational and tactical decision-making and the subsequent implementation. This approach advocates that information is used optimally in a deliberate and thoughtful manner. A manager's work process is considered primarily to consist of setting aims and objectives, planning, organizing, coordinating and finally controlling implementation. Furthermore, a manager's information needs are best provided by analytic and "structured" information, e.g. by written reports or information systems tailored to meet management's requirements. The classic works of Ansoff (see e.g. Ansoff, 1965, p. 15 - 35

or Ansoff, 1984, p. 187- 203) form a basis for this systematic approach and have been succeeded by many advocates (see e.g. Ackoff, 1970, p. 89 - 91 and p. 113 - 127 or Ackoff, 1981, p. 126 - 148 or also Huber's deliberation on managerial decision-making 1980, p. 2 - 225 or also Porter's, 1980, p. xiii - xx and p. 3 - 46, adaptation of the systematic approach to competitive strategy formulation and implementation). This analytical and systematic approach to management decision-making and information processing has often been seen to represent a normative or *prescriptive* school of thought, as an effort to improve managerial decision-making and information processing is obvious and essential in this approach.

• ***Utilization and processing of information by combining analysis and intuition***

At the other end of the continuum is an approach that could be characterized as *descriptive*, basing on empirical evidence of how managers actually utilize information or make decisions in actual organizations. The inconsistency between what seems to be required or how managers are assumed to operate and what they actually do is the principal focus of this approach. The systematic viewpoint is strongly criticized and it is argued that managers and strategists do not process information fully rationally and analytically, but instead ***combine rational reason or analysis and instinct in actual decision-making or problem-solving situations***. Furthermore, according to this approach managers prefer oral media and "unstructured" information and use collegial networks rather than information systems as information sources. The most prominent representative of this approach is Mintzberg, who analyzed in his doctoral dissertation (see Mintzberg, 1973, p. 1-217 or also Mintzberg's polemic article basing on the findings of this dissertation, 1975, p. 49-61) on the characteristics of managerial work processes in different types of organizations. Also the works of, for example, Kotter (see 1983, p. 69-89 or 1982, p. 156-167), Isenberg (1984, p. 81-90), Lord and Maher, 1993, p. 3-26), Hitt and Tyler (1991, p. 341), Kets de Vries, 1991, p. 3-24 and also McKinnon and Bruns (1992, p. 19 and p. 103-126) provide support for the findings of Mintzberg.

The contradiction in these two approaches is evident and more or less irreconcilable (for a more detailed discussion of different approaches to organizational decision-making and the nature of managerial work processes, see the previous study by the author, Pirttilä, 1995, p. 46-54). Both these approaches have, however, their justification. As Isenberg (see e.g. Isenberg, 1984, p. 81-90 or Isenberg, 1986, p. 775-788) claims, rationality can be considered *a desired aim* that a manager can *pursue* by creating rational systems and processes in the organization, e.g. by developing a formal planning system or systematic information systems, whereas decision-making in *actual managerial work* is conditioned by the requirement of simultaneity in decision-making and implementation, which brings irrational elements into managerial decision-making processes (irrationality in decision-making is extensively discussed in the "garbage can model" developed by Cohen et al, 1972, p. 1-25).

According to Isenberg, instead of accurate aims and objectives, managers have simultaneously a combination of related problems requiring attention and in their work processes managers are expected to think of how to solve these problems rather than what aims or objectives they should achieve. Furthermore, Isenberg states that situations are not sequential, discrete occurrences in managerial work , but rather portfolios of different problems, issues and possibilities, where all the elements are related. Thus, the unrelenting pace of managerial work and the limited cognitive capability of individuals to process information in decision-making situations destroy the realization of a rational optimum in actual managerial work, in spite of the aspiration for rational behavior.

A reconciliation between the contradictory approaches is also advanced by e.g. Pinfield (1986, p. 365-388), who concludes based on empirical evidence that the rational or "structured" perspectives and irrational or "anarchic" perspectives of organizational decision-making are partially complementary. The structured perspective is considered to be more appropriate in those situations in which consensus on goals exists, whereas the anarchic perspective is more applicable when there is a disagreement on goals.

Czarniawska and Wolff (1986, p. 8-12) and Brunsson (1976) also make an effort to settle the inconsistency by introducing the concept of "action rationality" and presenting that irrationality is illusory as what might seem irrational from the point of view of decision-making is highly rational from the point of view of organizational action. Czarniawska and Wolff consider the classical separation between decision-making and implementation to be artificial, as it unnecessarily imposes a purely cognitive character on decisions. They also argue that decisions and actions are mutually dependent rather than sequential processes. According to this argumentation, a decision is rational only when it prepares properly for action or implementation by building enthusiasm and commitment among organizational participants, not when it fulfills a prior criteria of rationality. In this way, in a decision-making situation managers continue to look for information confirming their previous judgments disregarding alternatives and avoiding contradictory information as this might weaken commitment (see e.g. the study by Brunsson, 1976 or also Isenberg, 1984, p. 83).

It can be expected that the actual managerial decision-making and processing of competitor information can best be described by a synthesis of the rational and descriptive approaches as outlined e.g. by Czarniawska and Wolff. As decision-making or problem solving, where competitor information is utilized, in many cases involves many organizational participants or functional groups whose preferences might be contradictory, the purely rational decision-making or information processing approaches are insufficient to explain actual competitive decision-making or competitor information processing in actual organizations. On the other

hand, concentrating solely on the descriptive approach, although supported convincingly by empirical evidence, does not reflect the decision-making or problem solving processes comprehensively, as the pursuit or aim of a rational outcome inevitably affects and constantly develops these processes. Furthermore, the descriptive approach concentrates on the status quo and thus does not provide enough constructive suggestions for improving or developing competitor information management in a corporate organization.

Therefore, a synthesis of both approaches is deemed to be the most appropriate for the purpose of this study. It is recognized in this study that a corporate organization and its participants strive for rational processing and utilization of competitor information and competitive knowledge, but due to the nature of the decision-making and problem-solving processes, this rationality can not in most cases be fully achieved, or the rational optimum might not have the chance to gain organizational acceptance and the necessary commitment. Both aspects characterize, however, the ways that competitor information is utilized.

3.5. Competitor information utilization patterns in expert work

As mentioned before, organizational decision-making, problem solving and competitor information utilization is principally considered to involve managers and not experts at lower levels of organizational hierarchy. Managers here include both generalists and functional managers, i.e. the grouping has been made according to hierarchical position. In this study it is argued, however, that also functional specialists or experts in non-managerial positions have a significant role in the way a corporate organization perceives and deals with competition and consequently manages competitor information and competitive knowledge.

An expert or a "knowledge worker" (see Drucker, 1977, p. 271-272) is usually defined as an organizational participant that has an ability to perform a complex and specialized task due to extensive education or training (see e.g. Mintzberg, 1983a, p. 164 or Mintzberg, 1983b, p. 39-41) or as someone with a large knowledge base in a particular context or a particular task (see e.g. Lord and Maher, 1993, p. 22-24). It should be noted that besides experts or specialists at lower hierarchical levels, also managers - general and functional managers alike - can also be considered as having expertise or expert skills and thus be included into the category of experts. As Lord and Maher present, top-level leaders with substantial experience in strategic decision-making may formulate strategies intuitively through the use of expert processes. Consequently, it can therefore be expected that managerial work is also to some degree characterized by the features of expert work, even if managerial work is additionally determined by conditions that other expert work does not have, as was discussed in the preceding section 3.4.

The possible rationality or irrationality of decision-making, problem solving and information processing has not been the principal focus in the discussion of the nature of expert work, but rather what competencies are required of experts and how these competencies are developed and utilized. Experts are expected to have, according to the definition, ***cognitive competence*** connected to the capability to perceive and utilize information and knowledge. It should be noted that cognitive competence obviously includes both the existence of a *knowledge structure* (schema) and also the *capabilities to utilize* information and thus transform it into action, i.e. learning. According to Lord and Maher (1993, p. 23), knowledge structures of experts match situations to responses i.e. these knowledge structures contain appropriate actions or behaviors that correspond to the problem representation.

Lord and Maher (1993, p. 20- 26) present that an "expert model" can be used to describe one type or one aspect of human information processing. This model acknowledges an expert's limited memory capacity and reliance on cognitive simplification mechanisms (as is also recognized in the discussion of the rationality of a manager's decision-making process). Also, it assumes that expertise supplements simple information processing, i.e. an expert intuitively "knows" solutions due to an existent knowledge structure while a novice requires a lot of information processing in the same situation. A key assumption of the expert model is that experts rely on a very well organized, or highly developed knowledge structures characteristic of a specific content domain, i.e. an expert is someone with a large knowledge base in a particular context or a particular task. Thus, experts can be very efficient processors of information but only in very specific social or task-related domains. Therefore, experts are not superior information processors in general, only in the domains for which they have richly elaborated knowledge structures. In addition, it is typical of experts to improve communication within their own group by using a specialized technical language for communication and having shared cognitive structures.

Indeed, ***social competence*** has been frequently considered an attribute closely connected to expertise (see e.g. Engeström, 1992, p. 3-28 or Sveiby, 1990, p. 61-62). According to Engeström, expertise can not be treated solely as a personal quality, since expertise is formed in social interaction and it is actually in a social community that new solutions or approaches are legitimated as expertise. Engeström also presents that expertise is a dynamic property that changes and develops in interaction and communication with other experts or professionals. Furthermore, Mintzberg recognizes communication networks as part of professional work (see Mintzberg, 1983b, p. 4) and presents that due to the complex nature of this work, coordination is often done through a simple, informal communication process, which Mintzberg calls mutual adjustment. Lord and Maher (1993, p. 25) emphasize the importance of having communication mechanisms that are both formal (e.g. standard

communication channels or operating procedures) and informal (e.g. organizational culture).

Both these aspects of competence related to the nature of expert work are interesting from the point of view of competitor information utilization and the coordination of competitive knowledge in a corporate organization. Following from the various definitions of expertise, in the case of competitor information and knowledge, expertise can be expected to include not only high competitor information intensity and high competitive knowledge capability (cognitive competence), but also a capability to communicate, develop and maintain interactive networks, where competitor information can be shared (social competence).

Competitor information resources and the ability to utilize these resources can be expected to be important - even critical - for experts in competition sensitive parts of the organization and these are also likely to determine the expert's position - at least his or her informal position - in the collegial intraorganizational network (i.e. the social community that Engeström refers to). Sveiby (1990, p. 61-62) discusses this by referring to "information or knowledge monopoly" as a characteristic feature of expertise.

In conclusion, it can be stated that the nature of managerial or expert work obviously creates conditions that affect the utilization of competitor information and constitute a significant factor in competitor information management and the coordination of competitive knowledge in a corporate organization. Furthermore, based on the different aspects of managerial and expert work, it can be argued that the formation of cognitive competence on the one hand and the formation of social competence and the communication patterns connected to it on the other hand are key elements in competitor information management and the coordination of competitive knowledge. These aspects are discussed in detail first in chapter 4, which concentrates on considering the formation of a shared competitive knowledge base in an organization (cognitive competence) and then in chapter 5, which focuses on examining the managerial and other expert networks in the intraorganizational sharing of competitor information and competitive knowledge.

3.6. Utilization of different competitor information sources

The role of different information sources, that competitor information is acquired from, is an essential issue closely connected to the competitor information utilization process in managerial and other expert work. Before discussing the significance of different types of competitor information sources, it is first necessary to define, what exactly is meant by an "information source". This concept is by no means self-evidently explicit in all cases. If, for

example, a sales manager gets information about a competitor's innovation from a customer and this customer has got his information from a competitor's sales representative, and assuming that this aforementioned sales manager reports his information to his superior, the managing director, it can with due course be asked, what actually is the managing director's information source. Since this study investigates the ways and processes in which competitor information and competitive knowledge is actually utilized, it is meaningful to define *an information source to be either a person, a document, an electronic database or some other source of information from which the required competitor information has primarily been retrieved.* This definition would seem appropriate as the ultimate secondary information source in the case of competitor information is always the competitor itself or direct observations of the competitor's actions.

Again, in the case of management, utilization of different information sources has been extensively researched. Typically, management's habits in utilizing various information sources have been investigated quantitatively by making direct observation, recording the usage and transactions, counting frequencies and in this way estimating the value of different information sources in managerial work. The results from these studies affirm other observations that have been made of the nature of managerial work in general. According to this research, management utilizes a combination of various information sources, where documented information retrieved from formal or *structured sources* (e.g. regular, written reports, statistics, news surveys etc.) is supplemented by information in oral form from more *informal sources* (as e.g. collegial networks). McKinnon and Bruns (1992, p. 201) present that managers use many information sources in one decision-making situation or to solve one particular problem and that the appreciation of information gained from one source increases, if corroborating information is gained from another source.

From the viewpoint of competitor information management, the empirical study by McLeod and Jones (1987, p. 87-104) provides especially interesting results. McLeod and Jones investigated not only the *volume* of information that managers get from various information sources but also managers' subjective perception of the *value* of information retrieved from different sources. The results show that in terms of volume the corporate environment and subordinates are principal sources of information for managers - in this study providing 75 per cent of the transactions. Furthermore, managers obtained the least information from superiors, which is not surprising, because the interviewees were high-positioned in the organizational hierarchy. However, McLeod and Jones discovered that ranking based on the perceived value of information differs considerably from that based on volume. Namely, even if the environment provided the largest volume of information, this information had the lowest average value. On the other hand, superiors provided the lowest volume, but the second highest value. Furthermore, subordinates ranked in this study first by virtue of both high

volume and value. McLeod and Jones also discovered that information retrieved from these sources was both in oral and written form and no strong preference for some specific media could be detected.

McLeod and Jones also note that even if all the interviewed managers had computer resources at their disposal, none based their information acquisition primarily on computer output (see also Davenport, 1994, p. 121). Rather, managers were observed to rely primarily on other persons in their organizations to provide most of their information. In this way the interviewed managers' computer output did not go to the managers directly, but, rather, was transmitted through other persons. Instead, these persons assisting management in their information acquisition did use information systems and computer output to varying degrees. McLeod and Jones conclude that the information provided by computer-based systems is just one media of communication among others. Additionally, they argue that managers do not use computer-based systems as their primary information source, but get the information from these systems through other organizational participants, e.g. subordinates.

From the viewpoint of competitor information, Svoboda's study (1990, p. 229) also provides interesting results. Svoboda presents that the higher a manager is situated in the organizational hierarchy, the more likely he is to use information that other organizational participants have processed or analyzed for him rather than collecting and processing "raw" data himself. According to Svoboda, the greatest amount of information utilized in managerial decision-making is acquired by assisting analysts, whom managers use as primary information sources. In Svoboda's study these analysts on the other hand got their information in many cases directly from computer-based systems or written reports.

Thus, these studies by McLeod and Jones and Svoboda corroborate the descriptions of managerial work that have been suggested in many studies, since according to the studies a manager in a high position in the organizational hierarchy utilizes other experts working as their colleagues or subordinates, i.e. collegial networks act as primary sources of information rather than directly written reports or computer-based systems (see the discussion in the previous sections 3.4. and 3.5). It is noteworthy that already Keegan's empirical studies (1968, p. 35-41 and 1974, p. 411-421) which were carried out in companies without computerized management information, reported same kinds of results concerning management's use of information sources.

The many efforts that have been devoted to developing management information systems and intentions to computerize managerial information acquisition (see e.g. Rockart and Crescenzi, 1984, p. 3-16 or Rockart and DeLong, 1988, p. 1-150 or Friend, 1989, p. 7-15

or Rochester and Douglass, 1990, p. 1-12) can in many cases be considered as contradictory with the results that describe the actual ways that manager's utilize various information sources. The contradiction is not, however, as irreconcilable as it would seem at first sight. The different types of information sources can be seen as complementary rather than contradictory. Some kind of a synthesis is suggested by Huber (1990, p. 53-54), who argues that organizational participants usually choose a communication medium or an information source that fits the communication task at hand. In this way, computer-based communication technology might still be used to exchange factual or technical information, whereas other media are used to elaborate on this information or to exchange other types of information. Thus, it can be concluded that even if an information system were not in any circumstances the most important source of competitor information in managerial work, this nevertheless does not make computer-based applications in competitor information management unnecessary.

Yet in the case of competitor information, informal or oral sources can be expected to play a significant role as a lot of this information is obviously gained from informal sources outside the corporate organization and is also usually in unorganized or unstructured form. According to Roush, the intraorganizational communication of general business and competitive information acquired from the corporate environment- whether in written or oral form - across departmental and division lines is done by using the informal communication network rather than using the formal organization structure (1991, p. 5-6). Indeed, improving the utilization of this communication network as a source of competitor information has been the focus of many normative investigations carried out in the United States. Even if these studies have been carried out using a methodology that can not be claimed to be fully disciplined and acceptable, the results provide, however, an interesting viewpoint to this study. According to these studies, a large amount of competitor information needed already exists inside the focal organization, i.e. organizational participants have hidden potential regarding competitor information and competitive knowledge, and this potential has been underutilized (see e.g. Fuld, 1991, p. 12-17 or Bernhardt, 1993, p. 173-177 or Herring, 1991, p. 48-52). In these studies insufficient coordination and lack of communication have been diagnosed as the causes of the underutilization of competitor information in these studies.

The findings of these normative investigations can, however, be interpreted also in a different way. It can be expected that a lot of competitor information is accumulated in a corporate organization and that organizations indeed have hidden potential. The underutilization mentioned in the investigations can, however, be assigned to either inadequate means of and opportunities for communication, or also they may be a consequence of insufficient cognitive capabilities regarding the utilization of competitor information and competitive

knowledge. These questions of accumulation and the communication of competitor information and competitive knowledge are discussed in detail in the following chapters 4 and 5.

4. THE FORMATION OF SHARED COMPETITIVE KNOWLEDGE AND ORGANIZATIONAL MEMORY

4.1. A cognitive approach to competitor information processing

In the preceding chapters, how the competitive environment is perceived and identified by various organizational participants, was discussed It was presented that this identification is a primary phase in the processing of competitor information and in the formation of competitive knowledge. Also it was argued that organizational participants can not be expected to identify the competitive environment solely by systematically and rationally analyzing events in this environment and competitors therein as prescribed in many works in the strategic management literature. It was stated that actual identification is more likely done using cognitive simplification processes in perceiving the competitive environment and resulting in the formation of organizational level knowledge structures or schemata that various organizational participants can be expected to share.

Furthermore, in chapter 3 an organizational perspective to competitor information management was introduced by first discussing why competitor information and competitive knowledge is required and also to what purposes it is actually utilized in a corporate organization. In addition, the characteristic features of the work processes in which this information and knowledge is utilized were outlined and the obvious constraints that these work processes impose on organizational participants and their ability to process competitor information and competitive knowledge were discussed. The discussion of utilization behavior was considered necessary as these patterns in fact give suggestions about the actual processes in which an organization learns from its competitors and events in the competitive environment. Based on empirical evidence, it could be established that competitor information and competitive knowledge is not used in a completely rational way in decision-making processes, but is used in a manner that in many empirical studies is referred to as "irrational" or "intuitive".

It can be argued that the extensive empirical evidence provided in literature is in large part left unexplained. However, by taking a cognitive perspective to individual and organizational information processing and the accumulation of knowledge this evidence becomes more intelligible. The cognitive approach is deemed especially appropriate in this study as this approach concentrates on the individual and collective processes by which information and knowledge is apprehended and the ways that this perception ultimately can be assumed to result in action, i.e. organizational learning.

The concepts introduced in the research of managerial and organizational cognition (see e.g. the excellent summary of existing research by Walsh, 1995, p. 280-321) are used in discussing competitor information processing and the formation of shared competitive knowledge. It should be noted, however, that these concepts are used here above all as tools to discuss the phenomena and their implications for strategic management. Thus the purpose is not to discuss the cognitive structures and processes in detail, but rather to use them as a template in describing and discussing the studied phenomena.

The aim of the next two chapters is to discuss the cognitive processes in which competitor information accrues into a corporate organization to form an organizational "memory", i.e. the processes in which competitor information is transformed into shared knowledge to form a common schema. This chapter concentrates on the accumulation of information and knowledge and the formation of organizational memory. Chapter 5 discusses the role that intraorganizational networks and communication have in managing the overload of competitor information and competitive knowledge and also their role in directing this flow of information and knowledge in an optimal way.

4.2. The formation of competitive knowledge structures on an individual level

The traditional approach to competitor analysis and competitor information gathering and intelligence in strategic management literature assumes that human information processing can be described and explained using a computer analogy. This supposition is made - even if implicitly - in the most noteworthy works in this field (see e.g. Porter, 1980 or Oster, 1990). This conception in strategic management literature was parallelled by a paradigm in cognitive psychology developed especially in the 1960's that derives from computer science (see a summary of the different approaches and developments in cognitive psychology by Miettinen, 1986, p. 63-109). According to this approach, human cognitive structures and processes are, if not similar to, at least resembling those of computers, even if individuals are recognized as limited-capacity information-processors. In this approach an organizational participant is assumed to be able to store and retrieve information in a systematic manner following more or less the same logic as computers.

This approach in cognitive psychology can be seen as an attempt to create and apply a research method with which subjective human cognitive processes could be studied objectively. Adopting this approach in strategic management research is understandable since studying information processing on an organizational level requires operationalization of concepts connected to these phenomena. The cognitive approach based on the computer

analogy to processing of competitor information provides a tool for this operationalization. It can be argued, however, that this operationalization has resulted in oversimplification of the complex phenomena connected to individual and organizational level processing of competitor information.

Even if this study does not concentrate on the problems and issues of cognitive psychology at the level of an individual, a short introduction to *cognitive processes* and *the formation of cognitive structures* at individual level is deemed necessary in order to give the necessary background to understand organizational level phenomena, which are the principal focus of this study. It can be claimed that individual level phenomena are vitally important to a cognitive theory of organizations even if they by themselves are insufficient in explaining organizational level phenomena (see e.g. Jelinek and Litterer, 1994, p. 4-6).

The concept ***cognitive processes*** or ***cognitions*** is usually defined to include all processes connected to human acquisition, processing and utilization of information - the processes of "knowing" (for definitions see e.g. Miettinen, 1986, p. 1 and p. 9-10 or von Krogh et al, 1994, p. 57). In strategic management literature, managerial, i.e. individual level, cognitions have been studied to an ever increasing extent, especially in the 1990's (see e.g. Stubbart et al, 1994, p. 1-358 or Walsh, 1995, p. 280-321 or Walsh, 1988, p. 873-896 or Barr et al, 1992, p. 15-36).

According to Jelinek and Litterer (1994, p. 7), all human behavior is based on some sort of belief, accurate or faulty, about what is going on in the immediate situation or competitive environment. Thus organizational participants do not act in a vacuum nor necessarily in what others see as their situation. Based on the ideas of Jelinek and Litterer, it can also be stated that events and actors in the competitive environment exist for organizational participants only insofar as they are conceived in their minds. To determine how to act, participants use knowledge they have previously acquired or they may seek to acquire additional knowledge they deem necessary to effective decision-making or action. Jelinek and Litterer also argue that the interpretations built of experience are of social origin, i.e. organizational participants construct meaning for events and relationships in the competitive environment through continuous interaction with other organizational participants.

In this way the cognitive processes connected to managing competitor information and the accumulation of competitive knowledge can be summarized as follows:

- ***Noticing*** and ***perceiving*** the competitive environment and ***identifying*** competitors therein. As was discussed in chapter 2, this is the primary phase in the processing of competitor information. Organizational participants and groups that have high competition

sensitivity are very alert and active in noticing and perceiving events in the competitive environment, attending to events they deem relevant and ignoring others. In perceiving and identifying the competitive environment, a cognitive simplification mechanism based on similarity is used. A basis for an organizational participant's understanding or perception of the competitive "reality" is called ***context*** (see Jelinek and Litterer, 1994, p. 15-16). Context constitutes an individual participant's perceived or subjective reality of the competitive environment regardless of whether other participants share this view.

• Context evolves over time through continuous ***interpretation*** of information about events in the competitive environment and competitors' actions. According to Daft and Weick (1984, p. 286), interpretation is a process of translating events, of developing models for understanding, of bringing out meaning, and of assembling conceptual schemes. In continuous interpretation *a schema or a knowledge structure* connected to a specific domain of knowledge evolves. Kiesler and Sproull (1982, p. 554) note that reasoning by analogy and similarity is very common in interpretation, whether normatively appropriate or not. The extent to which an event in the competitive environment or competitors' actions appears to resemble events in the past determines in part interpretation.

• The subsequent cognitive process, ***learning*** is distinquished from interpretation by the concept of *action*. According to Daft and Weick, learning involves a new response or action based on the interpretation (1984, p. 286). Indeed, there is a common consensus in research of organizational cognitions that learning always includes action (see e.g. the definitions by Fiol and Lyles, 1985, p. 803 or Daft and Weick, 1984, p. 286 or Garvin, 1993, p. 79-80) both at the individual and organizational level. It can be argued that from an organizational perspective individual learning from the competitive environment has significance only if it implies action, even if approaches to individual learning would not always include this in a learning process (see a summary of these approaches by Moilanen, 1996, p. 24-49). Furthermore, Fiol and Lyles present that learning means a process of *improving actions* through better knowledge and understanding, thus implying the assumption that learning has a positive connotation and will improve future performance.

These cognitive processes or cognitions result in the formation of **a schema** or **a knowledge structure**, which is an organized, pre-existing knowledge system about a concept or stimuli, its attributes and the relationships among those attributes that organizational participants use to interpret the competitive environment and generate appropriate behaviors (see Jelinek and Litterer, 1994, p. 16). A schema is considered to be a means with which individuals reduce the uncertainty and equivocality in the information environment they confront (see Walsh and Ungson, 1991, p. 62). Besides context, schema also determines the focus of attention in the competitive environment, i.e. what events are given attention and

what are ignored as irrelevant. According to Walsh (1995, p. 281), a knowledge structure is a mental template that individuals impose on an information environment to give it form and meaning enabling subsequent action. Furthermore, according to Miettinen (1986, p. 104) all concepts connected to schema are in fact an attempt to describe the fact that in perceiving, understanding and interpreting the environment an individual's previous knowledge and experience organized into some kind of structure is always involved, facilitating the utilization of new knowledge. The relationships among the cognitive processes of perceiving, interpreting and learning and the cognitive structures are outlined in figure 4.1. The purpose of the figure is to illustrate these concepts as a basis for understanding the phenomena connected to managing competitor information and knowledge, although the author is aware that this illustration clearly oversimplifies the complex cognitive processes and structures and relationships between these.

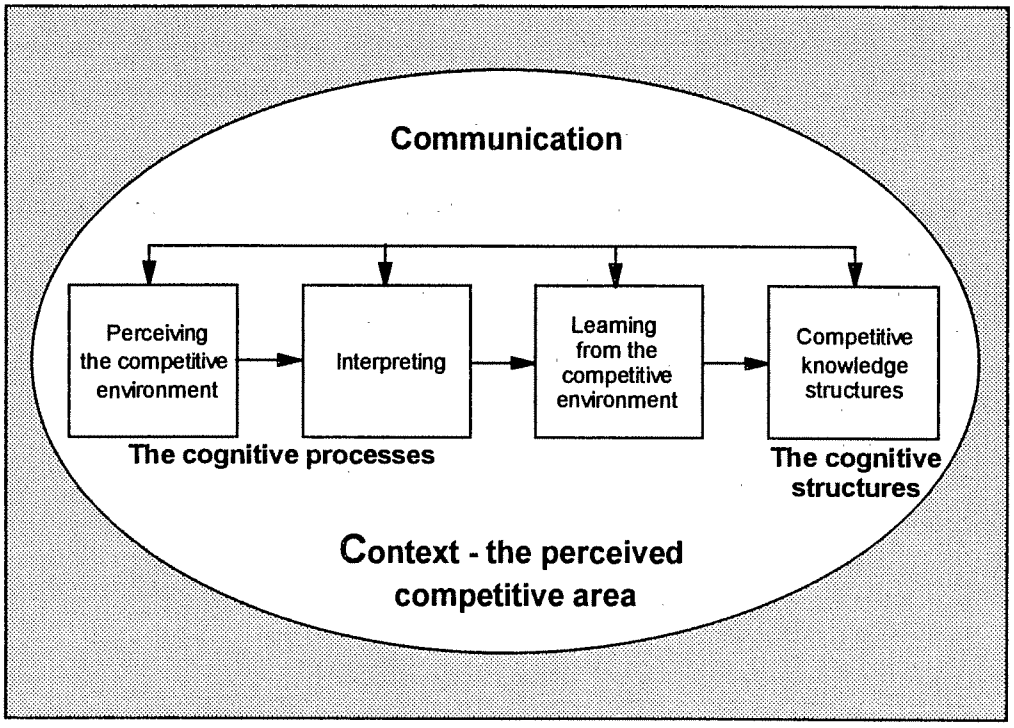


Figure 4.1. Relationships among cognitive processes and structures

According to Jelinek and Litterer, a schema is based on the human capacity to categorize. In a schema information is grouped into something like a central tendency or a prototype (see Jelinek and Litterer, 1994, p. 17). Lord and Maher (1993, p.17) describe schema as *hierarchically organized sets* of information that enable a person to process much more information than would be possible without mental structures (see also Porac and Thomas, 1990, p.

227-228). The use of schemata allows much more information to be stored and utilized in decision-making or problem solving situations.

According to Walsh (1995, p. 282), a schema is always connected to a specific information domain, i.e. the knowledge structure is always connected to particular expertise or knowledge content and is not general in nature. Furthermore, Jelinek and Litterer (1994, p. 17) describe schema as a relatively stable construct, if not completely static, whereas perceived reality, i.e. context, is constantly evolving as events unfold. According to Walsh (1995, p. 283), very little psychological work has examined, how knowledge structures change once they are created. It is widely assumed that this inertia of knowledge structures can lead to biases that have detrimental effects on decision-making (see e.g. Barnes, 1984, p. 129-137 or Porac and Thomas, 1990, p. 237) and that an inevitable byproduct of knowledge structures is that organizational participants sometimes act on "impoverished views of the world" (Weick, 1979, p. 68). Walsh (1995, p. 282) notes that schematic information processing can be at once enabling and crippling (see also e.g. Barr et al, 1992, p. 18-19).

In general it can be assumed that prior knowledge, i.e. a schema connected to a specific domain - in this case competitor information - facilitates adoption of new knowledge. Thus ***cognitive capabilities or cognitive competence***, i.e. abilities to perceive, interpret and learn from the competitive environment, become more sophisticated when the sophistication of the corresponding knowledge structure increases. Cognitive capabilities or cognitive competence describes an organizational participant's ability to collect and transform competitor information and knowledge into action in order to achieve a given organizational aim. Sophisticated cognitive competence, thus, results in learning, which ultimately improves performance. Both the sophistication of the schema connected to the domain of competitor information and also the sophistication of the cognitive competence can be described by a concept introduced in chapter 2, i.e. competitive knowledge capability.

4.3. The formation of competitive knowledge structures on an organizational level

It can with due cause be asked, whether individual level cognitions can be extended to organizational level, i.e. whether supraindividual cognitive processes or knowledge structures can in general be expected to exist. According to the summarizing review of Walsh (1995, p. 280-321) this has been a topic widely discussed already for some time by various researchers and it has also been an issue arousing a lot of controversy.

Furthermore, it has been disputed that if organizational level knowledge structures in fact exist, can it be assumed that organizational cognition is the mere sum or an aggregate of

individual level cognitions or can it be expected to be something else. Thus in general it has been discussed, what are the relationships of individual and organizational level cognitive processes and knowledge structures. Some ambitious attempts have been made to describe these relationships, e.g. in the recent study of organizational learning by Moilanen (1996, p. 1-199), but these studies, however, do not provide or even aim at providing a concise explanation of these relationships.

From the viewpoint of this study, the possible existence of collective knowledge structures and research of their properties is of utmost interest, as ultimately the unit of analysis in this study is the whole corporate organization and individual participants with their knowledge structures are interesting targets of study only as members of an organization. Furthermore, it is evident that the possible existence or non-existence of collective knowledge is a vital question in managing competitor information resources and in the coordination of competitive knowledge. Thus, such questions as whether organizational participants identify and interpret the competitive environment in the same way and whether there is a collective, organizational memory that retains competitor information and knowledge and moreover whether this can be expected to result in collective learning are crucial in this study.

The researchers advocating the existence of collective cognitive processes and organizational level knowledge structures use two arguments in particular to support their reasoning:

- ***The stability of organizational knowledge.*** Some organizational level phenomena form emergent and stable patterns that will persist regardless of individual organizational participants. Thus, although all the original members of the organization may be replaced over time, certain patterns can be expected to endure. Individuals may, e.g., leave an organization or an organizational group, but the knowledge of the organization or the group does not necessarily vanish (see e.g. Jelinek and Litterer, 1994, p. 6 or von Krogh et al, 1994, p. 60 or Walsh and Ungson, 1991, p. 61).

- ***The existence of goal-directed collective behavior.*** In an organization there is purposeful, collective behavior, even if individual participants or subgroups may have inconsistent aims. It is only through shared cognitions or knowledge structures that organizational participants are able to achieve coordinated action. Thus, if there is collective, coordinated behavior, it can also be expected that there are corresponding cognitive processes and collective knowledge structures (see e.g. Jelinek and Litterer, 1994, p. 3 and p. 14-15) enabling the implicit or explicit coordination of this behavior.

Walsh (1995, p. 286-287) has produced a summary of different approaches considering cognitions both at managerial, i.e. individual, and also at group or organizational level. Judging from the large number of references that Walsh presents, organizational cognition has been a legitimate target of study for some time. According to Walsh, the idea that a collectivity of individuals can serve as a repository of organized knowledge and that this repository can act as a template for interpretation and action has been identified by many researchers. This idea and the assumption that organizational level cognitive processes and knowledge structures are likely to exist is also accepted in this study, as this creates a way of explaining the otherwise inexplicable facts presented in the argumentation above. The empirical part of this study presented in chapter 7 tries to achieve further understanding of the formation of group and organizational level knowledge structures and for its part seeks further confirmation for the existence or non-existence of these organizational level phenomena.

In various approaches to organizational knowledge structures, these collective schemata are considered to be above all a result of social activity, i.e. interaction with other organizational participants. Indeed, organizational level cognitions are many times referred to as "social cognitions" (see e.g. Walsh, 1995, p. 305 or von Krogh et al, 1994, p. 59). It should be remarked that this aspect has also been noted in studies of the nature of expert work (see chapter 3, section 3.5), which argue that expertise is not solely an individual quality, but is formed in social interaction and that new solutions or knowledge is legitimated as expertise in a social community (see Engeström, 1992, p. 3-28 or Sveiby, 1990, p. 61-62), when a consensus of new knowledge is achieved.

Thus in conclusion, it can be stated that organizational members are expected to identify individual competitors or strategic, competitive groups in the corporate environment, create meaning for occurrences in this environment and develop their interpretation and corresponding action over time above all in *constant relationship* and *communication* with other participants in the same organization. A collective, organizational knowledge structure housing knowledge in a way transcending the cognitive facilities of individual organizational participants is assumed to be the outcome of this interactive process (see Walsh, 1995, p. 286). Thus on the one hand, as argued by Jelinek and Litterer (1994, p. 5-6), organizational actors are conditioned in their individual cognitions by their membership in the organization, on the other hand organizational level cognition results from the process of interaction between these organizationally conditioned, individual level cognitions. Thus *intraorganizational communication* is expected to be the *mechanism* through which organizational level knowledge structures are formed and developed from individual level schemata. These issues of communication are discussed in more detail in the next chapter.

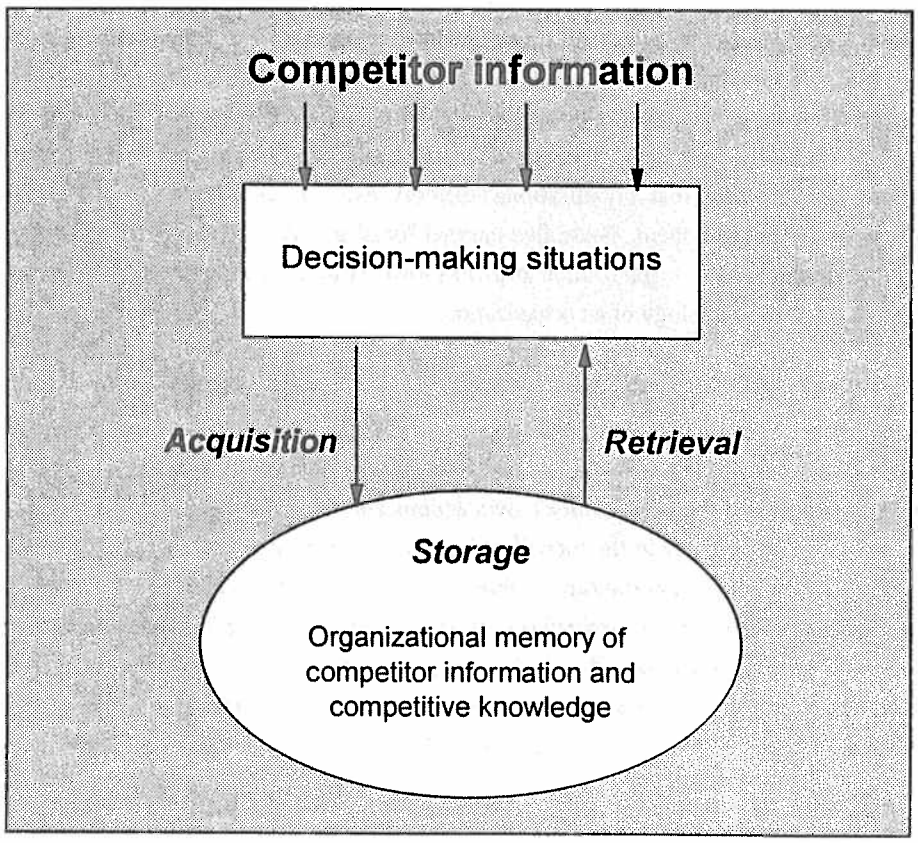
If it is accepted that organizational level knowledge structures are formed in interaction between various individual participants or organizational groups, this provides some interesting implications. For the first, it is obvious that in order for an individual participant's, or one subgroup's, knowledge to evolve into organizational knowledge *it must be shared*, i.e. a sufficient number of organizational members have to have the opportunity to get acquainted with this new knowledge. As von Krogh et al point out, knowledge at one point in time does not connect with new knowledge at a later point in time, unless there are sufficient ***"knowledge connections"*** available, i.e. the potential for individuals to convey messages about their observations i.e. sufficient means of communication (see von Krogh et al, 1994, p. 61). Also it is a necessity for organizational knowledge and the subsequent collective schema to develop that a sufficient number of organizational participants reach some kind of agreement on interpretations of their individual and collective experiences, i.e. ***achieve a consensus*** (see Daft and Weick, 1984, p. 286).

The question of whether organizational level knowledge structures are the "sum" or an "aggregate" of individual knowledge structures, i.e. what is the relationship between individual and organizational knowledge structures, is not deemed relevant from the point of view of this study - however interesting or important this controversial issue might be for research of organizational cognitions. For the purposes of this study, it is sufficient to focus on the interaction between individual and organizational knowledge rather than discussing whether the latter is an analogy of the former. Thus, this study concentrates on an effort to understand the process itself, i.e. that *organizational competitive knowledge structures develop in a process of sharing knowledge and reaching a consensus*. The emphasis in this study is getting a comprehensive view of the actual ways that competitor information and knowledge is managed and exploited in a corporate organization and not so much on going into a detailed discussion of the content or structure of these knowledge structures.

4.4. The formation of organizational memory as a location of competitive knowledge

Utilization of both individual and also shared, organizational knowledge entails that there exists some kind of organizational level "memory", where previous knowledge and experience can be stored and retrieved. Obviously, without this kind of a mechanism, organizational competitive knowledge could not be exploited in decision-making or developing competitive capabilities. From the point of view of this study it is important to understand the basic processes by which an organizational memory functions and also to contemplate, where organizational memory is actually located.

Organizational memory has been discussed by Walsh and Ungson (1991, p. 57-91), who emphasize in their definition the distinction between "information" and memory, as these concepts can be mistakenly interchanged in the context of acquisition and retrieval. (It must be noted that Walsh and Ungson do not make any distinction between data, information and knowledge, but in their elaboration it is implicitly clear that they refer to both data and information as "information".) Elaborating along the lines of Walsh's and Ungson's theory it can be presented that competitor information refers to cues perceived by individuals as reducing equivocality in decision-making situations and organizational memory on the other hand refers to stored information about a decision or problem solving stimulus and the response that, when retrieved, comes to bear in present decisions. Thus, the difference between information and memory lies in their temporal qualities and also in their uses in organizations (Walsh and Ungson, 1991, p. 61).



4.2. The functioning of organizational memory.

Advancing and extending on these notions presented by Walsh and Ungson, the functioning of organizational memory as a location of competitor information and competitive knowledge can be illustrated as in figure 4.2. Again this figure should be excused for being merely an oversimplification of complex processes and phenomena, but this wrongdoing is deemed justified for reasons of clarity.

Organizational memory can be described as some kind of retention structure (see Walsh and Ungson, 1991, p. 61-62), to which ***acquired*** competitor information and competitive knowledge is directed, in which it is ***stored*** and from which it can also be ***retrieved***, when necessary. Thus, the processes of acquisition, storing and retrieval, which are crucial in the utilization of information and knowledge, are included in the concept of organizational memory. In this way, the formation of organizational memory can be seen as *a retention mechanism for competitor information and competitive knowledge* that an organization possesses as a result of individual and collective cognitive processes.

Walsh and Ungson argue that organizational memory is both an individual and organizational level construct. Information and knowledge that is exploitable from the organization's point of view can be embedded at either levels, i.e. within individuals or in systems and artifacts. When organizational memory is discussed, each of these levels must be considered. Walsh and Ungson state that organizational memory exists in five retention facilities or "storage bins" as they call them. These five internal "bins" are individuals, culture, transformations that occur in the organization, organizational structures and the actual physical structure or workplace ecology of an organization.

Adapting Walsh's and Ungson's elaboration in this study, it is interesting to note that organizational memory containing information and knowledge about how competitors and the competitive environment is perceived, various interpretations about events and occurrences in this environment and the organization's own actions and solutions connected to these experiences, is located not only in the individuals' capacity to remember and articulate experience, but also in the organizational culture or different roles that are part of an organizational structure. This organizational storage of competitor information and subsequent knowledge has, however, often been neglected in discussion of competitor surveillance and competitor analysis in strategic management literature, where acquisition, storage and retrieval of competitor information and an analysis of competitive environment is often more or less assumed to start from a zero position. This has in many cases lead to misleading conclusions and prescriptions of how to organize competitive intelligence and competitor analysis activities.

It is also noteworthy that, according to Walsh and Ungson, individuals as well as organizations keep records and files as *memory aids* (see Walsh and Ungson, 1991, p. 63). These facilities are thus not directly a construct of organizational memory, even if in colloquial discussion they are very often referred to as such. The distinction between an information system and organizational memory is very apt to confusion, as information systems include a technical mechanism of information retrieval. When discussing the problems connected to design and utilization of information systems, in many cases this relatively new technology has been given a more significant role and emphasis than it deserves. It should be realized that these difficulties observed in many empirical studies of management information systems and managerial work are not necessarily a result of inadequate or inappropriate design of these systems. These problems should be approached more broadly as difficulties in cognitive capabilities, i.e. in the whole process of competitor information acquisition, interpretation and learning in managerial and expert work. These difficulties of exploitation are present whatever memory aid system is discussed.

From the viewpoint of this study it is also interesting to note as Walsh and Ungson (1991, p. 69-70) state that information and knowledge can be retrieved from these organizational "storage bins" either in a controlled manner or also automatically and intuitively. According to Walsh and Ungson, one example of automatic retrieval occurs when present behaviors are based on previous practices and procedures that have been shared and encoded in transformations or culture. In most cases the competitive knowledge stored in organizational systems and artifacts is tacit in nature and not articulable. This makes it more difficult to exploit and transfer this kind of competitive knowledge in a conscious and deliberate manner.

5. THE ROLE OF INTRAORGANIZATIONAL COMMUNICATION IN COMPETITOR INFORMATION MANAGEMENT

5.1. Network approach to organizational communication

As was discussed in chapter 4, the sharing of competitor information and competitive knowledge is the mechanism with which individual knowledge is transforming and developing into a collective, organizational level knowledge structure. The process of sharing or communication of competitor information and competitive knowledge is vital, when utilization of this information and knowledge is considered. As discussed before, the utilization angle is crucial from the organizational viewpoint, which is the principal focus of this study. The aim of this chapter is to discuss intraorganizational communication and especially the role that intraorganizational networks have in this communication as a means of managing the overload of competitor information and competitive knowledge and their role in directing this flow of information and knowledge in an optimal way.

Organizational communication can be viewed and analyzed using various approaches (see Johnson, 1992, p. 99-113). These basic differences in perspective more or less reflect the various models and approaches of viewing an organization and organizational behavior in general (for various approaches see e.g. March and Simon, 1958 or Huse and Bowditch, 1973, p. 27-45 or Katz and Kahn, 1978 or Galbraith, 1977, p. 1-32 or Mintzberg, 1983b). Some approaches concentrate on examining communication in the formal organization hierarchy - vertical or horizontal - thus focusing on the intentional nature of communication and transfer of information and knowledge and in this way providing also suggestions and prescriptions for improving communication. Another approach - network analysis - concentrates on studying the overall configuration of communication relationships - both formal and informal - within an organization. In addition, intraorganizational communication between actors has been studied by examining communication intensity and by investigating how organizational culture shapes the communication patterns of various organizational actors (for a summary of different approaches to organizational communication structure and communication see Johnson, 1992, p. 99-113). These different approaches should not be seen as mutually exclusive, but rather as complementary ways of viewing organizational communication. The need for multiple approaches is obvious, as different approaches have different strengths and weaknesses when studying different types of communication - the most appropriate approach depends on the phenomena studied.

For the purposes of this study the network approach was considered to be the most appropriate way of investigating intraorganizational communication, since communication of competitor information and transfer of competitive knowledge can be expected to have specific features that can best be described by this approach. The principal reasons for concentrating on this approach in this study can be presented as follows:

- *A lot of competitor information can be expected to be communicated through the channels of the informal organization* instead of keeping along the lines of the formal organization structure. This is because competitor information is in many cases difficult to acquire - a scarce resource exchanged in confidential relationships and thus an instrument with which organizational members pursue influence and power.

- Competitor information is acquired into an organization from the external environment. The ultimate source of this information is always either the competitor itself or observations of the competitor's operations. This is why in many cases a lot of this *information can not be put into structured form and is communicated orally* through the channels of the organizational networks.

- One of the focuses of this study is to identify the possible competitor information potential that a corporate organization possesses but which according to some studies is underutilized. It can be expected that if this hidden potential exists, *underutilization is at least partially a result of insufficient vertical or horizontal networking* between organizational actors.

- A plethora of empirical studies indicate that it is typical for both managerial and expert work to develop and utilize *a collegial contact network* covering both external and intraorganizational sources of information. It can be expected that competitor information is communicated and competitive knowledge transferred in this network.

The strength of the network approach is that it can develop rich descriptions of individual dyadic relationships and then reveal the overall pattern of these linkages across an entire organization and its parts (see Johnson, 1992, p. 106-109). Furthermore, the network approach includes both formal and informal and both vertical and horizontal networks, which are all interesting from the viewpoint of this study. The network approach has, however, been criticized for ignoring e.g. context, complexity and the multiplex nature of relationships between the actors and also differences in status and the temporal stability of relationships (see Johnson, 1992, p.104 and p.109). Furthermore, the network approach does not take into consideration the intensity of the relationship between the actors.

Even if the intensity of relationships affects the communication of competitor information and transfer of competitive knowledge inside the organization, studies of utilization and exploitation of competitor information and competitive knowledge indicate that from the organizational viewpoint the *quality* of the communication is more essential than the *quantity* of communication (see e.g. Ghoshal and Westney, 1991, p. 17-31). Competitor information acquired in an occasional contact can be as significant as information gained in a more intensive communication relationship. Organizational culture as an element shaping communication structures and habits was excluded from the scope of this study, as the principal aim is to achieve a holistic view of communication phenomena and not so much to analyze the underlying factors.

Also it should be noted that even if network approach is used in discussing intraorganizational communication, this study does not extend to detailed network analysis. As already mentioned in chapter 1 the principal aim of this study is to look at competitor information and competitive knowledge management from the viewpoint of strategic management and the focus of the study is thus limited to discussing questions relevant in this respect.

5.2. The formation of organizational communication networks

According to Nohria and Eccles (1992a, p. 288), in a broad sense the structure of any social organization can be thought of as a network, which represents the structure of ties among roles, individual persons, organizational subgroups or organizations (see also Goldhaber, 1993, p. 149). In literature the network approach is discussed both in connection with organizational communication (see Johnson, 1992, p. 99-113 or Nohria and Eccles, 1992b) and also as referring to a new type of organization structure and organizing mode - fluid, flexible and cutting across various intra- and interorganizational boundaries - radically different from the Weberian bureaucracy (see e.g. Baker, 1992, p. 397-429 or Gargiulo and Benassi, 1993, p. 1-25 or Bovasso, 1992, p. 86-106 or Zand, 1981, p. 57- 88).

It is probable that the increasing interest in adopting a network perspective of organizations and organizational communication has developed especially as a result of the growing size of organizations, which has made the information-processing capacity of the formal organizational communication channels insufficient. When the size of the organization becomes big enough, the formal organizational hierarchy can no longer secure sufficient communication by increasing middle management (for discussion of middle management's mediating role in organizational communication see e.g. Hart and Banbury, 1994, p. 256 or Bartlett and Ghoshal, 1993, p. 44 or Daniel, 1983, p. 225) or by relying on other formal channels of communication.

When the network approach is adopted to discuss organizational communication, very often intraorganizational networks are referred to as representing merely the informal channels of communication between various actors and the horizontal or lateral communication relationships between the actors. This focus is in a way understandable as the formal approaches that earlier have dominated the discussion have neglected the significance of informal networks and lateral relationships in organizational communication. It should be noted, however, that a network can operate vertically as well and can also be part of the deliberately planned formal organization structure (as is indeed the case in the new type of network organization).

An excellent comprehensive description of the forming of network relationships inside an organization is provided by Mintzberg (1983b, p. 19-22), who presents five views of how an organization functions. This grouping also gives notions of organizational communication and communication structures. Adopting some of Mintzberg's views and elaborating them further from the viewpoint of the communication of competitor information and transfer of competitive knowledge, four network types can be presented. Describing organizational communication networks by these four types is an attempt to understand organizational communication phenomena and create a conceptual basis for discussing the functioning of these communication networks:

- *The formal communication network* describing the formal flow of competitor information within an organization. This communication is determined by the deliberately planned organization structure, formal authority, agreed division of labor and corresponding roles in communication.

- *The informal communication network*, which establishes some kind of a "sociogram". Informal intraorganizational networks supplement and circumvent the formal channels of communication creating unofficial centers of power inside the organization.

- As one particular type of the first two networks, it is necessary to distinguish *a communication network forming in various work constellations*. This communication network is forming as people in the organization cluster into cooperative or collegial groups to get their work done (see also Brass and Burkhardt, 1992, p. 191-215). A motive for establishing this kind of a temporary or permanent work constellation can be, e.g., the need to develop a new product.

- *Ad hoc communication network* that is forming as a result of relationships established temporarily for a specific decision-making situation. This kind of communication can arise when

different actors and organizational groups have to reach consensus on a stimulus in an acute or exceptional decision-making situation.

It can be argued that in order to get a comprehensive view of organizational communication connected to the flow of competitor information or transfer of competitive knowledge, all these network types should be considered. Organizational communication is clearly a combination of all these networks and none of these network types is sufficient in itself to describe or explain all intraorganizational communication phenomena and thus they should above all be seen as mutually supplementary.

It should be noted that being in a central position in an intraorganizational communication network provides power and authority - either formal or informal - compared to other organizational participants, as these actors have more information sources and resources at their disposal (see e.g. Brass and Burkhardt, 1992, p. 191-215 or Nohria, 1992, p. 9-10 or Pfeffer, 1992, p. 111-125). The power aspect is likely to be present in all types of networks regardless of whether they are based on formal authority, work constellations or friendship.

5.3. Networks as a means to manage competitor information overload

Intraorganizational networks can be recognized to have two principal tasks in organizational information processing. On the one hand vertical and horizontal networks are necessary ***to ensure*** that all concerned individuals and organizational groups have ***unrestrained access to the information and knowledge*** that is needed either in carrying out their regular duties and in ad hoc decision-making situations. On the other hand intraorganizational networks are obviously an important ***screening device, having the task of restricting the excess volume of competitor information and knowledge*** available in the external or internal corporate environment and ***calling attention to relevant, key bits of information*** and only these - keeping participants up to date on developing opportunities or warning of possible threats (see e.g. Burt, 1992, p. 62-63 or McGrath et al, 1995, p. 264-265), but at the same time saving them from irrelevant information.

In essence an intraorganizational network is, for organizational participants, an efficient means of managing the overload of information that they are overwhelmed by. As discussed in previous chapters, individuals and organizations use cognitive simplification mechanisms in perceiving and interpreting the corporate environment and in focusing their attention, since there are limits to the volume of information that can be processed. In much the same way, they use communication networks to reduce the amount of information they have to process themselves, but at the same time enhance the range of information sources at their

disposal. As Walsh and Ungson (1991, p. 80) present, networks evolve primarily to reduce external transactions, achieve economies of scale and scope, and to facilitate the sharing of information.

In this way, organizational participants are able to make use of the information processing capacity of other members of the communication network and exploit the knowledge and learning that is embedded in their views and estimates. Thus, in fact, by using a network of contacts an individual or organizational group can increase their information processing capacity by "delegating" some screening tasks to other members in the network. As many empirical studies of managerial and expert work indicate (see the discussion in chapter 3, sections 3.5 and 3.6) this is the method that organizational participants actually use in many situations in their information acquisition and information processing activities. It is also noteworthy that social communication networks are characteristically reciprocal and symbiotic, especially informal or horizontal networks.

Burt (1992, p. 63) refers to intraorganizational networks as a solution to the "logistics" problem of information flow within an organization. The task of networks is to ensure that ***the right information is in the right place at the right time*** (see figure 3.2. presented in chapter 3, section 3.1.). As each actor can be in a limited number of places within a limited amount of time, the existence of a communication network enhances and makes it possible to gain relevant information - at the right time. Networks are essentially one means of dealing with the temporal element connected to utilization of competitor information and competitive knowledge. Burt recognizes timing as a significant feature of the information received through the network and claims also that communication networks provide "early warning", i.e. that networks are able to produce information faster than other means of communication.

It is evident that utilization of these networks makes it possible to communicate information that is difficult to put in structured form or that is not desirable due to reasons of confidentiality to put into structured form. The exploitation of tacit knowledge is also possible to a certain degree as actors can make use of other participants' knowledge without actually having to articulate or "internalize" it (see the discussion of knowledge types and transfer by Hedlund, 1994, p. 74-78).

In this way, intraorganizational communication networks can be seen above all to *supplement* the systematic transferring of competitor information or competitive knowledge represented by, e.g., written reports produced by competitor analysis and competitive intelligence functions or information systems built to provide competitor information. Networks of social communication cope with the holes in information acquisition that can not be dealt with

by systematic scanning and analysis. From the viewpoint of competitor information and competitive knowledge management they are especially interesting as this area has not been discussed as much as the efforts to systemize collection of competitor information and analysis of competitors and the competitive environment and also because this area is likely to have underutilized potential, which could be better made use of, if the phenomena connected to this type of communication were understood.

5.4. The significance of weak ties in communication of competitor information and transfer of competitive knowledge

As was discussed earlier, the intensity of the relationships between organizational actors is likely to vary. All actors can not be expected to have equally strong relationships with each other in the intraorganizational network. Goldhaber (1993, p. 150) e.g. presents that participants are likely to build groups which consist of three or more individuals, the majority of whose interactions are with each other. According to Johnson (1992, p. 110), the obvious weakness of the network approach in organizational communication is that it more or less ignores the varying strength of relationships and tends to approach relationships in a binary sense: either relationships exist or they do not. He also points out that absence of relationships between two organizational groups may be as fruitful a target of study as examining existing relationships.

Granovetter (1973, p. 1360-1380) has made a significant contribution to the network approach by presenting a theory of weak and strong ties and arguing that weak ties are often more important than strong ties in understanding certain network-based phenomena in an organization. According to Granovetter, organizational participants tend to build clusters, which bond together similar people into reciprocal relationships with strong ties. The strength of a tie is characterized as a combination of the amount of time, the emotional intensity, the intimacy or mutual confiding, and the reciprocal services. Thus, the information obtained in strong ties within these clusters is more likely to be redundant. In addition, every participant in these clusters is likely to have access to similar information and through continuous sharing of information they are likely to have a shared, collective knowledge structure, which can be expected to be very homogenous. A network of strong ties is in this way unlikely to be a channel for new or contradictory ideas and innovation.

Granovetter presents that weak ties serve as "bridges" between such parts of the organization that are otherwise disconnected. Thus, weak ties are essential in communication between different clusters, where participants are bonded to each other with strong ties. Granovetter argues that a weak tie is likely to provide new information from dissimilar parts of the system. Also Burt (1992, p. 72) states that weak ties are a critical element of social

structure in organizations and that they are essential to the flow of information that integrates otherwise disconnected social clusters into a broader entity.

When the intraorganizational flow of competitor information and transfer of competitive knowledge is considered, Granovetter's theory of weak ties provides an interesting insight. As competitor information ultimately comes into the organization from the external environment through various competition sensitive groups, it can be expected to be scattered around, possessed by various disconnected groups in various parts of the organization. In this way *weak ties are likely to be a critical element in managing the flow of competitor information* in a corporate organization. The absence of weak ties between different clusters or groups that have competitor access potential and thus high competitor information intensity or high competitive knowledge capability leads to underutilization of organizational competitor information resources. In fact, this underutilization or "hidden" potential referred to in many studies in the competitive intelligence literature is very likely to be at least partially a result of an absence of sufficient "bridges" between various organizational clusters, i.e. absence of weak ties.

When discussing the role of weak ties in managing competitor information and competitive knowledge and especially their possible capability to convey this kind of information and knowledge between various disconnected groups, it should be remembered that there are other restraints in communication and transfer of knowledge that affect the final outcome. As has been discussed in the previous chapters, prior knowledge, i.e. a schema connected to competitors and the competitive environment, in fact facilitates adoption of new knowledge. Thus, it should be noted that competitor information and competitive knowledge can be transferred through weak ties only if the receiver in another cluster is able to understand - perceive or interpret - the meaning of the new information. Therefore, it can be argued that weak ties are a possible bridge in conveying competitor information only if both parties in the transaction have sufficiently similar knowledge structures so that they are able to "speak the same language" (see e.g. Ruekert and Walker, 1987, p. 7). Von Krogh et al (1994, p. 61) argue that the development and formation of organizational knowledge is enabled by "languaging" in a way that participants in different groups develop between themselves distinctions of different concepts and ideas connected to observations and phenomena that they face. It can be argued that only when various organizational groups succeed in this languaging, can they be expected to be able to exploit the potential that weak ties between different clusters provide.

These problems connected to communication and conveying can be expected to emerge especially in transfer of competitive knowledge, even if in the case of competitor information similar restraints can occur as well. If knowledge can be articulated, it is obvious that

transfer becomes easier. It can be assumed that weak ties are more likely to have potential in communication of competitor information and articulable knowledge than in transfer of tacit knowledge. It can be presumed that conveying tacit competitive knowledge requires the existence of strong ties and collective knowledge structures. However, in spite of these evident restraints in the utilization of weak ties, they provide an interesting possibility when discussing attempts to improve the exploitation of competitor information resources likely to be scattered among different competition sensitive groups within a corporate organization. It can be assumed that development efforts in this area are likely to yield the most profitable outcome.

5.5. The role of lateral relations in communication of competitor information and transfer of competitive knowledge

Even if all types of networks presented in section 5.2. are significant in the communication of competitor information and competitive knowledge, horizontal communication in lateral networks deserves particular attention, even if overemphasizing its role should be avoided. As it is evident that different functional groups, especially those occupying boundary positions, have an important role in competitor surveillance and the processing of competitor information, ensuring sufficient horizontal communication between these groups is crucial for efficient utilization of competitor information and competitive knowledge. Furthermore as work constellations between various functional groups in separate parts of the organization do not necessarily exist and also as relationships between these groups are not necessarily determined by the formal organizational structure, it can be assumed that the possible obstacles in communication of competitor information and transfer of competitive knowledge are likely to be found particularly in this area.

Lateral relations can be defined to consist of the processes that bring together persons from different parts of the organization into a collaborative effort in order to deal with decision-making situations (see e.g. Galbraith, 1977, p. 111-129). The need for lateral relationships arises, when the existing formal organization is not able to cope with the complexity or uncertainty of emerging problematic issues, or when middle management's mediating role as an information broker becomes inadequate (see e.g. Zand, 1981, p. 60-64 or Pfeffer, 1992, p. 114). According to Zand the relationships that he calls "collateral organization" (which obviously includes all informal networks, both lateral and vertical) are particularly suitable for solving knowledge-centered or ill-structured problems. Furthermore, Duncan (1979, p. 68) presents that lateral relations are a process that is overlaid on an existing functional or decentralized structure and that they in fact move decision-making down to where the problem is in the organization (see also Galbraith, 1977, p. 111). Galbraith claims that lateral

relationships in this way for their part reduce the information overload at the upper levels of organizational hierarchy.

Lateral relationships are very often equaled with informal networks, but a clear distinction should be made between these. The confusion is understandable because informal networks very often are lateral, whereas the formal networks embedded in the formalized organizational structure are often capable of covering most vertical relationships. It should be noted that horizontal cooperation and lateral communication can be designed to be part of the formal organizational structure. According to Galbraith, the use of informal networks can indeed be substantially improved by designing them into the formal structure. Lateral relations or weak ties ensuring sufficient flow of competitor information and transfer of competitive knowledge between different competition sensitive groups do not necessarily arise spontaneously from the task environment, especially in highly differentiated, large organizations.

Galbraith (1977, p. 111-129 and p. 148-166) has presented several forms of lateral relationships that can be used in order to improve horizontal cooperation and lateral flow of information. These forms are in a way an effort to adopt the favorable properties of informal networks into the formal organization structure. The measures Galbraith suggests range from the very simple, like direct contact between managers, to the very complicated, like establishing very sophisticated organizational roles and structures. If the aim is to improve the horizontal flow of competitor information and transfer of competitive knowledge between various organizational groups, some of Galbraith's suggestions, if not all, are interesting. The most complex and costly of Galbraith's measures like creating a linking-managerial role or a matrix design may be necessary to coordinate tasks which need a lot of integration, but are not appropriate in the case of coordinating competitor surveillance or securing efficient utilization of competitor information and competitive knowledge. After all, the aim in this is mainly to ensure and improve unrestrained flow of information and knowledge and not so much to coordinate complicated organizational tasks.

Adapting Galbraith's insights into improving horizontal cooperation and communication of competitor information and competitive knowledge, some measures could be suggested. For the first ***direct contact*** between different organizational participants affected by a problem is in many cases sufficient to transfer information and knowledge from one competition sensitive cluster into another. If, for example, a sales manager hears from a client, how much a competitor invests annually in research and development activities, he could be expected to contact the R&D manager in his own company and give him this information. This simplest lateral relationship often arises spontaneously, but can also be planned, e.g., either by creating an organizational culture or a reward system that *encourages cooperative behavior*, or by increasing *job rotation*. The principal aim of these deliberate measures is to

ensure that the relevant organizational participants in different competition sensitive groups know each other so well that, when necessary, they are able to communicate the right information to the right person, i.e. to create an appropriate lateral communication network. Galbraith argues that the findings clearly indicate that those managers who have interdepartmental experience communicate laterally to a larger number of colleague managers and use more informal means to communicate than those who lack this experience.

Lateral flow of competitor information and transfer of competitive knowledge can also be improved by creating ***liaison roles***. These are specialized roles that facilitate communication between two interdependent departments. For example, a liaison role could be created to handle communication between marketing and R&D functions in order to ensure that all signals of changes in competitors' products or in significant changes in technology are communicated between these functions and that appropriate measures are taken.

If many different organizational groups are involved in solving a problem and direct contact between these is not sufficient to handle the issue, a temporary ***task force group*** or ***a permanent team*** could be established. A task force group exists only as long as the problem remains and is dissolved immediately after, whereas a permanent team is constantly assigned to take care of performing a certain task. Galbraith argues that both task force groups and permanent groups should not consist of full-time dedicated members because, if members are cut off from their original organizational groups, they very easily loose their most valuable information sources, i.e. their colleagues in their original departments, as a lot of information is conveyed orally in personal interactions. On the other hand a task force group or a permanent team should be given enough time and resources, e.g., some full-time members to ensure motivation and identification with a project.

These different deliberate measures to improve lateral flow of competitor information and transfer of competitive knowledge should not be considered as mutually exclusive alternatives. All measures presented here can be used simultaneously. It should be noted that the more extensive means of ensuring lateral contact, like task force or permanent groups, can be expected to be more efficient in transferring competitive knowledge than direct contact, which can in many cases be assumed to be better suited for communication of competitor information.

5.6. The role of competition sensitive and competitor information intensive groups in communication of competitor information and transfer of competitive knowledge

It is evident that competitor information and competitive knowledge is not and should not be evenly diffused into a corporate organization. When aiming to ensure efficient communication of competitor information and transfer of competitive knowledge, the different competitor information intensive organizational groups obviously have a key position. Boundary groups, which have high competitor information access potential and which are competitor information intensive, do not necessarily communicate this information within the organization (see Tushman and Scanlan, 1981b, p. 292). In fact it can be expected that maintaining an extensive external network of contacts binds resources and thus boundary individuals and boundary groups do not necessarily develop large intraorganizational communication networks. Especially in the case of the sales and marketing functions, problems are likely to arise as these organizational groups have a crucial role in building an efficient network to an important external constituent - the clients. On the other hand particularly these externally oriented functions are almost certain to have high competitor information access potential and high competitor information intensity.

Tushman and Scanlan discuss informational boundary spanning (see e.g. Tushman and Scanlan, 1981a, p. 83-98 or Tushman and Scanlan, 1981b, p. 289-305) and argue that in order for an individual to span a boundary for the organization, it is not enough for this individual to be an external communication star but he/she also has to be an internal communication star as well. Thus, boundary spanning individuals are required to have substantial communication with areas outside their own organization and at the same time they have to have an extensive communication network inside their own organization. Tushman and Scanlan identify boundary spanning to be a two-part process: first obtaining information from the external environment and then disseminating this information to internal users.

Tushman's and Scanlan's notion about this dual nature of the boundary spanning process is important from the viewpoint of this study. The competitor information and competitive knowledge that various competitor information intensive boundary groups have access to and acquire is an underutilized resource for the organization, if this information and knowledge remains in the possession of these individuals or groups only. For successful competitor surveillance and utilization of competitor information and competitive knowledge it is essential that the various competition sensitive and competitor information intensive groups build an intraorganizational communication network allowing access to relevant information and knowledge to all those individuals and groups that can utilize this information in their work processes.

It should be noted that it is not economical to put efforts into improving overall intraorganizational communication and dissemination of competitor information and transfer of competitive knowledge as is very often prescribed in the competitive intelligence literature. Communication should be seen above all as part of the process in which competitor information and competitive knowledge is shared and transformed into a collective, organizational knowledge structure. Development efforts should obviously start by identifying the competition sensitive groups that have high competitor information access potential, i.e. the competitor information intensive groups in an organization, and encourage networking between these.

5.7. The potential of groupware information systems as a communication media

As discussed previously the principal communication media that managers and other experts have been observed to use in their networking activities is oral communication (see the discussion in chapter 3, section 3.6). The most extremist views have even argued that utilization of information systems is not in accordance with the nature of managerial work and not to be recommended as a tool for management (see e.g. Mintzberg, 1973 or Mintzberg, 1975).

It should be noted, however, that in recent years information and data transfer technologies have developed significantly making communication between different parts of the organization easier and more flexible, facilitating thus both geographical decentralization and international growth. As traditional competitor information systems have more or less concentrated on storing the information and communicativeness in these systems has been poor, the new types of information systems - the so called groupware applications first developed for office automation - have changed the situation in a significant way. Therefore, the role of these groupware applications and their potential in communication of competitor information is worth discussing.

When considering the communication of competitor information and competitive knowledge, the available communication media can be divided into three types:

- ***Oral communication media***, like discussions, phone conversations or regular meetings
- ***Electronic communication media***, like electronic mail or interactive groupware applications
- ***Written communication media***, like written reports or letters

Of these three types of communication media, oral communication provides the most interactive means of conveying information. Information or knowledge is communicated and a response is given immediately. Oral communication, however, is totally synchronous and requires that the participants in the interaction are present exactly at the same time. Therefore, oral communication is the most "costly" of these three types of media and requires most resources from participants. Written communication on the other hand is at the other end of the continuum allowing asynchronism, i.e. those taking part in the communication do not have to take part in the interaction at exactly the same time. Written communication, however, lacks interactiveness, i.e. there is usually a considerable time delay in response.

It can be argued that the new type of electronic communication media, like electronic mail or groupware, provide a transitional form between oral and written communication. Groupware is a generic name for software that lets a group of people work together through networked computers. The concept of groupware involves communications, project management, network management and related functions. As distinct from traditional network applications designed to give many users access to a central database, groupware typically gives many users access to each other (see Cowan, 1991, p. 288-294). This type of electronic communication that electronic mail or groupware applications provide has features of both oral and written communication. This type of media is not as interactive as oral communication, but on the other hand more interactive than written communication since, for example, electronic mail provides easy and quick ways to respond. Furthermore electronic media does not require synchronous communication and in this way resembles written communication. It should be noted that traditional information systems and software applications that do not contain a communication engine should be regarded as written communication as the systems in themselves do not provide any means of response. The properties of the three types of communication media are presented in figure 5.1.

Feldman's empirical study (1987, p. 83-101) of the effect of electronic mail on organizational communication gives an interesting contribution to the discussion of the possibilities of the new types of media. Feldman suggests that a totally new type of communication occurs in large organizations that have electronic mail. She argues that electronic mail creates links between people who would otherwise not share information, as electronic mail decreases the cost of signaling interests so that people who otherwise would not know that they share interests can now discover one another and communicate. Feldman concludes that electronic mail is a medium that encourages weak ties within a large organization and also in the interorganizational terrain.

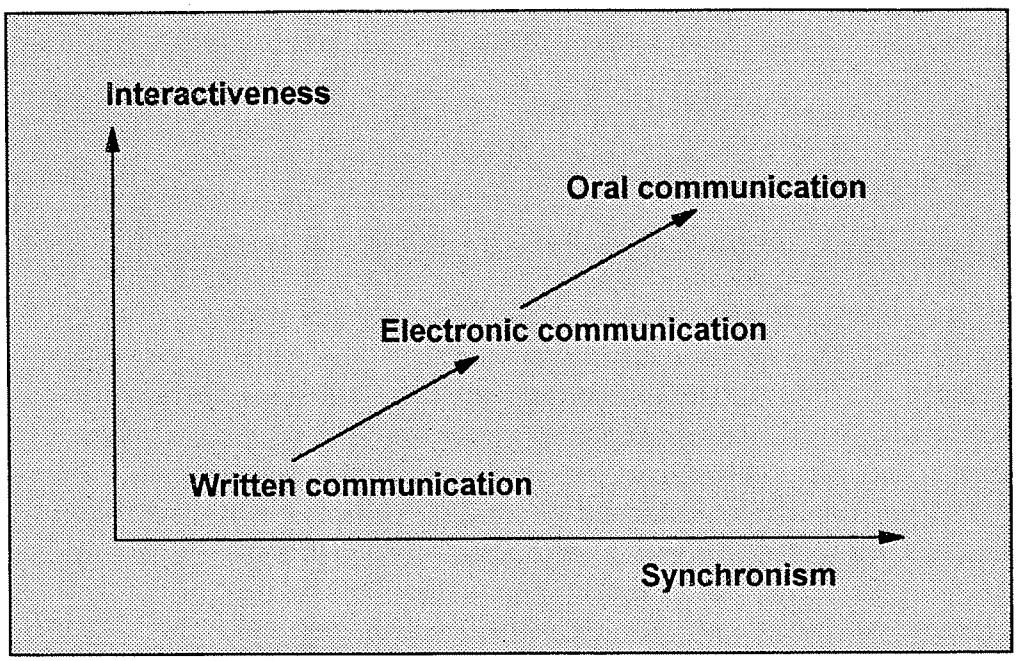


Figure 5.1. The properties of different types of communication media

According to Feldman, electronic mail has two properties that are particularly appropriate in creating weak ties, asynchronism of communication, and the ability to send a message to many recipients with no more effort than it would take to send to one person, The asynchronous nature of communication reduces cost by making it unnecessary for participants to communicate at the same time. Thus, coordination costs are greatly reduced compared to synchronous communication which occurs in face-to-face or telephone interactions.

Interesting is also Huber's notion that computer-assisted communication media are not so much substitutes for traditional media like oral or written communication, but rather their role should be seen as complementary (see Huber, 1990, p. 47-71). Huber argues that computer-assisted communication increases the total amount of communication without reducing the amount of oral or written communication. Huber presents that electronic communication results in more actors from different parts of the organization participating in decision-making processes.

Based on Feldman's and Huber's elaboration, it can be expected that electronic communication provides a possible medium for creating more weak ties between different

organizational groups. In this way it can constitute a part of the organizational communication infrastructure contributing to the generation of intraorganizational networks. In this way computer-mediated communication could create a change or increase in communication between different competition sensitive and competitor information intensive groups within an organization and thus mean more efficient utilization of competitor information and competitive knowledge.

Definite conclusions on the effect of this new type of media are, however, premature. There is still very little reliable empirical evidence of the actual effects of these new communication media on the nature of managerial or expert work, as this type of communication has been widely used in corporate organizations for a relatively short time. It is clear that this new computer-mediated communication can not be a substitute for face-to-face interactions (see Nohria and Eccles, 1992a, p. 288-308), as a study made in Harvard Business School indicates. Relating this study, Baker (1994, p.60) claims that managers use electronic mail in well-defined contexts like exchanging factual information or broadcasting information and face-to-face interaction for defining and discussing problems and solutions and building a shared understanding of the situation. It is obvious that the effects of this type of communication need further study, especially as various studies so far seem to give contradictory results.

6. CONCLUDING REMARKS ON THE THEORETICAL FRAMEWORK

6.1. Justification for adopting the cognitive and network approaches

The preceding chapters have introduced on the one hand a cognitive approach and on the other hand a network approach to how a corporate organization and different actors within the organization monitor and make sense of the competitive environment, what kind of ways they use to process and manage the overload of available competitor information and competitive knowledge and how they exploit this information and knowledge in their work processes. The aim in this concluding chapter is to provide a summary of the theoretical discussions and framework elaborated in chapters 2-5.

The purpose of this theoretical elaboration has above all been to add insights to previous discussion of competitor surveillance and competitor analysis, which has for the most part concentrated on and emphasized the significance of a systematic approach. The intention has neither been to replace nor present a substitute for this methodical and deliberate approach, but rather to complement the views and understanding of the mechanisms with which a corporate organization and various participants within the organization cope with the task of perceiving the competitive environment, interpreting the information collected and learning from it. While the principal aim in the systematic approach is to describe deliberate competitor analysis and, to some extent, to give normative prescriptions in an effort to improve collection and analysis of competitor information, the purpose of the cognitive and network approaches is more to describe and comprehend how an organization and its participants process and make use of information and knowledge related to the competitive environment - regardless of whether this information or knowledge has been acquired in a systematic or unintentional manner. Therefore, the cognitive and network approaches should be seen, above all, as an addition to the systematic way of looking at competitor surveillance and competitor analysis. This is since they go a step further by contemplating how individuals and organizational groups actually process and utilize acquired information.

Furthermore, the cognitive approach combined with the network perspective can be considered a legitimate method of studying the phenomena connected to competitor surveillance and competitor information processing, since it gives a *comprehensive* perspective of the issues concerned. It can be expected that deliberately collected competitor information represents just the tip of the iceberg and that a lot of the competitor information and competitive knowledge acquired into an organization by various participants is collected in an

unsystematic manner in connection with other activities. In fact, it can be assumed that this unsystematic and uncoordinated collection is much larger and provides more information and knowledge than the systematic activities of scanning and monitoring the competitive environment. Some studies have referred to this unintentionally collected information as an underutilized "hidden" potential that could and should be exploited better. Enhancing understanding of the cognitive processes involved gives a better view of the possibilities of exploiting these information and knowledge resources and of the restraints there are in this exploitation.

6.2. Management of competitor information and competitive knowledge

The crucial question in perceiving or making interpretations about competition is usually in the first place how to cope with the excess of information available of phenomena and occurrences in the competitive environment and of various actors' activities therein. Essential is particularly, ***how to target attention to the relevant, key bits of information*** from this overload and ***how to ensure that the right information is in the right place at the right time***. Individuals, organizational groups and whole organizations mainly use two mechanisms to deal with this problem:

- Exploitation of previous knowledge and experience is organized into ***a schema,*** i.e. a knowledge structure

- ***Intraorganizational networks*** develop as a means of developing a shared, organizational level knowledge structure and as a channel of conveying messages between various participants in different parts of the organization.

Organizational participants use ***a schema or a knowledge structure*** as some kind of a mental template that they impose on the competitive environment in order to simplify their conception of this environment and in order to be able to interpret the complex phenomena confronting them. It can be argued that a completely rational and continuous analysis of the competitive environment and competitors therein, as prescribed by the systematic approach to competitor analysis, would in many cases leave organizational participants confronted with an impossible task. Requiring an all-inclusive assessment of the competitive environment and competitors therein not only ignores the limitations set by human information processing capacity but could also prove difficult due to insufficient access to all the relevant facts.

A primary phase in making sense of the competitive environment is determining what part of the competitive environment and what actors, i.e. competitors in this environment, are

significant from the focal organization's point of view. Instead of approaching this dilemma of competitor definition in a completely analytical manner, organizational participants deal with this by targeting their attention on some parts of the competitive environment and ignoring others by utilizing a schema. Individuals create cognitive taxonomies, i.e. classifications of the competitive environment and focus their attention on those competitive organizations that are similar to their own as regards goals and resources. Once the relevant category has been chosen, this classification provides a foundation on which much of the environment is understood. In this way organizational participants are able to comprehend their own organization's position in the competitive environment. The same simplifying mechanism is used not only in perceiving the competitive environment but also in the continuous interpretation of events and occurrences.

Thus, in managing competitor information and competitive knowledge a schema has three functions:

- ***Focusing attention on a limited segment*** of the competitive environment and a limited number of actors therein

- Serving as a subtle ***screening device*** for finding the significant pieces of information and knowledge that are relevant for the focal organization

- ***Facilitating interpretation of new information and adoption of new knowledge*** thus enabling learning from the competitive environment and competitors' actions therein

It is evident that a schema is a construct existing both at individual and organizational levels of analysis. Thus, not only individual organizational participants but also different organizational groups or even whole organizations can be expected to share a collective schema related to the competitive environment. The stability of organizational knowledge on the one hand and the existence of goal-directed, collective behavior on the other hand are indications of the existence of this phenomenon at organizational level also.

An organizational level schema evolves as various organizational participants continuously share their information and knowledge in interactive communication. In this process of sharing organizational members seek and reach some kind of agreement on their perceptions of the competitive environment and also on interpretations of their individual and collective experiences. Thus, in order for organizational knowledge and a collective schema to develop, a sufficient amount of organizational participants must ***achieve a consensus*** of their perceptions and interpretations of the competitive environment. This consensus leading to the formation of organizational level knowledge structures is not a sum or an aggregate of the individual level knowledge structures but rather it emerges as ***a convergence*** of the various participants' perceptions and interpretations. It should be noted, however, that a schema is

not diffused evenly into an organization, even if a relative consensus were to be achieved. All organizational participants can not be expected to share a similar schema connected to the domain of competitive environment or competitors.

The sharing of information and knowledge is facilitated by ***intraorganizational networks*** consisting of organizational participants from different parts of the organization. Besides forming a communication infrastructure these intraorganizational networks obviously function as a means of managing the overload of competitor information. Networks constitute a screening device restricting the excess volume of competitor information and knowledge requiring the attention of members and, more importantly, focus the members' attention on significant and relevant pieces of information and only these. This is achieved as network members are able to exploit the schemata of other members in the network as an extension of or an addition to their own schema.

Therefore, networks can be considered as a way of dividing the labor of competitor surveillance and competitor analysis in a corporate organization. Various members in the network are able to increase their capacity to process competitor information and competitive knowledge by "delegating" screening and analyzing tasks to other members in their network. At the same time, network members are able to enhance the range of information sources at their disposal, since they can utilize the network contacts of other members. It should be noted that, in most cases, this "division of labor" and "delegation" of surveillance tasks is achieved unconsciously and unintentionally, but nevertheless results in the realization of the task.

In conclusion, it can be stated that intraorganizational networks are essentially a way of ensuring that the right information is in the right place at the right time. From the corporate organization's point of view, this three-dimensional question is crucial, as information and knowledge does not have value to an organization, if it can not be utilized in efforts to achieve organizational goals. Exploitation of an organizational participant's own schema and the schemata of other network members is basically a tool for dealing with the first dimension of this "logistics" problem, i.e. "right information". The solutions to the other two dimensions "right place" and "right time" are embedded in the reciprocal and symbiotic nature of intraorganizational networks. As these network relationships often develop or are deliberately planned to facilitate the flexible running of organizational activities, network members are often acquainted with what is "right place" and "right time".

Consequently, intraorganizational networks have the following functions in managing competitor information and competitive knowledge:

• ***Dividing the labor of competitor surveillance and competitor analysis by delegation to other network members.*** In this way intraorganizational networks reduce the need for external transactions, while at the same time actually enhancing the number of information sources at disposal.

• Providing a solution to the "logistics" problem of competitor information and competitive knowledge management by ***ensuring that the right information is in the right place at the right time***

It is worth noting that by adopting a cognitive approach and a network perspective to how competitor information and competitive knowledge is collected, communicated and utilized in a corporate organization by individual participants and organizational groups, many empirical observations become intelligible. For example, the apparent irrationality and unsystematic behavior present in the nature of managerial work can be viewed as a natural way of dealing with information overload. Also, many seemingly "blind spots" in competitor surveillance and competitor analysis, like "poor identification of competitors and industry boundaries" and obvious underutilization of competitor information and knowledge resources, can be better understood.

The problems in managing or exploiting competitor information and competitive knowledge resources more or less concentrate on the fact that competitor information or competitive knowledge can not be transferred from one actor to another like physical goods, as is evident from the cognitive perspective. The success of the information transfer transaction is affected above all by the ***cognitive capabilities*** of organizational participants. In order for information or knowledge transfer to succeed, the receiver should be able to perceive the meaning of this information or knowledge and how it can be utilized, i.e. he or she should have sufficient cognitive capabilities, in other words cognitive competence. Therefore, the sophistication of the cognitive capabilities of organizational participants have a significant influence on how "hidden" competitor information or competitive knowledge resources in the possession of various actors within the organization can be utilized. It should be noted that in many cases utilization of "hidden" information and knowledge can not be improved by increasing their availability by better communication, but rather improved cognitive capabilities are required.

6.3. The role of various organizational groups in competitor information and competitive knowledge management

When competitor information and competitive knowledge management is considered, it is obvious that a corporate organization should not be viewed as a homogenous and monolithic entity, but rather as a complex social system consisting of different groups and

subgroups. It would be naive to assume that a corporate organization is coherent in its outlook towards competition, or that the informational transactions that an organization conducts with the competitive environment are carried out primarily by management or that management alone makes interpretations of the competitive environment and competitors therein for the corporate organization as a whole. Obviously, various functional groups are significant both in acquiring competitor information and competitive knowledge into a corporate organization, making interpretations and in utilizing competitor information in their own operations in order to contribute to organizational goals.

Even if a general consensus regarding identification of competitors and interpretation of the competitive environment can be expected to exist among various organizational groups, there are still likely to be considerable differences between various groups. It is justified to assume that different functional groups in an organization develop different perspectives, as they are likely to look at competition and competitors from their own functional viewpoints. Similarly, there are likely to be the same kind of differences between various levels of an organizational hierarchy. These dissimilar perspectives are reflected in various ***competitive environment identification patterns*** depending on the dimensions on which organizational groups compete with other organizations. When a corporate organization is seen to compete by making competitive moves in the product-market space, competition is perceived either as a hostile or cooperative game. If a corporate organization is seen to compete for a superior resource position, competition is perceived as striving towards superior capabilities.

It should be noted that there is likely to be considerable asymmetry both in ***competition sensitivity*** and consequently also in competitor information processing activities within a corporate organization. In order for an organizational participant or an organizational group to become sensitive to competition, this usually requires that an actor is to some extent vulnerable to changes in the competitive environment or to possible effects that the activities of competitors have. This vulnerability, which creates motivation for competitor surveillance is not equally shared by all groups in different parts of the organization.

Competition sensitivity determines how alert or aware an organizational participant or a group is to occurrences and events in the competitive environment. If an individual or a group is positioned in the organization in such a way as to have the possibility of acquiring competitor information, i.e. ***competitor information access potential***, high ***competitor information intensity*** can develop. Competitor information intensity describes the amount of competitor information that an individual or an organizational group possesses and accumulates. It should be noted that in the same way as in competitor information intensity an asymmetry between different organizational groups can be expected to be predominant.

Furthermore the cognitive capabilities to utilize competitor information and transform it into individual or organizational learning, i.e. the ***competitive knowledge capabilities***, are likely to vary considerably between different organizational groups.

Thus, there are likely to be both quantitative and qualitative differences in competitor surveillance and competitor information and competitive knowledge processing activities within an organization. Therefore, in managing the flow of competitor information and competitive knowledge in a corporate organization all individuals or organizational groups do not have significance. Those that have high competitor information intensity and competitive knowledge capability are of particular importance. Consequently the crucial question in managing competitor information and competitive knowledge is not how to ensure overall communication of competitor information and competitive knowledge within an organization, but rather how to improve sharing of competitor information and knowledge among competition sensitive individuals and organizational groups. The absence of horizontal links between different competition sensitive groups that have competitor information access potential, high competitor information intensity and sophisticated competitive knowledge capabilities is likely to lead to underutilization of organizational competitor information resources.

7. COMPETITOR INFORMATION MANAGEMENT IN A FOREST INDUSTRY COMPANY

7.1. The scope and objectives of the empirical study

The aim of the theoretical discussion, concerning identification of the competitive environment and competitors therein and utilization of competitor information and formation of exploitable competitive knowledge, presented in chapters 2-6 is to analyze the complex phenomena involved and create a conceptual order as a basis for a thorough understanding and consequently as a guideline for management of competitor information and competitive knowledge resources. The theoretical discussion, however convincing or plausible the reasoning might be or however logical the theoretical framework might seem, can be considered insufficient when studying these complex phenomena of cognitive processes and formation of organizational level knowledge structures. In order to achieve an in-depth understanding of how a corporate organization *actually* identifies the competitive environment and competitors therein or how competitor information is actually collected, interpreted and utilized in different work processes and also how this information is transformed into exploitable knowledge structures, it was deemed necessary to study these phenomena also empirically.

It should be emphasized that the object of the empirical part of this study is not to test or verify the framework created in the theoretical part of this study, but rather to analyze further and to seek further understanding of the studied phenomena. The empirical part of this study, presented in this chapter, describes and analyzes the process of identifying the competitive environment and competitors and also collection, interpretation and utilization of competitor information and formation of competitive knowledge in one corporate organization. Chapter 8 discusses how these findings fit the conclusions drawn in the theoretical framework and what further contribution they give to understanding the studied phenomena.

The objectives of the empirical part of this study can be presented more specifically as endeavoring to enhance knowledge of the following issues:

- **Identification of competition and individual competitors.** How is the competitive environment perceived or identified and interpreted inside the target organization? Are there any differences in this identification and interpretation between different intraorganizational groups? What differences are there in competition sensitivity?

• **Utilization patterns in exploitation of competitor information and competitive knowledge.** How and to what purposes is competitor information and competitive knowledge actually used in the studied corporate organization? What are the most valued sources of competitor information in the target organization? Are there any differences in utilization patterns between various organizational groups?

• **The formation of an organizational base of competitive knowledge.** How is competitor information and the subsequent competitive knowledge accumulated in the studied corporate organization? How do organizational participants or intraorganizational groups differ in competitor information access potential or competitor information intensity or competitive knowledge capability?

• **Intraorganizational transfer of competitor information and competitive knowledge.** How is competitor information and competitive knowledge communicated and transferred inside the target organization? What is the role of intraorganizational networks in the communication of competitor information and the transfer of competitive knowledge?

It should be noted that the purpose in this study is not to analyze, whether the way that the studied managers or other organizational participants identify the corporate environment and competitors therein or make interpretations corresponds to analytical or "objective" views of correct and appropriate identification and interpretation defined by outside observers or whether the observed identification patterns or interpretations have actual positive or unfavorable effects on the company's performance in the competitive environment. Thus it is not studied, whether the observed identification patterns and interpretations result in actual learning that improves performance. This was not deemed necessary as the aim is above all to explore and understand the process of identifying and interpreting the competitive environment and not directly to strive to improve it. Also even if the utilization of competitor information and competitive knowledge in various work processes is described and analyzed which groups in the organization have most competitive knowledge capabilities, i.e. competence and opportunity to transform knowledge into improved action, the actual consequences that these utilization processes - their possible sophistication or unsophistication - have on the actual performance of the studied corporate organization is left outside the scope of this study.

7.2. Obtaining the case company

The basic thought of exploring competitor information management and the formation and utilization of competitive knowledge originates from practical problems that the author

experienced while working as an information specialist in a multinationally operating forest industry company. Practicing competitor surveillance in an information service unit as part of the competitive intelligence activities of the forest industry company showed the shortcomings of both systematic competitor surveillance activities and formal competitor analysis. It was obvious that managers in particular, but also many participants at lower levels of the organizational hierarchy did not utilize the information provided by the formal surveillance and analysis units. Also it was evident that managers and other organizational participants had other sources of competitor information and furthermore it seemed that at least some of them were well informed of competitors' activities in spite of their passiveness in utilizing systematic surveillance and analysis. As this subjective and separate observation was supported by empirical evidence presented in strategic management literature reporting the failure of systematic competitor analysis and competitive intelligence systems, the research question began gradually to take shape.

Thus in this empirical study it would be somewhat absurd to speak of "selection" of a case company - a phase normally required in meticulous application of the case method - as this was more or less determined while formulating the research question. Furthermore it can be argued that it would have been extremely difficult to choose another target of study as many issues connected to competitor definition, competitor information sources and utilization of competitor information are considered business secrets and thus in large part beyond reach for outside investigators. As a member of the case company the author had a unique opportunity to collect and analyze evidence containing a great deal of confidential information that would and could not have been accessed by outsiders. Also it can be argued that finding evidence for the research question requires access to this kind of confidential material, the risk of misguided conclusions due to omissions being otherwise evident.

Although there was no real choice in the "selection" of the target company, the object of exploration has to meet certain requirements in order to be a suitable and appropriate target. First of all, since the aim is to study the phenomena connected to competitor surveillance and utilization of competitor information resources and subsequent competitive knowledge, it is advantageous, if the studied company operates in a business or in an industrial sector where surveillance of individual competitors is an essential issue or at least worthwhile. In companies where the number of competitors is large, surveillance of the competitive environment consists mainly of collecting general market data and information about the competitive situation. It was considered important that the target of study should be interested in surveying individual competitors because it would then be easier to study how the competitive environment is perceived and interpreted and also how information is communicated and knowledge developed. When surveillance is directed towards "personified" objects - in this case individual companies - it is likely that the studied phenomena can be

better distinguished than in those cases where surveillance is targeted at more general and in many cases abstract objects and phenomena like market trends or the competitive situation.

It can be stated that the forest industry has features that makes it an excellent target of study, even if looked from a more remote position or considered according to more objective criteria. *The forest industry* or its subsector *the paper industry*, which is the focus of interest in this study, are industrial sectors that require a large amount of capital to meet the need for big investments. The total number of companies delivering certain paper grades in different markets is relatively limited. In addition even a single investment in a new paper machine by an individual competitor can, and in many cases does change market conditions in a significant way. Also, the operations of an individual competitor in the market, e.g. price changes, product modifications or changes in the service factors provided for customers, affect all other paper producers operating in the same market more or less directly.

In addition, the timing of investments is crucial in the paper industry, as this industrial sector is characterized by relatively intense business fluctuations and affected by successive phases of economic upswings and downturns. Demand conditions in many paper grades vary from oversupply during recession to clear shortage, at least in some paper grades, during upswing periods. An unsuccessful timing of investment, considering business phase or simultaneous competitors' investments, easily leads to economic losses. Also, the time delay between an investment decision and the start-up of a new paper machine is longer than in many other industrial sectors, thus making the timing and adjustment to competitors' operations more difficult. In this way, competitors' investments and investment plans are given a lot of attention in paper industry companies and, in general, it can be stated that competitor monitoring in this industrial sector is worthwhile.

7.3. Description of the case company

The case company of this study is a subsidiary of an internationally operating forest industry group which has producing subsidiaries in four other countries in Western Europe besides Finland. The group got its form in the late 1980's as a result of mergers, acquisitions and also investments in greenfield mills. In 1994 the group had a turnover of FIM 18,9 billion and about 17 000 employees. The greater part of the group's turnover comes from the paper industry - the production of publication papers and fine papers. The group has a pronounced strategy of concentrating its operations on selected core products. The printing and writing paper sector is the focus of the group's long-term business.

The parent company has mainly a coordinating role and the group's business is conducted through subsidiaries, which are wholly-owned by the parent company. Apart from owning the subsidiaries, the parent company's main concerns are group financing, planning of major investments, logistics operations, real estate management and wood and energy supply. The subsidiaries have a relatively independent position in the group. Most of them have very strong and characteristic corporate cultures, which is natural since the group was formed from mergers of companies with a long independent history behind them.

The parent company's business operations are organized into four divisions according to product group. Two of these divisions operate in the paper industry and the other two in the mechanical wood-processing industry and packaging materials. The case company studied is part of the publication papers division of the group. The divisions have, in the same way as the parent company, mainly a coordinating role and they do not take part in operative activities. The divisional organization structure had, however, been introduced only recently at the time of this empirical study and its role in the group had not quite been established yet. The divisions act principally as a forum for the managing directors of the different subsidiaries and they aim is to give a uniform appearance towards customers. The divisions have very limited resources and an extremely lean organization structure. For example, in 1994 the publication papers division, of which the case company studied is part, consisted of an executive, an assistant and a secretary.

The case company is a limited company that has two paper mills, chemical and mechanical pulp mills and also some mechanical wood-processing plants at two different locations in Finland. The case company's principal product is coated magazine paper and the focus of business in the case company is in the paper industry sector. Therefore this empirical study concentrates on examining competitor information and competitive knowledge management in the paper industry sector of the case company.

Even if the case company's product is undoubtedly a bulk product, nevertheless it can be characterized more as a specialist, high-priced paper grade than a commodity paper grade. The product is to some extent differentiated by such factors as branding and customer servicing as well as certain paper properties. The case company has a substantial market share in this principal product area. The whole group was in 1993 the world's biggest supplier of light-weight-coated paper. In 1994 the case company produced 670 000 tons of coated magazine paper, 39 000 tons of uncoated magazine paper and 148 000 tons of special newsprint.

The functioning of the case company has traditionally been technologically oriented. This is natural as paper production is capital intensive and requires large, vertically integrated

complexes. The quality of the product is achieved mainly by good command and technological know-how of the complex production process and thus the role of the production and technical support functions is pronounced.

This orientation can be seen in the case company's organization structure. Activities have been for the most part organized around different production units and their technical support. Far advanced functional differentiation is also typical for the case company. The organization chart of the case company has been schematically presented in figure 7.1. Because of the large company size the organization hierarchy of the case company has many levels. Therefore the company employs a relatively large middle management.

Like other subsidiaries in the group, the case company has a strong and long-lived corporate culture of its own. Employment relationships have for decades been characterized by loyalty and mutual understanding between management and employees. In the case company this consensus has often been referred to as "the spirit" of the company. In 1994 the company had 3 050 employees. Typically, many of them have a long tenure in the company and the age class distribution has gradually grown towards older age classes. In addition the majority of employees are male. For example in 1993, when this empirical research process started, there were altogether 211 persons employed either in management or duties requiring academic education or sophisticated professional skills. Of these 211 employees 29 were female and of these female employees 12 were engaged in secretarial duties.

As already mentioned in the previous section it is characteristic for the competitive environment of the case company that there is a relatively small number of companies producing the same specialized, high-quality product or substituting paper grades. The number of competitors is relatively limited, even on a global scale, compared to many other business sectors. Most of the competitors are companies that have operated in this industrial sector for a long time.

Responsibilities for systematic competitor surveillance and competitor analysis have been divided between the parent company and different subsidiaries. The staff functions - above all the financial planning department and corporate marketing intelligence- of the parent company have assumed responsibility for surveillance of competitors' strategies and financial status and the different subsidiaries monitor competitive products and their technical development. The areas of interest in competitor surveillance and competitor analysis in the case company are clearly functionally differentiated. Monitoring of competitors in top management and also in the marketing function is clearly market-oriented, whereas in the production function, in product development and R&D and also in technical staff functions it is technologically oriented. Unlike the parent company, in the case company there are no

specialized business intelligence staff that are responsible for monitoring competitors. Instead, responsibility has been divided between different organizational functions and competitor surveillance and competitor analyses are done in addition to regular duties.

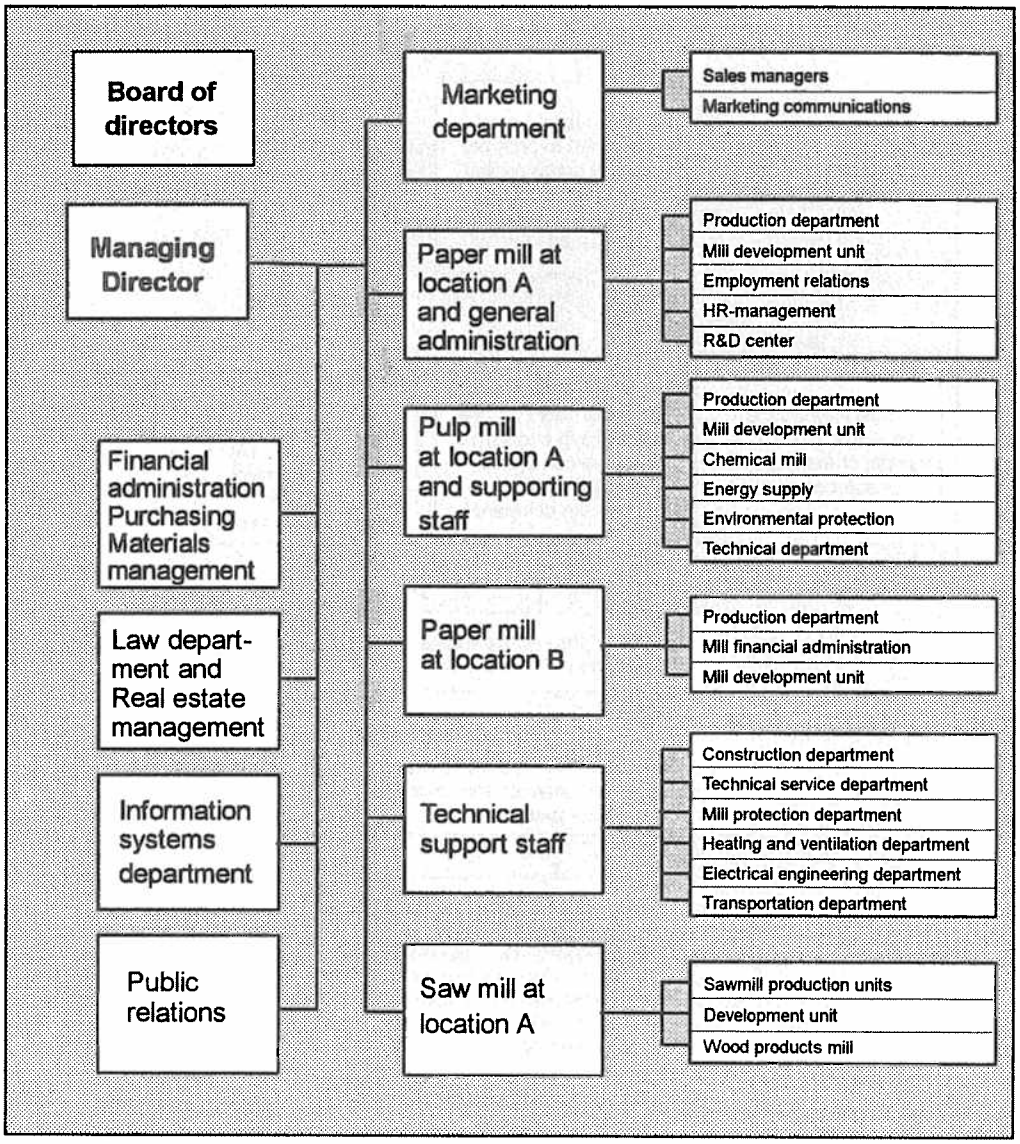


Figure 7.1. The organization structure of the case company

7.4. The research process of the empirical study

The research process of the empirical study took altogether almost three years. The phases of the empirical part of the study are presented in chronological order in figure 7.2:

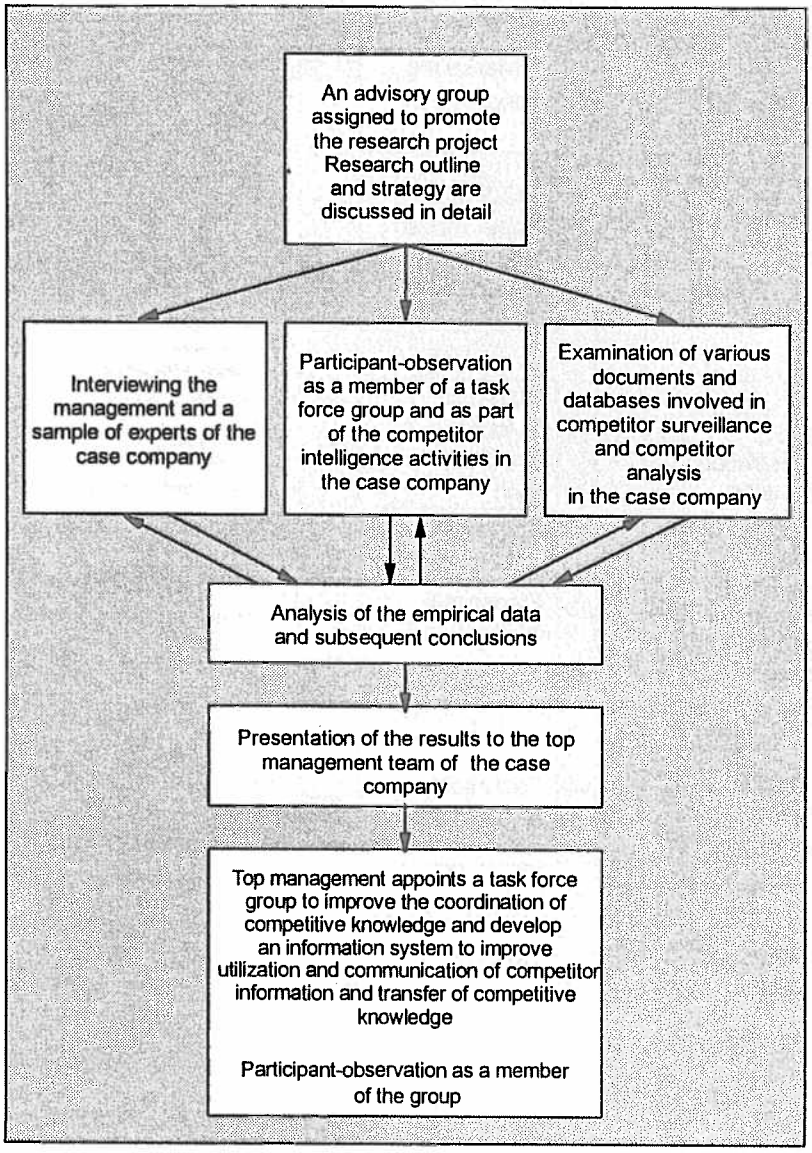


Figure 7.2. Phases of the empirical study

A proposal for the research project was presented to management in November 1992. After the research project plan had been accepted by management an advisory task force group was assigned to promote the project. The marketing executive of the case company was the chairman of the group and members were from various departments from the case company and one member from the parent company. These members included the Production Executive, the R&D Manager responsible for product-oriented competitor analysis, the Marketing Manager responsible for competitor surveillance in the case company, the Information Service Manager and the Executive of Business Development in the parent company. The advisory group discussed in detail the competitor surveillance and competitor analysis activities practiced in the case company and also the role of the parent company in these activities. The research outline and research strategy were also discussed and plans and preparations were made for data collection. These discussions provided the author with the necessary background information regarding the status of competitor surveillance and competitor analysis in various organizational groups. In addition the author was able to make pilot tests of the draft of the interview outline.

Before starting data collection the author familiarized herself with the competitive market situation of the case company. The author made a meticulous and systematic analysis of all the existing and potential competitors of the case company in order to be able to discuss competitors and the competitive environment with the interviewees in detail.

Data collection was carried out during May 1993 and April 1994. Multiple sources of evidence were used in collecting the empirical data as recommended by e.g. Yin (1989, p. 84 and p. 95-98) and Eisenhardt (1989, p. 536-538). Principally three data collection methods were used in this study. The whole management of the case company was interviewed and those top executives of the parent company that were - based on their job descriptions - supposed to be involved in the competitor surveillance activities of the case company. In addition, a sample of expert employees were interviewed. Altogether 72 interviews were conducted. The author also carried out participant-observation as a member of the advisory group and as an actor in the competitor intelligence activities of the case company. An examination of numerous documents and databases containing competitor information and describing the practices of competitor surveillance and competitor analysis applied in the case company and in the parent company was also made.

Data analysis started simultaneously with evidence collection. The final analyses were made during January and April 1994 and conclusions were drawn from the collected material and a preliminary case study report was prepared. In May 1994 the principal results of the

empirical study and the preliminary report were presented to the top management team of the case company.

The author discussed the results with top management on two occasions. As an outcome of these discussions the top management team appointed a task force group with the task of improving the management and coordination of competitor information and competitive knowledge and developing an information system in order to enhance utilization and communication of competitor information and encourage transfer of competitive knowledge. The author was acting as a member of this task force group and was able to make additional observations of the different competitor information collecting and utilization practices applied in the case company and also to further analyze the relations of different competitor information intensive groups and the patterns of intraorganizational communication between these groups.

7.5. Data collection and analysis

7.5.1. Interviews

A greater part of the empirical evidence was collected through interviews, which were carried out between May 1993 and April 1994. Interviewing can be described as a process covering selection of appropriate interviewees, designing and preparing an interview protocol, actual interviewing and finally arranging the collected interview data for systematic analysis.

The first phase of the interviewing process was selection of relevant interviewees, which was done in April 1993. Initially the selection was discussed with the advisory group assigned to guide the project. A lot of contemplation was devoted to which organizational groups should be interviewed and whether some groups could be ommitted i.e. whether interviewing could be restricted to those organizational groups that are either identified as competition sensitive or boundary in the strategic management literature or those that take part in the systematic or ad hoc competitor surveillance and competitor analysis activities of the case company. It was decided that in order to get valid answers to the research questions posed all organizational groups involved either in operative or staff functions in the paper industry sector of the case company were to be included in interviewing. Such highly diversified staff functions as the company health center or lunch and canteen services and secretaries were excluded as it was deemed unlikely that these groups would have any role in explicit or implicit competitor surveillance or competitor analysis activities. The sawmill industry of the case company was excluded since it was considered that the paper industry business would be a relevant target in the empirical study as the case company's focus of

business is on the chemical forest industry sector. In addition to the members of the case company, it was also deemed necessary to interview some members of the parent company, as the parent company obviously had an important role in the competitor surveillance and analysis activities of the case company.

In choosing the interviewees it was assumed that top management, middle management and professional or expert employees would be the relevant target group when studying the intraorganizational phenomena of competitor information and competitive knowledge management. It was considered to be likely that these groups monitor the competitive environment, make interpretations and learn from it to a greater extent than lower levels of the organizational hierarchy. It was decided that the whole management of the case company would be interviewed, both the top management team and also all middle managers. In addition, a sample of professional employees were chosen to be interviewed. In this sample all organizational functions and departments were included and the sample was weighted in a way to take into account function or department size measured by number of managers and professional employees.

The case company has a well documented code of practice in which organizational responsibilities and authorities have been defined. This file was used in selecting interviewees. The top management team consisted of 6 general executives and all were included in interviewing. In addition to this the company had 27 functional executives and managers that were in charge of the various functional departments. All these managers were also included in the interview. In addition to management, the case company had altogether 178 employees who had either an academic education or whose work required complex professional skills and education, i.e. employees that could be described as knowledge workers. When the highly diversified groups discussed earlier were excluded, interviewees were to be chosen from a group of 150 professional employees. 31 professional employees were chosen from these 150. In this way the group of interviewees consisted of the following:

Parent company	8 executives
Case company:	
Top management team	6 executives
Marketing department	4 sales managers
	1 marketing communications manager
	7 professional employees
Paper mill at location A	1 production executive
	1 product development manager

	1 HR executive
	1 administrative manager
	4 professional employees
Paper mill at location B	1 production executive
	1 manager in charge of mill financial administration
	1 product development manager
	2 professional employees
Pulp mill at location A	1 production executive
	1 product development manager
	1 manager in charge of environmental protection
	1 manager in charge of the technical department
	6 professional employees
Research & development center	1 R&D executive
	7 professional employees
Technical support staff	1 executive
	6 managers in charge of technical departments
	2 professional employees
Law department	1 executive
Financial administration	1 professional employee
Purchasing	1 professional employee in charge of the department
Information systems department	1 executive
	1 manager
Public relations	1 executive

The average age of the executives and managers interviewed was approximately 47 years and the average age of other professional employees in the sample was approximately 42 years. The executives and managers had approximately 18 years tenure either in the parent company, in the case company or its subsidiaries. Correspondingly the professional employees included in the sample had approximately 14 years tenure. Of the 72 interviewees 6 were women. There were not significant differencies in these chracteristics between different organizational groups.

The interview protocols were designed based on the theoretical study with the purpose of discussing the phenomena connected to competitor information and competitive knowledge management with the managers and other professional employees. Dissimilar interview protocols were designed for management and other professional employees, as it was considered necessary to discuss some issues in more detail with the management. The interview

protocols, which are presented in Appendixes 1a-b and 2a-b, were designed to include semistructured open-ended questions instead of merely selecting topics or themes to be discussed with the interviewees. This was considered necessary as the number of interviewees totaled 72 and analysis of the interview results could have proved difficult. The interview protocol was tested with the advisory group and some alterations were made to the protocol.

Initial contact with the interviewees was made by phone and an introductory letter signed by the chairman of the advisory group, the marketing director of the case company, was sent to those interviewees who asked for a reference. The interview protocol was not, however, sent beforehand as it was considered necessary that the interviewees would not be able to prepare for the interview. Spontaneous answers were necessary especially in studying how interviewees identify the competitive environment and how they define competitors. Advance preparation could be expected to produce a set of "right" answers, i.e. interviewees would most probably intuitively know what they were supposed to answer and response accordingly. In this way interviewees would have been able to check from available documents and competitor databases the names of competitors regarded crucial by company management. Also it was evident that the interviewees would be likely to adapt an analytic or systematic approach to competitor definition, if they had time to get prepared. Furthermore, it could be expected that advance preparation would restrict the spontaneity of the interviewing situation and thus restrict the uninhibited flow of discussion.

As the issues discussed in the interviews partly deal with very confidential matters and partly examine the very delicate patterns of organizational relationships and communication between various organizational groups, the interviewees were guaranteed absolute anonymity. This was considered necessary in order to get truthful responses to the questions posed, even if revealing interviewees' backgrounds in analyzing some of the results would unquestionably have provided valuable information.

The interviews were conducted on the premises of the persons interviewed, usually in their own offices or in negotiation rooms that the interviewees had reserved for the interview. The average length of the interviews was approximately one hour. There was, however, a clear variation in the length of the interviews between different organizational groups. Those interviewees that proved to have high competition sensitivity wanted to discuss the questions posed in more detail than others. On average also the interviews of management took longer than the interviews of other professional employees both in groups of high and low competition sensitivity. Most executives and managers were more interested in discussing at length the phenomena studied than professional employees.

All interviews were conducted in Finnish except for one, which was conducted in English. With the permission of the respondents all interviews were tape recorded but also backup notes were taken. Some interviewees also made comments right after the tape recorder had been switched off and these remarks were added to the written notes. Immediately afterwards verbatim interview transcripts were prepared and complemented with the notions of the backup notes. According to the agreement made with the advisory group, all tapes were destroyed after they had been transcribed. It was also guaranteed to the advisory group and likewise to all interviewees that the author and the author only would have access to the interview transcript material. This was necessary because some of the issues discussed were either burdened with matters considered as business secrets and some issues discussed dealt with sensitive intraorganizational relationships. This requirement for ultimate confidentiality naturally limits the analysis and presentation of results, but was a definite precondition that the case company set for carrying out this empirical study.

The interview transcripts produced on average 10 pages of material per interviewee, i.e. in total about 720 pages. Because of the large amount of empirical data, some preparations were made for data analysis right after the interviews. The interview transcripts were read immediately afterwards and the interviewees' answers to questions central to the studied phenomena were marked down on the interview transcripts.

7.5.2. Documentation

In this study a wide variety of documentary data was collected and examined. This material included documents both in electronic and manual format. This documentary data was used principally in checking and verifying the information obtained from other sources, i.e. interviews and participant-observation. The documentary data was also used in a preliminary examination of the organization and its work processes in order to be able to prepare and design the interviewing process.

Before starting the actual interviewing, the commonly used and known competitor information databases were surveyed and studied. In addition to this, in connection with the interviews all electronic competitor information databases and manual archival records containing competitor information kept up either by individuals for their own purposes or databases updated collectively within a department were examined. This examination included both systematically updated and maintained files and randomly upheld files and occasional documents. These documents supplemented and corroborated the interviewees' identification of competitors and the competitive environment and their actual utilization of

competitor information. This examination also partly indicated the interviewees' position and role in the actual competitor surveillance and analysis activities in the case company.

Furthermore, both prior to the interviews and during the interviewing process internal newsletters and the company staff magazine, organizational charts and other codes of practice recording the relationships of authority and co-operation between various organizational groups were examined. This provided information about the deliberately planned formal organization structure and networks and the formally defined responsibilities in competitor surveillance and competitor analysis.

7.5.3. Participant-observation and direct observational data

Being a member and also part of the competitor surveillance activities of the studied organization allowed the researcher to observe organizational participants in the natural context of their work processes and in this way to collect additional data. Additionally, both participating in the work of the advisory group appointed to guide the case study and also being a member of the task force group which was appointed to improve competitor surveillance based on the findings of the preliminary case study report gave opportunity to participant-observation. Furthermore, visits to the different organizational units during the interviewing and document examination process provided a possibility for more objective or remote observation of the settings of the various participants' work processes and the activities that took place in these settings.

Participant-observation and other observational data provided above all information about the intraorganizational relationships and communication patterns between various organizational participants. In addition, observation revealed inconsistencies between what interviewees pronounced as their position and role in competitor surveillance and competitor analysis and what their actual position and role was. In this way observation allowed the researcher to check and verify information obtained through interviews and multiple sources of evidence were used to validate data.

When doing participant-observation the risks of developing biases were seriously considered. As the researcher is an actor in the studied phenomena the difficulties in distinguishing the researcher's own experiences from those of the studied are evident. Therefore no analysis was based solely on one source of evidence and an especial consideration and care was taken when using data obtained from participant-observation.

7.5.4. Data analysis and verification

The data analysis phase of this case study was a time-consuming task due to the large amount of empirical data collected. Furthermore, because of the nature of the phenomena studied, for the most part the attributes connected to these phenomena could not be quantified and attempts to apply quantitative methods in analyzing the data were unsuccessful. Thus the collected qualitative data did not provide the basis for any statistical analyses, even if some frequencies were counted, e.g. the scores that different individual competing companies got when interviewees were asked to mention the most significant competitors. These calculations provided, however, only a method of reducing and summarizing the multitude of data and were used above all in promoting and supplementing the qualitative analysis.

The analysis of the multitude of qualitative data was based on the theoretical framework elaborated in the theoretical part of this study, which was in large part made prior to the empirical study. Thus when the empirical work was started, the concepts and propositions arising from the theoretical discussion were available. In this way, the design of the case study and data collection were shaped by the theoretical propositions and subsequently analysis was also guided by the theoretical orientation. The theoretical discussion formed a basis helping to focus attention on certain matters in competitor information and competitive knowledge management in the case company. It should be, however, once again emphasized that the empirical study does not constitute a testing of the theoretical framework, but rather an enhancement of the theoretical discussion presented.

The analysis of empirical data was started already at the data collection phase. Notes were made to the interview transcripts in order to collect the most significant points in the interviews and additional summarizing notes were made of the contents of each interview. Furthermore, as more empirical data began accumulating, some preliminary analyses were made and consistent patterns in the material were searched for. The documentary information collected was also catalogued and filed. Notes and memorandums were made of participant-observation and these were duly filed.

The crucial phase in the analysis of the empirical data was data reduction. This was done, as described above, in the first place by distinguishing significant data from interview transcripts and documentation. Following this, based on the suggestions of the theoretical framework, consistent themes and patterns as well as inconsistencies were searched for from the whole empirical material. The interview material and documentation was grouped into different subunits of analysis according to position in the organizational hierarchy and according to function. Then themes and patterns were searched for in these subunits of

analysis. Summaries were prepared of these analyses both at organizational level and subunit level.

Subsequently, these summaries of empirical data were analyzed and conclusions were drawn. After this a preliminary case study report was prepared and presented to the top management team of the case company. The results were also discussed with the research and development function and comments were recorded. The results and conclusions were discussed with the management team in two meetings and their comments and suggestions were recorded and utilized in further analysis. This procedure acted also as a way of verifying data and it was decided that interview transcripts would not be sent to interviewees for verification. This decision was made because giving the interviewees the possibility to alter spontaneous comments could have risked the authenticity of results. For this reason only the comments of key informants were collected.

Furthermore, in the latter meeting with the top management team the managers decided to appoint a task force group to compile the existing competitor information and competitive knowledge resources in the case company and improve their utilization. All competitor information intensive functions were taken into this group and the researcher was chosen as the secretary and later coordinator of the project. Based on the comments of the top management team one key informant (the Production Executive) and on participant-observation as a member of the task force group, final analyses were made. The results of the empirical study presented in the next four sections (sections 7.6 - 7.9.) of this chapter are based on these analyses.

7.6. Identification of the competitive environment

7.6.1. Definition of individual competitors

The interviews were started by asking both managers and professional employees to define the most significant competitors. The question was phrased in the following way: "Who or what are the competitors of your own company? Could you mention ten competitors that you consider to be the most significant ones?" (The questions in interviews were made in Finnish except for one. Translations of the questions and also of the quotations of interviewees' answers presented in the following sections are made by the author.) Posing the question by asking to define a limited number of competitors was deliberate. The aim was to induce the interviewee to consider the competitive environment as consisting of individual competitors. This was done in order to avoid too broad or monolithic and easy-to-give definitions of competitors and the competitive environment like "competition between

electronic publishing media and paper". However, if the interviewees explained that they could not name ten competitors or wanted to name more than ten, they were allowed to give the number that they felt necessary. Inducing the interviewees to give a list of competitors compelled them to focus their attention and to endeavor to think of the competitive environment as a heterogeneous entity. For the objectives of this study, assuming this kind of approach was essential. Nevertheless, if the interviewees were not prepared or did not want to name individual competitors, the matter was discussed more broadly with them. Also of those interviewees that were willing or able to construct a list of competitors additional questions were asked and the competitive environment was discussed in more general terms.

The aim of asking for precise definition was primarily of course to examine how the interviewee actually defines competitors and also if the management of the case company, the management of the parent company and professional employees define significant competitors in the same way. Furthermore it was deemed necessary to make perfectly clear in the beginning of the interview what the interviewee was actually referring to when speaking about "a competitor". This was essential in order to be able to analyze the data. This question was also a means of testing the competition sensitivity of the interviewee. If the interviewee was not able to define competitors in detail or discuss the competitive environment at all, competition sensitivity could be assumed to be low.

In general it can be stated that analysis of the interviewees' answers provides no reason to assume that managers or professional employees would approach the problem of competitor definition in an analytic, Porterian manner. It was typical of both managers' and experts' responses that competitors were defined as producers of light-weight-coated or medium-weight-coated mechanical paper, which are the main products of the case company. Very few competitors producing substituting paper grades, e.g. supercalendered paper, i.e. SC paper, which is also used as a magazine paper, were mentioned as significant competitors. Also it is interesting to note that respondents also used a geographical limitation in defining competitors. The interviewees in general considered significant competitors to be situated in Europe, which is the main market area of the case company. Only one competing firm in North America was mentioned by several managers in the case company and in the parent company, even though North American paper industry companies have a large capacity of the very paper grades that the case company is producing. The following quotations of top management's comments both in the case company and in the parent company illustrate the overall way of identifying competitors:

"The most significant competitors are above all the European coated mechanical paper producers. Europe is our main market area, where the most important competitors are met in the competitive arena."

"Competitors are the most important producers of LWC-paper and also other magazine paper producers. Of course competition comes to some extent also from substituting products like SC-paper, but I would say that not directly and I certainly would not consider it significant"

It is noteworthy that of the 72 interviewees only two managers spontaneously mentioned electronic publishing media when discussing competition, but not any of the professional employees. Managers were asked for their opinion of the electronic media, if they did not mention it spontaneously. However, electronic media was regarded as a significant competitor only by one functional manager in the case company. The following comment made by a manager in the parent company illustrates well the management's overall perception of electronic media as a competitor:

"Electronic media should be to some extent monitored in the long run, but I would not regard it as a serious competitor. If one were to go deep into this that would be a huge area and also an immense task to keep up with.. It is enough to have some kind of a sense, to be aware of what is happening in that field. That's enough. It is not sensible to take electronic media into account in the operative work or even in strategic decision-making in the short span. I consider it a waste of resources to start making, e.g., thorough competitor analyses of electronic media. Besides it has been seen that changes are not very sudden in this area. If changes are happening in the marketplace, there will be plenty of time to get prepared, when the first general signals come."

Thus it can be observed that managers and other professional employees defined **the relevant competition as coming from other producers of the same paper grades and furthermore as only those producers that market to the same market area as the case company**. It is noteworthy that actors in the case company that had high competition sensitivity had a shared cognition of the competitive arena that the case company was operating in and the relevant category of competitors was defined as those firms having the same kinds of production facilities, the same kinds of products, the same types of customers and also having their customers situated in the same geographical area as the case company. The definition of competitors by different respondents is presented in Table 1 in Appendix 3.

Furthermore it is interesting to note that subsidiaries of the same group were also to some extent mentioned as competitors. When starting to define competitors many interviewees

made a clear distinction between "internal" and "external" competition to start with. Approximately one third of those in managerial position and also one third of professional employees in the case company mentioned other subsidiaries as competitors. In addition, two managers in the parent company made the same remark. In general this way of looking at competitors was typical especially in functional groups - both among managers and professional workers - who contributed to improving the case company's technological competence or superiority, or the competence of the main product. Such functional groups were, e.g., production and research and development. It is noteworthy that competition sensitivity in these groups was also high.

This occurrence of "internal" competition is not as odd or surprising as it might seem at first. The group has a decentralized organization structure and subsidiaries have been given a great deal of independence in their operations. It should be noted that the whole principle of profit centers is based on the idea of making units to compete with each other for resources and consequently also to compete for superiority in profitability, productivity and excellence of products. Comments by two interviewees exemplify the overall attitude well:

"Are we now talking about the internal or the external competition?... Oh, well... Even though we are competing for resources, above all investments with other subsidiaries in the group, I would prefer to concentrate on the external competition. The internal competition is limited and restricted and not "real" competition, even though it no doubt exists."

..."As such it is interesting that to some extent also other subsidiaries in our own group are our competitors. It is natural that our success as a profit center depends on our being best in our own group. I would say that other profit centers in this group are our competitors - putting the word "competitor" in quotation marks."

Furthermore, it is noteworthy that there were clear differences between various functional groups and also between different levels of organizational hierarchy in the focus of attention, when defining competitors. Different organizational participants in fact had a different content of the concept "competitor". General management considered competitors to be competing companies and this way of looking at competitors was also typical for managers in the marketing function. Instead, in the production function when asked to mention competitors both managers and professional employees defined competitors as the paper machines of competing companies. Typically they named individual paper machines as competitors and referred to them with numbers, e.g., PM 1 in the mill of competitor X. One production manager and one general manager listed mills of competing companies, when asked to mention the most significant competitors and technical staff functions that had high competition sensitivity also typically defined competitors as competing mills. Furthermore

the majority of professional employees in the marketing function defined competitors as competing product brands that were met in the competitive arena. In the research and development function competitors were seen as competing paper grades, e.g. LWC offset paper of competitor X. In general it can be said that the lower in organizational hierarchy a participant was situated the more specific was the focus of attention.

7.6.2. Identification patterns in perceiving the competitive environment

Both the focus of attention in defining individual competitors and also the interviewees answers to questions concerning their competitor information needs and utilization gave indications of how various organizational participants and groups identified the phenomenon of competition in general. When interviewees articulated their information needs and especially when they discussed the individual decision situations where they had utilized competitor information their identification patterns became apparent. This discussion gave an ample amount of examples of various situations where competitor information was used either to make a response to a competitive action or to improve performance compared to competitors or build capabilities in order to achieve a superior competitive positioning. These examples gave evidence of the interviewees' attitudes and approach to competition and competitors.

There were clearly distinguishable differences in identification patterns between various organizational groups. It should be noted that many individual participants or organizational groups had features of more than one identification pattern, but in all cases one identification pattern was predominant. General management and the marketing function clearly identify competition predominantly as ***a hostile game***, but to some extent also as ***a cooperative game***, where the respondent recognizes that hostile operations can induce competitors to retaliatory actions. This identification is best illustrated in the discussion with a sales manager who related of situations where he had repeatedly used competitor information:

"In a situation when a competitor starts to behave aggressively in the marketplace, e.g. in price setting, I immediately analyze, of course, what this means. Is it merely a temporary disturbance or does it threaten our market share permanently? Is the competitor taking over our key customers? Do we have to react to this quickly by lowering our own prices, by better product quality or do we have to provide our customers with better service? We have to be very careful in responding, because if we overreact, there will be a "Serbian war" going on very soon. An eye for an eye, a tooth for a tooth. This will soon create a spiral that will also damage our own position in the market. Of course, the first reaction is always that, aha, we will strike back, but I would say that in most cases it pays to sleep overnight.

In this kind of a situation I use competitor information to find out what the competitor in fact is striving for. If it is a sporadic act, it is best to do nothing. But if it's a declaration of war, a response is necessary. For example, information about the competitor's financial position is always necessary in this situation, because it is often reflected in behavior in the market. If a competitor, e.g., has a cash flow problem, we then know that it might take whatever actions to solve this problem, but we then know what kind of an attitude to take, when we are aware of the motive for this behavior."

It is noteworthy that both managers and professional employees in business development and business intelligence departments identified competition as a hostile game both in the case company and in the parent company. Likewise in the marketing function all interviewees identified competition as a game regardless of hierarchical level in the organization.

Production and technical staff functions on the other hand identified competition principally as ***a struggle for superior capabilities and competencies*** rather than preparing an immediate response to competitive actions. Typically in technical staff functions there was no indication that interviewees - neither managers nor professional employees - would in any respect identify competition as a game. The research and development function also identified competition as building capabilities rather than as a game.

It is interesting to note that some interviewees in this capability-oriented group considered competition to be hostile, while other interviewees looked at competition and competitors as colleagues performing similar duties and solving similar problems and were thus having a cooperative viewpoint. The cooperative approach is best illustrated in the answers of two respondents both working in the technical support staff:

"Our operations with other paper industry companies could better be described as cooperation than competition. I have been involved in various joint working groups in industrial organizations, where the aim has been to achieve overall technical development with competitors. I would put the word competitor in quotation marks. We rather exchange information than try to hide much. This is of mutual benefit in technological development to all parties."

"We are such technocrats in our own narrow field that we see competitors more as colleagues than competitors."

In the case company the collegial approach to competitors was typical especially in technical staff functions, where the overall competition sensitivity was low. On the other hand, in the research and development function, where the predominant identification pattern was also

capability-oriented, the approach was clearly hostile. This was also the case in the production function. The different identification patterns and the hostility or cooperativity of the attitude in the various functions in the case company can be illustrated by the following figure:

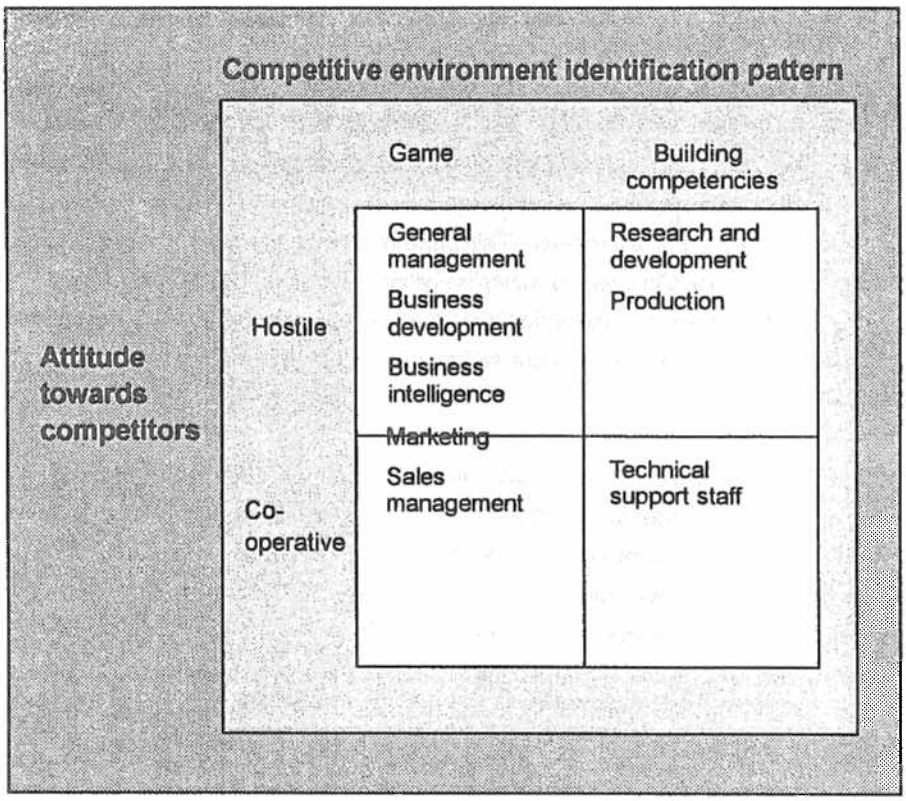


Figure 7.3. Competitive environment identification patterns and characteristic features in some functional groups in the case company

7.6.3. Competition sensitivity of various organizational groups

Competition sensitivity of various organizational participants and groups was studied basically in three different ways. First it was examined based on the interview data, how accurately organizational participants were able to define individual competitors, i.e. whether they were able to name any competitors. The accuracy was also studied by analyzing whether their definition corresponded to the definition made by management or other organizational participants or groups, i.e. whether their definition (actually their schema of

competitive actors in the environment) was shared by any other organizational group. Then competition sensitivity was studied by analyzing the amount and quality of documentary material that the interviewees or organizational groups had at their possession, as it was assumed that this would give some indication of the intensity of the monitoring activities performed by the interviewee.

In addition to this, competition sensitivity was studied by following the communication of a piece of news about a competitor's investment that was considered especially interesting by management at the time that the interviews were made. The competitor's investment resulted in the developing and launching of a new type of product which was qualitatively almost equal to the case company's main product but was cheaper to produce and thus could be offered to customers at a lower price. This piece of news was particularly suited as a target of study as this particular piece of news reported a competitor's interest and later decision to buy a certain piece of production apparatus and perceiving the significance of this investment for the case company was not self-evidently clear and required certain cognitive capabilities.

The interviewees were asked, whether they had heard this piece of news and from whom. When the piece of news was not yet public information, it was communicated in the case company through informal intraorganizational channels between those perceiving the significance of the news. It was made public in the end of March 1993, when the interviewing was just beginning. This piece of news had, however, novelty value, throughout the period that the interviews were in progress and the repercussions of this investment were becoming evident during the interviewing period.

When determining competition sensitivity of an organizational participant or a group of participants based on these above mentioned indications, it could be clearly observed that there were significant differences between different organizational groups and their members regarding sensitivity to competition. In the studied case company and in the parent company it was discovered that the following organizational groups and their members had higher competition sensitivity than other groups:

- ***General management***
- ***Marketing management and professional employees***
- ***Production management and professional employees***
- ***Research and development management and professional employees***
- ***Business development and business intelligence***

When these groups are considered, it is noteworthy that it is not only the boundary position of the group or the individual that determined competition sensitivity in the studied company. Clearly the case and parent companies' production, business development or business intelligence did not directly negotiate or transact with the competitive environment and thus were not according to definition occupying boundary roles in spite of the externally oriented nature of most of these groups. Instead general management, marketing and research and development functions in the case company clearly had these kinds of external transactions.

Furthermore, it can not be claimed that position in the organizational hierarchy determines competition sensitivity, i.e. that managers in general would have higher competition sensitivity than lower levels of organizational hierarchy. Of the 33 interviewed managers of the case company 22 could be classified as having high competition sensitivity and in the parent company 4 managers out of 8 could be considered to have high competition sensitivity. On the other hand, in the group of professional employees 20 interviewees out of 31 had high competition sensitivity.

Thus it would seem that hierarchical position or boundary position alone does not determine competition sensitivity. Rather in the company studied the functional position in the organization would seem to influence competition sensitivity more. However, it is interesting to note that managers in competition sensitive functions could be described as more sensitive to competition than professional employees in the same function. For example, in the production and research and development functions managers were not only able to mention more competitors, but all of them had also collected manual archival records for their own purposes. Furthermore the sophistication of these records was obvious compared to the records collected by professional employees in the same functions. All managers in production and research and development functions had heard the news about the competitor's investment and understood the significance and implications.

It can be noted that regardless of the boundary or non-boundary position and also regardless of the hierarchical position of the organizational participant, the groups and individuals that had high competition sensitivity belonged to ***a work constellation*** where the aim was either to respond to competitive actions or to ensure and improve competitiveness. If the groups or individuals having high competition sensitivity did not have a boundary role they were involved in a work constellation with a boundary spanner. For example, business development and business intelligence departments had a work constellation with the marketing function and also with general management. The production function operated in close cooperation with the marketing function in the case company.

On the other hand, competition sensitivity was lowest in highly specialized functions like the information systems department, financial administration, public relations, the law department or such technical staff functions as, e.g., maintenance, where work constellations with both internal or external constituencies were concentrated on improving performance in the highly specialized task that the individual or group was responsible for. It is interesting to note that some of these highly specialized functions mentioned the same functions in another subsidiary or an external subcontractor providing the same service, when asked to name significant competitors. These were above all cases where the functional group benchmarked their own performance with that of another department performing the same tasks in another subsidiary or benchmarked another subcontractor. In these cases it can be said that the respondents did not fully perceive the company as a whole operating in a competitive environment or consider that competitive actions would affect their own operations. One answer of a manager in a specialized function is illustrative. Due to the risk of revealing the identity of the interviewee, the function in question can not be specified:

"I see as a serious competitor the ...(mentions the name of the function in question)... department in another company - how well they manage performing this function in their company and with what costs and how well they are able to support the business of their companies. Who then is our competitor? Could it be the ... (mentions the name of the same type of department)... in the parent company? They certainly could take care of the same services that we provide."

7.7. Utilization of competitor information and competitive knowledge

7.7.1. Analysis of perceived competitor information needs and demand

The phenomenon of competitor information and competitive knowledge utilization was approached in this empirical study from multiple angles. Besides examining the way that organizational participants utilize information in their work processes and in different decision-making situations, competitor information needs and demand were also studied. This was considered necessary as information needs and demand, as a manifestation of conscious needs and ultimately information utilization, are obviously intertwined. Taking all these perspectives when examining competitor information and competitive knowledge utilization was assumed to provide a more comprehensive view to the studied phenomena than relying solely on an analysis of utilization processes and situations.

In the interviews the respondents were first requested to specify what competitor information either directly or indirectly they needed when carrying out their tasks. In the interviews

no distinction was made between the concepts of data, information and knowledge, but both in articulation of information needs and in the examples of utilization situations that the interviewees related, it was obvious that the respondents were discussing all three concepts. The phrasing of the question was done deliberately in such a way as to induce the respondents to concentrate on assessing the requirements set by their task environment.

The purpose of asking the interviewees directly to define their competitor information needs was above all to give the respondents an opportunity to contemplate analytically what competitor information or competitive knowledge would be required to carry out the tasks of their departments or units in a successful manner. Also in this way, the interviewees were prepared for the discussion of the actual utilization situations.

From the viewpoint of this study, it was not considered necessary to determine information needs by using systematic methods, such as, e.g., the CSF-method or other similar analytic approaches (see chapter 3, section 3.2.), as the aim was not to examine the most appropriate way of competitor monitoring or analysis nor to improve the monitoring or utilization processes. In studying the role of cognitive structures and processes and intraorganizational networks in competitor information and competitive knowledge management it was deemed essential to concentrate on analyzing the way that organizational participants themselves define their information needs and examining the possible differences that exist in conscious needs and actual utilization.

In addition to directly asking the interviewees their needs for competitor information, an analysis of assignments concerning procurement of competitor information, i.e. a study of actual competitor information demand, was carried out. The analyzed assignments were tasks given to the information service department by both managers and also professional employees in various decision-making situations. This analysis was used to provide additional information about the information needs and actual utilization of competitor information by studying one aspect of competitor information demand both in the case company and in the parent company.

In general, it can be noted that interviewees defined their need for competitor information and competitive knowledge as much larger than their actual information utilization would give reason to expect. When actual utilization motives and situations were discussed, a majority of the interviewees were not able to mention instances where they had used the information that they claimed to need. This was true both among general management, functional managers and all groups of professional workers.

When defining information needs the interviewees typically first gave their own job descriptions and also explained the tasks of their departments or units and then analyzed what competitor information or competitive knowledge was needed to perform these tasks. Thus, when defining their need for competitor information and competitive knowledge, the interviewees in fact made an effort to establish what kind of information *should* be used in their work processes in order to perform them successfully. Some managers were also clearly aware of what they were supposed to answer to this type of question - the following extreme example of one manager's answer illustrates this tendency:

..."Didn't Porter describe this in his book of competitor analysis and competitive strategy. (The manager picks Porter's book Competitive Strategy from his bookshelf) It is all presented here..."

When the competitor information needs that the interviewees expressed were analyzed and when the assignments that were given to the information service department were studied, it could clearly be seen that the advanced functional specialization characterized the areas of interest both in expressed competitor information needs and in actual competitor information demand. In particular, interviewees that identified competition primarily as the building up of superior competencies defined their needs from the viewpoint of their own organizational function. This was the case especially in production, research and development and technical staff functions, but also to some extent in the marketing function. It is noteworthy, however, that also 6 general managers of 8 in the top management team of the case company defined their information needs and areas of interest from functional standpoints, even if their information needs were broader and more general in nature.

Staff functions that had a work constellation either with general management in the case company, group management in the parent company or the marketing function, e.g. business development or business intelligence, did not determine their competitor information needs from a functional viewpoint at all. They preferred comprehensive information of a competitors' performance, especially financial status and competitive positioning. It is noteworthy that only two managers in the top management team of the case company but none of functional managers defined their information needs in this way, whereas in the parent company 5 of 8 interviewed managers defined their competitor information needs by determining them as a requirement for comprehensive information about competitors.

When the interviewees' definitions of competitor information needs and search requests for competitor information were analyzed, the areas of interest could be divided into six different categories:

- ***Competitor's economic status and performance***
- ***Ownership and organization structure***
- ***Competitor's investments and investment plans***
- ***Competitor's production and technological resources***
- ***Competitor's other resources***
- ***Competitor's market position and competitive behavior***

Competitor's economic status and performance and ***ownership and organization structure*** were especially monitored in the general management of the case company and the parent company, but also at all hierarchical levels in the marketing function and in business development and business intelligence functions. Furthermore many interviewees in administrative and supporting staff functions, like financial administration, public relations, marketing communication and information service, also expressed a need for this type of information as "background information", but were not able to show how they had utilized this information in their own work processes, either directly or indirectly. General management utilized this information about competitors' financial position and performance and ownership and organization structures above all to evaluate and forecast competitors' strategies, their ability to invest in new capacity and their overall competitive capability. In the marketing function, information about a competitor's financial position and changes in ownership structure were utilized to interpret the competitor's moves in the marketplace and plan responses. Business development and business intelligence utilized financial and ownership information indirectly in the preparation of reports and to assist management. The information about competitors' economic status and performance needed can be listed as follows:

- ***Profitability***
  - ROI %, ROCE %, ROE %
- ***Financial position***
  - Financial structure
  - Liquidity
  - Equity turnover
  - Liabilities turnover
  - Indebtedness
- ***Productivity***
- ***Costs***
  - Personnel costs
  - Prices of wood raw material
  - Prices of other raw materials

- Energy prices
- Production costs

Organizational participants that either expressed a need for information about a competitor's ***ownership or organization structure*** or ordered this type of information from the information service department were interested above all in the following information:

- ***Ownership structure***
  - Major owners and their share of ownership
  - Ownership changes
- ***Organization structure***
  - Group Structure
  - Direct ownership / subsidiaries
  - Indirect ownership

Competitors' investments and investment plans were the most frequently mentioned type of information needed in all organizational groups and at all hierarchical levels in the organization of the case company. Requests about competitors' investments and existing capacity were also the search assignments most frequently given to the information service department. In most cases organizational participants that expressed an interest in competitors' investments and investment plans were able to show how they utilized this type of information. General managers considered investment information as providing them with reliable information about competitors' actual, realized strategies and also as giving indications of future plans and courses of action. Information about investments in new capacity gave general managers and the marketing function clues to how the market conditions were going to develop in the future and demand / supply circumstances were forecast utilizing this information. General managers developed their own investment plans based on this information. At functional level, investment information was needed and requested in order to be able to assess the technological sophistication of competitors' planned solutions and the implications that this would have on their own performance in the competitive marketplace. Both managers and professional employees in marketing, production and research and development utilized investment information in this way. Areas of interest in competitors' investments can be specified as follows:

- ***Investment plans***
  - Greenfield investments / the amount of new capacity
  - Brownfield investments / the amount of additional capacity
  - Rebuilds / the amount of extended capacity
  - Timing of investment / start-up date

- ***Realized investments***
  - Product quality / paper grade
  - Details of implemented technological solutions and new technology
  - Changes in competitor's position in the product / market space
  - Investment costs

A need for information about ***competitors' production and technological resources*** were mentioned in particular by interviewees in the production and research and development functions. Both managers and professional employees utilized this information to assess their own performance and capabilities compared to competitors' and to allocate improvement measures accordingly. In addition, it was evaluated whether competitors' technological solutions could provide answers to their own problematic areas. General management and the marketing function also expressed a need for technological information in the interviews, but they emphasized that they were interested in this type of information only if it had significant effect on the quality of competitors' products. The technological information needed can be given as the following:

- ***Production technology***
  - Production machinery / details of paper machines and their technology
  - Process technology
  - Process control and achieved uniformity of product quality
  - Environmental technology
  - Reliability of operations
- ***Capacities in various paper grades***
  - Existing capacities
  - Capacity utilization rate
- ***Production volume*** / tons per year
- ***Productivity of competitors' production lines and machinery***
- ***Production costs***
- ***Maintenance and maintenance costs***
  - Maintenance service level
  - Maintenance organization
  - Maintenance costs
- ***Raw materials***
- ***Working methods and organization, housekeeping***

Besides competitors' production and technological resources highly specialized staff functions in particular expressed a need for ***information about competitors' resources*** in respective functional areas. For example, information systems department, HR management,

research and development, information service, maintenance and technical staff functions articulated a need for information on how these functions had been organized by competitors and also the amount of resources competitors had allocated to these functions as well as details of competitors' applications and solutions in these areas. General management was also interested in competitors' performance and costs in these areas as information for comparison with own functions. The following information about competitors' resources was mentioned in more than one interview:

- ***Resources in supporting staff functions***
  - Data processing and information systems costs
  - Research and development costs
  - Information service costs
  - Personnel training costs
  - Service level in supporting staff functions
- ***Human resources***
  - HR policies
  - Key persons
  - Level of HR education and know-how in various functional areas
  - Compensation policy and other terms of employment
  - Number of employees by functions
  - HR age composition
- ***Information systems resources***
  - Hardware and software applications
- ***Energy resources***
  - Self-sufficiency in energy resources
  - Dependence on different types of energy
  - Energy costs

Information about ***competitors' market position and competitive behavior*** was needed and monitored in the marketing function and also in general management. This was principally utilized for assessing their own position and marketing strategy in the competitive marketplace and planning necessary responses. In addition, information about competitors' products was needed and also utilized in research and development and production functions. Product information was used for product benchmarking and also to allocate resources to weak spots in their own competitiveness, and for innovation and motivation of employees. The needed information about competitors' market position and competitive behavior can be listed as follows:

- ***Price and quality competitiveness of competitors' products***
  - In various paper grades
  - In various market areas
- ***Competitor's product portfolio***
  - Paper grades
  - Changes in product portfolio
  - New products and improvements in existing products
  - Focus of research and development activities
- ***Service elements in competitor's products***
  - Delivery times
  - Logistics performance
  - Customer service performance
- ***Competitor's position in the market***
  - Market shares in different paper grades in different market areas
  - Main market areas
  - Changes in market shares or market areas
- ***Competitors sales channels***
- ***Environmental strategy***
  - Environmental argumentation in marketing

It was evident based on the data obtained in the interviews and also by studying search assignments that the need for competitor information varied in frequency. Some competitor information was needed and monitored continuously whereas some information was needed and acquired for specific problem solving situations case by case. This was characteristic in all categories of competitor information. The utilization patterns determined the continuity or occasionality of the information need.

7.7.2. Competitor information collecting motives and utilization patterns

After the interviewees had specified their competitor information needs they were asked for what purposes they actually utilized the information that they had just claimed to need. In the interviews all types of competitor information mentioned when defining information needs were discussed in detail one by one. Additionally the interviewees were encouraged to discuss work processes where competitor information or accrued competitive knowledge was utilized. Observational data was also collected and analyzed to give additional information about these work processes.

In addition, the interviewees were asked to relate and show how they exploited existing competitor information systems or manual archives that some interviewees had collected for their own purposes or that some departments had accrued for their internal use. This procedure was done with those interviewees that stated in the interviews that they had used competitor information systems or manual archives as a source of competitor information.

In general it can be noted that in the studied case company, utilization of competitor information and competitive knowledge is much greater than could be assumed based on strategic planning or strategic management literature. The motives for collecting and exploiting competitor information and subsequent knowledge are diverse and are not restricted to the domain of strategic or operative decision-making. Competitor information was utilized by management and by other competition sensitive groups in the organization mainly in the following work processes:

- ***Strategic and operative decision-making***
- ***Benchmarking - comparing own competencies and performance to that of competitors***
- ***Source of ideas and innovation***
- ***Legitimation of proposals and decisions***
- ***Motivating employees and committing them to decisions and solutions made***
- ***Creating a competent professional image towards various interest groups***
- ***Gaining personal power inside one's own organization***

In ***strategic decision-making*** competitor information and subsequent knowledge was above all utilized for the planning of investments. The information was utilized not only for planning large investments concerning new paper machines or other production lines, but also for planning smaller rebuilds. Both at a strategic and operative level, competitor information was used in decisions to allocate resources. In the research and development and production functions resources were directed to weak spots recognized by comparisons with competitors. Additionally by collecting and exploiting competitor information, marketing strategy was formulated in a continuous process - competitive advantages and market niches were sought and new products and market segments were mapped. Competitor information was utilized for strategic decision-making in general management and also by managers in the marketing, sales, research and development and production functions.

In ***operative decision-making*** competitor information was used mainly by the marketing and sales functions and to some extent by general management. In the marketing and sales functions competitor information was typically used for creating responses to actions that competitors had taken in the marketplace which weakened the focal organizations competitive position. In these situations competitors' motives and capabilities were assessed and a

response was planned. The sales function utilized competitor information also in actual sales situations when putting forward argumentation to customers. For example, information about the quality of competitors' products was used in situations when the advantages of the company's own products were to be emphasized to customers. The superior qualities of the company's own products were pointed out compared to competitive products. The marketing and sales functions required and exploited information about the quality of competitors' products also in sales negotiations when answering customers' questions about, for example, whether equal quality properties could be provided by the company's own product. As well as sales personnel, technical customer service, which in the case company was part of the marketing department, also used competitor information in negotiations with customers in order to be able to put forward arguments in a credible manner.

It is justifiable to separate ***benchmarking*** as a utilization motive from other strategic or operative decision-making even if benchmarking is undoubtedly merely a specific example of these. In particular, the production function, research and development, general management, technical staff functions and other supporting staff compared their own performance and competencies to those of competitors. It is noteworthy that the functions of the line organization emphasized that effective benchmarking would be possible only for firms operating in the same industrial sector, i.e. the firms that they had defined as competitors, whereas staff functions in many cases did benchmarking with respective functions in firms operating in other industrial sectors. The more specialized the function, the more inclined the organizational participants were to look for benchmarking targets in other industries.

In the case company benchmarking of competitors was used especially in the setting objectives regarding the quality of the company's own product. This way of utilizing competitor information was typical in production, research and development and marketing functions. In addition, benchmarking was used to assess profitability, different components of productivity, cost structure and sophistication of the know-how of human resources. It was then used to prepare improvement plans and in necessary decision-making.

In the same way as Ghoshal and Westney (1991, p. 17-31) observed in their empirical study, competitor information was also used to ***create ideas and innovation***. This was a typical utilization motive for professional employees in production and in most staff functions whereas in general management and marketing this kind of utilization occured only in a few cases. Monitoring competitors' actions and solutions provided organizational participants in the case company with e.g. information about the strengths and weaknesses of different technological innovations or positive or negative effects of different measures taken. In a way the professional employees were able to ***learn from the experiences of competitors*** - of both successes and failures - without having to experiment themselves. It should be

noted that the utilization motive was definitely not to copy or imitate competitors' behavior or solutions but to avoid making the same mistakes that competitors had already made or recognizing a successful solution or action if it had already been implemented by a competitor. Ideas and innovations for hte company's own development work were generated in this monitoring process. The ultimate aim in utilizing competitor information and accruing competitive knowledge in this way was to save scarce resources and exploit the results achieved by competitors. Especially in organizational functions where competition sensitivity was low, like information systems department, public relations, information service and technical staff functions, this utilization motive was evident in the majority of the respondents interviewed and observed. Technical staff functions, e.g., collected and exploited competitor information in specific technological problem solving situations case by case when problematic situations were encountered.

In line with Ghoshal's and Westney's observations, this empirical study also established that competitor information is used for ***legitimation of proposals and decisions***. This utilization motive was common in all competition sensitive functions especially among professional employees but also among functional managers. When making proposals for investments or suggesting that a certain course of action should be taken, information about competitors' solutions or actions were used as an argument in the decision-making process. Among professional employees the ultimate aim in utilizing information in this way was to secure resources and consequently to improve competencies. It is interesting to note that professional employees and function managers utilized, in almost all cases recorded in this empirical study, competitors' successful solutions as a reference in legitimation, but only in few cases were competitors' failures used as a reference in the decision-making process.

One specific type of legitimation should be given special attention due to its significance - namely utilization of competitor information in ***motivating employees and committing them to decisions and solutions*** made. In all the studied organizational groups but particularly in the production and research and development functions, which were oriented towards building and improving competencies, this utilization pattern was typical. Especially functional managers but also professional employees in these functions presented to their subordinates, how their own company or own function is performing compared to significant competitors in an effort to motivate them to better performance and to create an overall community spirit, i.e. in an effort to build solidarity and commitment. It is likewise interesting to note that all examples of this type of utilization recorded in interviews or by observation involved situations when comparison was positive to the case company. In interviews the respondents who utilized competitor information in this way were asked whether motivation would function in comparisons proving negative to the case company and whether they could recall any incident of this type. All such interviewees but one

answered that they could not recall or mention examples of situations where the comparison made would have been proved negative for the case company. When this result is considered it should be remembered that in the corporate culture of the case company a certain feeling of solidarity was characteristic - the "spirit" of the case company, as already discussed in section 7.3. Utilization of competitor information in "positive" motivation showed in fact that managers and professional employees consciously tried to maintain this spirit of solidarity and commitment.

Professional employees used competitor information and accrued competitive knowledge also for their own individual purposes. Professional employees in all competition sensitive groups used this information and knowledge in ***creating a competent and professional image towards various constituents*** both inside and outside their own organization. When meeting external interest groups, professional employees felt it important to have some kind of basic background information about competitors. This included information about competitors' financial performance in general, competitors' products and production technology and their latest investments. Also inside their own organization professional employees considered it important to be equally aware and if possible even more aware than their colleagues of competitors' state of affairs. It was obvious based on the information collected in the interviews and by participant-observation that professional employees considered competitor information and the consequent competitive knowledge to be an essential part of their professional competence or know-how. A few functional managers also utilized competitor information and competitive knowledge in this way, but in the majority of cases this was a utilization pattern occurring merely among professional employees in the case company.

Besides creating an image of competence competitor information - although not so much competitive knowledge - was exploited for ***gaining personal power inside the organization***. This utilization pattern was common both among functional managers and professional employees. Competitor information was withheld from other organizational participants to be used in appropriate situations in internal meetings and also in reports made to general management in the case company or in the parent company. This type of utilization could be recorded in the interviews. When the interviewees were asked whether they had noticed any restraints in intraorganizational communication of competitor information, a considerable number of examples of this utilization pattern could be recorded. In a way, utilizing competitor information as a means for gaining power is consistent with the observation that this information constitutes a part of perceived professional competence. As competitor information is easy to communicate at least between those who can interpret the meaning of this information, handing over valuable competitor information that other organizational participants do not possess without getting anything in exchange is unprofitable from an

individual's point of view. On the other hand, the greater part of competitive knowledge is at least to some extent tacit in nature and in this way it was not necessary to withhold competitive knowledge or know-how in the same way as competitor information as in these cases it is usually inevitable that the professional employee possessing the competitive knowledge is involved in the exchange process and thus getting direct acknowledgment for his competence.

7.7.3. Utilization of competitor information sources

In the interviews the respondents were directly asked for the principal sources of competitor information that they use in their work processes. In addition there was a detailed discussion with those interviewees that had given specific examples of utilization situations of where they had got the competitor information that they used. The study also investigated where the interviewees had got the piece of news about a certain competitor's investment, which was used as an example in the empirical study, and this analysis was used in complementing other evidence. Discussion of information sources was considered necessary as it was assumed to provide an interesting aspect of the utilization processes and also partly to describe the nature of competitor information sharing and communication, which is discussed in the next section 7.8.

When discussing competitor information sources, the interviewees were given some general suggestions for information sources listed in competitive intelligence literature as a basis for discussion. This was felt necessary as in the test interviews done with the advisory group, it had been noticed that even interviewees with high competition sensitivity had difficulties in defining comprehensively their information sources. The suggestive list was, however, drafted in sufficiently general outlines as not to affect the interviewees' specific answers. In the discussions with the respondents too general answers were not accepted but the interviewees were asked to define the information sources specifically.

The competitor information sources that the interviewees mentioned in all answers to information sources can be categorized in the following way, where information sources in each category are presented by frequency:

Human information sources:

Colleagues outside own organization	147 mentions
Colleagues inside own organization	114 mentions
- Superiors	39 mentions
- Peers	43 mentions

- Subordinates	32 mentions
Customers	26 mentions
Intraorganizational meetings	15 mentions

Structured information sources:

Articles in professional journals	153 mentions
Newsclipping services	126 mentions
Articles in newspapers and trade journals	103 mentions
Competitor information systems	42 mentions
Annual reports	42 mentions
Market research reports	31 mentions
Written reports (intraorganizational)	4 mentions
Commercial databases	2 mentions
Statistics	1 mention

Even if further classification and analysis of the category "colleagues outside own organization" would provide additional valuable information, this further elaboration is not possible without revealing business secrets. Therefore analyzing this category further is left outside the scope of this study.

It should be emphasized that the frequencies presented here give only general suggestions of the utilization of different information sources by different organizational participants. They simply constitute a list of different sources used, but do not give any evidence of actual utilization frequency in the studied organization. When looking at these figures, it should be noted that some interviewees with low competition sensitivity did not answer this question, whereas some interviewees having high competition sensitivity gave a number of information sources. The frequencies presented above simply count all the mentions of specific information sources recorded in the interviews and should be regarded against this background.

After discussing in detail the sources from which the interviewees got competitor information, they were requested to estimate the reliability and usefulness of these sources. The respondents were asked to select from the information sources that they had just mentioned the three that they considered to be most valuable in carrying out their own work. It was considered that requesting the interviewees to make a choice between different information sources would provide evidence not only of their appreciation of these sources, but the answers would also more reliably reflect the actual utilization frequency and utilization patterns of different information sources in decision-making situations. It should be noted that

all interviewees were not prepared to answer this question and some respondents gave fewer choices than three.

When the answers to this question about preferred information sources were analyzed, the most valued competitor information sources could be distinguished as follows:

Colleagues outside own organization	46 mentions
Colleagues inside own organization	33 mentions
Articles and newsclipping services	21 mentions
Customers	9 mentions
Annual reports and analysts' reports	6 mentions

It should be noted again that these frequencies in themselves do not reflect any absolute level of valuation, but should be interpreted as indicative. More than actual frequencies the answers to this question give evidence of the utilization patterns of competitor information sources in decision-making.

There were no significant differences between various organizational groups in valuation and utilization of competitor information sources according to hierarchical level in the organization. Both managers and professional employees had similar patterns in utilization of information sources. However, there were significant differences in utilization of information sources according to competition sensitivity, competitor information access potential and competitor information intensity. Individuals and organizational groups that had high competition sensitivity, high competitor information access potential and high competitor information intensity were more inclined to use human information sources and oral communication than others. Those groups that had very low competition sensitivity did not answer these questions at all and those with low competition sensitivity were inclined to value structured sources more than other respondents.

Thus, when looking at the answers, it is noteworthy that on the whole human sources scored high in most valued and most used information sources, whereas structured information sources got relatively few mentions as most valued information sources. This is consistent with the results achieved in studies concerning managerial information processing (see e.g. Mintzberg's study, 1973 or McKinnon and Bruns, 1992, p. 201 or McLeod and Jones, 1987, p. 87-104). When the valuation of information sources and especially the role of information systems as a source of competitor information were discussed further in the interview, most of the respondents mentioned the interactivity and rapidity of human sources as the principal reason for preferring human information sources compared to structured ones.

An interactive communication situation enabled the parties to exchange views and subjective opinions freely.

Various types of collegial relationships outside the company organization were clearly the most valued competitor information sources in all organizational groups at all hierarchical levels. Colleagues inside the company's own organization - superiors, peers and subordinates - provided information that was also considered valuable in all organizational groups. Therefore the results of this empirical study seem to indicate that structured information sources provided the largest amount of competitor information, but the least value. On the other hand, human information sources provided a lesser volume, but the highest value of competitor information for respondents in all organizational groups. Additional evidence confirming this observation was gained, when the information concerning a competitor's investment used as an example was studied. An overwhelming majority of the interviewees had obtained this piece of information from human information sources, even after this piece of information was published.

It is also interesting that none of the respondents considered competitor information systems as giving the most valuable information, even if these systems had been designed and tailored to provide competitor information for the studied case company and parent company. There were several information systems in use, each designed to satisfy the information needs of specific target groups: one general system that was managed by the financial planning department of the parent company, two systems giving information about competitors' products and one system concentrating on competitors' production facilities.

The role of competitor information systems was discussed further in the interviews as this was considered to describe the position and possibilities of systematic competitor monitoring among different organizational groups. In the interviews both managers and professional employees were asked about their preferences in using different information sources, among them information systems. General management both in the case and the parent company expressed a deeply skeptical attitude towards information systems as a source of competitor information. None of the interviewed general managers was prepared to utilize a competitor information system as a tool in his own work. On the other hand, many middle managers in various functional groups and also professional employees felt that the lack of a suitable competitor information system was a hindrance in their own work. Particularly, professional employees in competition sensitive functions were prepared to use an information system as a source of competitor information.

It was paradoxical that existing competitor information systems in the case company had been more or less designed for the needs of general managers and to some extent also to the

needs of functional managers. Managers, however, especially general managers were clearly the group that was least interested in utilizing information systems as a source of competitor information. On the other hand, the majority of professional employees felt that they could not find relevant information from existing competitor information systems. The reason for this was that these information systems were not designed specifically for them.

The most frequently mentioned problem in existing competitor information systems was that the respondents felt that these systems did not provide sufficiently detailed information for their needs in decision-making situations. Competitor information contained in these systems was too general and too aggregated in order to be useful for most functional managers and professional employees. Many interviewees also mentioned that existing information systems as well as manual archives were not updated frequently enough. Competitor information in these systems was too old to be valuable as a source of information.

In summary it should be emphasized that despite the strong inclination to utilize human information sources and oral communication as the principal source of competitor information, it was characteristic, particularly of managerial information acquisition but to large extent also for professional employees in the case and parent companies, that many sources of information were used simultaneously. When the same piece of information was gained from several independent sources, the information was corroborated and perceived reliability increased. In this way managers and professional employees formed and changed their perception of the competitive environment by utilizing many information sources. The utilization of various information sources is best described by two answers from interviewees in managerial positions:

"The most valuable competitor information I get is from collegial contacts outside own organization. I also get valuable information from public sources. When especially future oriented matters are speculative in nature, there is never just one source. It is usual that when you hear an interesting piece of information for the first time, you do not react. Then when you hear a corroboration from two other sources, you take a different attitude."

Another general manager answered to the questio where he had got the piece of information about a competitor's investment which was investigated as an example in the study:

"The information came from various sources. Actually it was like this: I had always thought that this particular competitor had a paper machine that needed rebuilding sooner or later. The markets for its product had long been decreasing also. I had always thought that this competitor would have to do something to their machine. I often had wondered, whether the guys would realize what they actually should do with their machine. Then I

read, I think it was in their personnel magazine, that some development work was being done in this particular mill. The article did not specify accurately what it was all about, but I somehow got the feeling that something was up. Then I heard from my contacts inside our own company (mentions two persons, one peer and one subordinate) that this competitor is interested in a certain type of production facility and also that this competitor has hired professionals in a certain type of technology. These pieces of information put together were enough. I knew that the guys had realized after all."

7.8. Competitor information and competitive knowledge communication patterns

7.8.1. Formal and informal networks in the case company

Based on the theoretical elaboration it was assumed that a great amount of competitor information and subsequent competitive knowledge is shared through an intraorganizational communication network, either formal or informal. The results achieved in preliminary discussions and test interviews with the advisory group also indicated that different types of networks had a significant role in the communication of competitor information and competitive knowledge in the case company studied. In addition the results got in the interviews of utilization of competitor information sources supported further the justification for adopting the network perspective.

As it was evident that in addition to communication through networks, competitor information was deliberately distributed in structured form, e.g. in competitor information systems, also this type of communication was investigated. In addition, what kind of role different ways of communication had in the overall communication of competitor information and competitive knowledge in the case company, was analyzed.

The ***formal networks*** in the case company were studied before the interviewing process was started. These formal networks were mostly determined in an accurately defined code of practice, which described the authorities, tasks and responsibilities of different functions and their managers. This documentation was studied in order to analyze the division of labor in the case company and in this way to get some preliminary ideas of how monitoring of the competitive environment and competitors had been formally arranged. In addition to formally defined relationships the case company had deeply-rooted routines of interdepartmental co-operation, e.g. regular meetings, even if these were not actually defined in the formal code of practice. These co-operative relationships had, however, such a long-established role in the organizational decision-making and communication that they actually had a formal role and their decisions formal authority.

When the formal organizational networks were studied, it could be observed that the tasks of monitoring the competitive environment or competitors were not clearly recorded in the formal code of practice of the case company. On the other hand, in the parent company monitoring responsibilities had been clearly defined. The financial planning department and corporate marketing intelligence of the parent company had the responsibility of monitoring the competitive environment recorded in their task descriptions. Even if the responsibilities of competitor monitoring had not been formally defined in the case company's organization structure and practice, various organizational participants had these activities included in their actual tasks and these activities were carried out in connection with other duties.

When these formal networking patterns were studied in the case company, it was obvious that particularly vertical relationships were well defined in the formal organization structure, whereas lateral relationships were in most cases not determined in detail. The formal organization structure had obviously been designed above all to define the relationships of formal authority and responsibilities and not so much to direct co-operation between different functions. Some work constellations between different functions were, however, defined. For example, the work constellations between various supporting and line functions were defined and also to some extent the relationship between the production and marketing functions. In addition, established routines of interdepartmental co-operation, especially the networks between production, marketing and research and development functions, were evident at both mill sites of the case company.

Besides formal networks ***informal intraorganizational networks*** were also studied in the interviews. This was done by discussing what kind of intraorganizational contacts the interviewees had in the case company, in the parent company or in other subsidiaries belonging to the group. The interviewees were asked to mention ten persons outside their own department or outside their immediate surroundings that they either had close contact with or that they considered to be important for carrying out their own work. The interviewees were asked to consider both contacts that they considered to be important in getting competitor information and also those that they considered to be otherwise significant. The respondents were allowed to give more than ten contacts, if they considered it necessary. On the other hand, some interviewees mentioned fewer than ten significant contacts. It should be noted that they were interviewees with low competition sensitivity and they were understandably not able to mention contacts that were important in acquiring competitor information. These interviewees mentioned contacts that they considered otherwise significant for their own work.

The reason for asking the interviewees to mention especially contacts outside their own immediate surrounding was to map the lateral relationships and weak ties in the organization. This was deemed appropriate as the aim was above all to study the sharing of competitor information between different organizational functions and not so much to study communication of competitor information between individuals. It was assumed that asking the interviewees to name ten contacts would give evidence of both the frequency of contacts between different functions and also of the quality of these relationships. This assumption was deemed justified as the respondents were actually requested to make a choice between the most important contacts, i.e. decide on the relevancy of different intraorganizational contacts.

In the interviews, informal networks were additionally studied by following an interesting piece of news about a competitor's investment. This piece of news told about competitor X's rebuild of a paper machine aiming at a significant improvement in this competitor's product. The interviewees were asked where and when they had heard or read about this investment for the first time. They were also asked to whom they had communicated this piece of news after they had heard or read it. Furthermore the utilization of competitor information sources was studied and used for corroborating other evidence as it obviously described communication of competitor information from one angle.

The answers to the question of the ten most important contacts were analyzed by recording the frequency of contacts between different departments and functional groups. Also it was studied whether the respondents in the respective groups considered the relationship to be mutual. Furthermore, it was investigated whether gatekeepers could be found, i.e. persons with a central position in the informal communication network. It was assumed that if gatekeepers could be found they would most probably have a significant role in the communication of competitor information and the position of these gatekeepers would give information of overall communication patterns between different organizational functions. The evidence collected by studying the communication of the aforementioned piece of news and utilization of competitor information sources was used in corroborating the results achieved by asking the interviewees to name most important contacts.

7.8.2. Lateral networks and gatekeepers in the case company

Generally it can be stated that the interdepartmental communication had clear "knots" i.e. persons, who had a central role in communication networks. These persons did to some extent take care of the exchange of competitor information and competitive knowledge for their own departments i.e. they spanned the boundary for their own organizational groups.

In this way they can be described as internal communication "stars" and in the following they are called gatekeepers.

The results of this analysis of intraorganizational relationships showed that the case company is characteristically technologically oriented. The production function had a central role in all interdepartmental networks and especially in those that communicate competitor information. Four of the six gatekeepers observed in the case company were members of the production function. This finding is understandable in the case company as competitive advantage in the paper industry is largely achieved by a good command of and technological superiority in the production process.

Furthermore, when the contact networks were studied by analyzing the interdepartmental contacts that interviewees had mentioned in the interviews and by following the communication of the piece of news, in general it could be observed that strong lateral relations existed between the line functions of the case company. The production and marketing functions especially were clearly connected to each other by lateral relationships at all hierarchical levels. In the interviews, in the answers of almost all professional employees and managers in the production and marketing functions a majority of the most important contacts came from the other function. However, interviewees in the production function considered marketing a more significant contact than interviewees in the marketing function considered contacts in the production. It is noteworthy that general management was also a party in this network formed by the production and marketing functions. Particularly, the relationships between the marketing function and general management were strong. Also, when the communication of the piece of news was studied, the production and marketing functions and general managers all got this piece of competitor information from their own collegial contacts outside the case company and after receiving this piece of news communicated it among themselves. In general, it can be stated that the network formed by the production and marketing functions and general management clearly had a significant role in the communication of competitor information and the transfer of competitive knowledge in the case company.

On the other hand, it could be observed that staff functions were without exception outside the networks where competitor information was communicated. It is interesting to note that the research and development function and those departments dealing with competitive intelligence activities in the case and parent companies were not included in networks that communicated competitor information, even if in these functions competition sensitivity was on average very high. Interviewees in the research and development function mentioned members of production and marketing functions among their most important contacts, but the relationship was not reciprocal. Interviewees in the production and marketing functions

did not in general consider the research and development function to be a significant contact. Also, the competitive intelligence function mentioned general managers as their most important contacts as they were involved in a work constellation, but likewise this relationship lacked reciprocity. None of the general managers interviewed mentioned competitive or marketing intelligence as a significant contact.

Following the communication of the piece of news about a competitor's investment gave further verification to this finding regarding the staff functions' position in interdepartmental networks. Such staff functions as the technical support staff and administrative staff were not aware of this piece of news and its significance to the case company even after the information was made public by the competitor themselves and was very widely discussed in the case company. The research and development function and competitive intelligence functions were not among the first functions included, when this piece of news was discussed. The intelligence function received this piece of information at a later stage than those included in the network and the research and development function received this information only, when the quality of this novel product was first discussed. That is to say that these functions were communicated this piece of information when they got involved in the work processes concerning the assessment and consequences of the competitor's investment and when reactions to the competitor's move were planned.

It is noteworthy that the interdepartmental communication networks had clear "knots", i.e. persons occupying gatekeeping roles could be found. When the findings of the interviews and the communication of the piece of news were analyzed, six organizational participants could be clearly distinguished as gatekeepers:

- Three participants in executive positions in the production function at both locations of the case company
- One participant in a managerial position in the production function at paper mill A
- The managing director
- A mill manager (a general manager)

In addition to these internal communication stars some other organizational participants, especially in the production and marketing functions, were also to some extent in a central position in the communication networks, but only these six gatekeepers had a very wide communication network in different organizational functions. It is interesting to note that all six gatekeepers occupy managerial positions, whereas gatekeepers could not be found among professional employees. Furthermore, no gatekeepers or organizational participants in central roles in the communication networks could not be found among staff functions.

7.8.3. Barriers in intraorganizational communication

In order to get additional information about the functioning of intraorganizational networks, the interviewees were requested to contemplate whether they considered that there were any obstructing factors or barriers - deliberate or unintentional - in the flow of competitor information inside the case company or between the case and parent companies. The interviewees were also asked to mention examples of situations where a free flow of information was impeded. In addition to asking for subjective views, participant observation and discussions with the advisory group were also used to verify this evidence. Studying the perceived barriers in intraorganizational communication was assumed to give further evidence not only of intraorganizational networks and their role in the communication of competitor information and transfer of competitive knowledge, but also evidence of how these networks functioned.

When the collected evidence was analyzed, it could be noted that the perceived barriers in overall communication and the communication of competitor information were principally to be found in the relationship between the case company and the parent company and between the case company and other subsidiaries in the same group. The different subsidiaries had a very independent position in the group and this probably affected both the relationships between the case and parent companies and also relationships between subsidiaries. Interviewees in the case company told in the interviews that exchange of competitor information with the parent company lacked reciprocity. These respondents felt that information was provided for the parent company when requested, whereas the parent company did not provide the case company with sufficient competitor information.

It is interesting to note that the perceived barriers of communication did follow organizational boundaries and no indication of, e.g., geographical barriers could be observed. As mentioned earlier, the case company operates at two mill locations. The parent company has some functions at the other mill site, but also at several other locations in Finland. Based on the evidence collected, it could be observed that there was no difference between the organizational participants' perception of communication barriers towards those functions of the parent company that were located at the same mill site and those that were not located in geographical proximity. Also there were no significant perceived communication barriers between the two mill sites. However, there were clearly some barriers in communication between the case company and some foreign subsidiaries. The interviewees mentioned that these barriers were caused by difficulties in communicating in a foreign language and also by cultural differences.

Almost all interviewees considered that the obstructions in the communication of competitor information inside the case company were random and unintentional. Some interviewees mentioned in this discussion, however, that some professional employees hold back important competitor information in order to utilize it in situations where they can exploit it to improve their own personal position in the organization. Many interviewees related incidents when competitor information was deliberately revealed in a meeting with management. Obviously, as competitor information is, particularly for professional employees, an asset that is acquired in hard-to-establish contacts inside and outside the organization, professional employees and middle management perceive competitor information and competitive knowledge as being part of their professional identity.

Unintentional impediments were also studied in the interviews by discussing with the professional employees, whether they believed that management would be interested in competitor information that they accessed through their own network of contacts. This issue was also discussed with management by asking whether they thought that professional employees at lower hierarchical levels have potential competitor information that is not utilized to the full in the case company. It is interesting to note that with only a few exceptions - all these exceptions coming from the marketing function - professional employees felt that management would not be interested in any information that they could get from their networks. Functional managers, on the other hand, felt that there was a great deal of underutilized information and knowledge potential in the organization. General management and management of the marketing function, however, considered that underutilized potential does not exist to a large extent.

7.8.4. The media used in communication of competitor information

It was considered necessary to study the communication media used in intraorganizational communication and especially in communication of competitor information. This was assumed to supplement and give further evidence of the communication patterns in the case company. In addition, it was deemed necessary to analyze what kind of role different ways of communication, e.g. oral and written communication, had in the overall communication of competitor information and transfer of subsequent competitive knowledge.

The interviewees were asked, what was their principal way of communication with the persons that they named as their most valuable contacts outside their own department or outside their immediate proximity. They were asked, what type of communication is the most frequent. The interviewees were given some alternatives in the interview, if they had difficulties in defining different types of communication. These alternatives were:

- Regular meetings
- Other planned appointments, face-to-face meetings
- Ad hoc face-to-face meetings
- Written reports
- Phone conversations
- Electronic mail

Oral communication was the most frequent communication type among all interviewees. Some type of oral communication was mentioned by all interviewees as a principal way of communication. Particularly in the communication of competitor information phone conversations and ad hoc face-to-face meetings were the most important way of communicating. In addition to this, regular meetings were considered an important forum for information exchange and many respondents emphasized their significance. It should be noted in this connection that in the case company there is a corporate culture that encourages holding meetings both inside departments and interdepartmentally in decision-making or problem solving situations. In this particular company the corporate culture has certainly affected this tendency to exchange information in meetings.

However, competitor information was not communicated in written reports or by electronic mail to a large extent. Only one respondent mentioned that he used to communicate some interesting pieces of news about competitors to his colleagues by electronic mail. Many interviewees told that they did not consider a written form to be appropriate for communication of competitor information, which in many cases was confidential and in some cases "soft" information that was not totally reliable and confirmed from many sources.

However, when the answers from the interviews were analyzed and when the different archives and databases of competitor information and written reports containing competitor information were studied, the picture changed somewhat. A lot of communication containing competitor information was indeed put in written form in the case company. This information was not exchanged in the communication networks that the respondents felt to convey the most valuable competitor information.

When utilization of this written communication was studied by asking in the interviews, how respondents utilized these written sources and by participant observation, it could be established that different types of information were communicated in different ways. Written communication - written reports and electronic mail messages - were used above all for communicating factual information that had usually been confirmed from multiple sources. Oral communication was used for communication of competitor information that had

usually not been properly confirmed from different sources and that had more novelty value than the information communicated in written form. Oral communication was also used in situations involving transfer of competitive knowledge. The role of these structured forms of communication was obviously to capture and store factual competitor information to be retrieved at a later stage.

7.9. Formation of an organizational base of competitive knowledge

7.9.1. Competitor information access potential in different organizational groups

The preliminary findings of the empirical study confirmed the assumption that there were considerable differences between various organizational groups, not only in competition sensitivity, but also in their ability to obtain, collect and process competitor information and ultimately to accumulate competitive knowledge. Based on these first exploratory findings and on theoretical elaboration it was assumed that there would be differences in competitor information access potential between various organizational functions - regarding both access to published information and information gained from individual network. Therefore, in the case company it was estimated by using interview data, by examining archival records and by participant observation, how easily competitor information was obtained by different organizational groups and whether there were any differences in access to this type of information.

In the interviews the discussion of various competitor information sources gave many indications of the accessibility of competitor information. The discussion revealed the types of information - e.g. published information and information obtained from the interviewee's own network - that the interviewee utilized in his decision-making. Furthermore, following the communication of the piece of news about a competitor's investment provided a means to "test" which individuals had obtained this information and which had not heard of it, i.e. which individuals and functions had access to this information considered crucial by management at the time of the interviews and which individuals and functions lacked this access. Additionally various archival records and databases that were collected by various functional groups were studied and the quality and sophistication of information therein was estimated.

When examining the results of these analyses, it was obvious that position in the organizational hierarchy affected competitor information access potential. It is not surprising that managers generally had better access to competitor information - both published and information shared in networks - than professional employees in the same functions. It should be

noted, however, that managers in highly specialized functions had lower competitor information access potential than managers in functions with high competition sensitivity.

The results show that to some extent competition sensitivity and competitor information access potential are parallel qualities, i.e. almost all individuals that could be estimated to have good access to both published competitor information and information shared in networks had at the same time high competition sensitivity. It is worth noting, however, that competitor information access potential is by no means determined by competition sensitivity, in other words all functions that have high competition sensitivity do not necessarily have high competitor information access potential. Of the organizational functions that had high competition sensitivity, there was one that clearly had lower competitor information access potential than the others.

Those functions that in the case company carried out business development or business intelligence tasks, i.e. marketing intelligence and financial planning in the parent company and information service in the case company, had significantly fewer possibilities to access competitor information than other competition sensitive functions. As mentioned earlier in section 7.8.2. when discussing lateral networks, staff functions were without exception outside the networks in which competitor information was communicated. On the other hand intelligence functions had better possibilities to access published information than other functions with high competition sensitivity. In general, however, the sophistication of the information resources of intelligence functions was inferior to other functions with high competition sensitivity.

In the case of the research and development function, access to competitor information was reduced by the same lack of networking as seen in intelligence functions. The research and development function, however, had external networks outside the own company that compensated for the lack of internal networking. In general the research and development function had better access to competitor information than the intelligence function, but not as good access as line functions which had high competition sensitivity.

In the case company the line functions which had high competition sensitivity, i.e. marketing and production and general management, had overwhelmingly the best possibilities to access competitor information. These groups had access to published sources and also the best access to competitor information exchanged in intraorganizational networks. It was obvious that the sharing of competitor information in the network of general management and these line functions was done in connection with daily operations,. i.e.. in the work constellation that these groups formed.

The work constellation that these groups had with intelligence functions and the research and development function was different, however. These staff functions served the line functions by assisting them in decision-making and particularly in problem solving situations. It seemed that the exchange of information was in many cases restricted to these situations and especially in the case of the intelligence function the exchange of information was typically a one-way flow from the intelligence function to the line functions.

In summary it can be stated that in the studied case and parent companies the following functions had the best access to competitor information:

- ***General management***
- ***Marketing management and professional employees***
- ***Production management and professional employees***

7.9.2. Competitor information intensity in different organizational groups

By definition competitor information intensity is more or less determined by competition sensitivity and competitor information access potential of individuals and organizational groups. In order for high competitor information intensity to develop, an individual or an organizational group is required to have both high competition sensitivity and good competitor information access potential.

In the studied case company it could be observed that all functions that had high competition sensitivity also had high or relatively high competitor information intensity. The line functions, i.e. marketing and production, and general management which had high competition sensitivity and high competitor information access potential, also clearly had high competitor information intensity. The work of these groups was highly competitor information intensive and they used both public information and information gained from intraorganizational and external networks in their work processes. These groups also more than other organizational groups had created various kinds of manual archives or data banks to store and retrieve the competitor information that they possessed. Part of these archives were especially tailored for the use of these groups and were not shared with other organizational groups.

The research and development function and intelligence functions which had high competition sensitivity but more restricted competitor information access potential could be observed to have relatively high competitor information intensity. The nature of the information resources possessed by these functions was different, however, from those of

general management, marketing or production. The majority of competitor information that the research and development and intelligence function possessed was collected from public sources, whereas the majority of competitor information that the other functions accumulated was collected from intraorganizational and external networking. The emphasis of accumulated competitor information thus varied in these functions.

This empirical study did not study competitive knowledge capabilities of different organizational groups, even if this concept was discussed and used to create the theoretical framework. Estimating the competitive knowledge capabilities of various organizational groups would have required a detailed study of how well individuals and groups were able to utilize competitor information in their work processes and how well they were able to learn from this information, i.e. to form competitive knowledge and use this in achieving organizational goals. This estimation would have required extensive research and would have gone outside the scope of this study. The aim in this study has been to explain and understand the processes in which organizational participants and groups manage competitor information and competitive knowledge and not how these information and knowledge resources are implemented in operations in order to improve organization's performance.

8. CONCLUSIONS AND DISCUSSION

8.1. Major results of the study

This study has made an attempt to stir research interest in an important, but often overlooked issue in strategic management literature. The approach in existing research concerning monitoring of the competitive environment and analysis, communication and utilization of competitor information has been more or less analytical and prescriptive. The focus has been on providing a consistent framework and a manifold of tools for a firm to plan and organize its competitor analysis and intelligence functions in a rational and systematic manner. However, very little attention has been paid to the cognitive questions connected to this intelligence process and to the different ways that organizational participants use in sharing information. In this study, management of the competitive environment and competitors therein was studied from the information processing perspective and an effort has been made to get a holistic view of the systematic and implicit processes in which a corporate organization makes sense of the competitive environment, utilizes the information collected from this environment and accumulates competitive knowledge. This chapter 8 draws together the analyses from the theoretical discussion presented in chapters 2-6 and the research findings from the empirical study discussed in chapter 7 and makes conclusions based on these results. Also, managerial implications and suggestions for further research are discussed in this chapter.

This study claims that the primary phase in management of competitor information and competitive knowledge is ***perceiving*** the competitive environment and ***identifying and defining*** the relevant individual actors, i.e. competitors operating in this environment. Traditional strategic management literature has emphasized the importance of a systematic approach in which the competitive environment is analytically studied and all existing and potential competitors are defined. This approach prescribes to include in competitor definition and competitor monitoring all such actors that possibly threaten the focal organization both now and in future.

In this study it has been shown, both through theoretical elaboration and enhanced by empirical evidence, that in reality managers do not define competitors in such a systematical and analytical manner. Instead, decision-makers settle the problem of perceiving the competitive environment and competitor definition by using simplified mental models. Organizational participants ***define rival organizations by developing cognitive taxonomies***, i.e. ***classifications of their competitive environments, focusing on those corporate***

organizations that are similar to their own in goals and resources. Managers and other experts attempt to match the characteristics of their own organization to characteristics of perceived categories of competitors in order to comprehend their organization's position in the competitive environment and to define the actors relevant from their own organization's standpoint. Once a decision-maker has defined the relevant category, this classification provides the foundation on which much of the environment is understood.

The empirical study carried out in a forest industry company provided corroborating evidence to the theoretical elaboration and to previously made empirical studies. Based on the results of this empirical study, there is no reason to assume that managers or professional employees would approach the issue of competitor definition in an analytic, Porterian manner. The managers and experts in the forest industry company clearly perceived the competitive environment and identified competitors therein based on cognitive taxonomies that had developed as a result of previous experiences and knowledge. Both managers and professional employees defined competitors as producers of the same paper grade which was the main product of the case company. It is worth noting that managers and professional employees generally did not even consider producers of substituting paper grades as competitors, not to speak of less obvious competitive forces like electronic media. The managers and professional employees also used a geographical limitation in defining competitors. They in general considered significant competitors to be situated in Europe, which is the main market area of the case company, i.e. the competitive arena where competitors are met and where similar goals cause collisions.

By using previous knowledge and experience organized into a schema, i.e. a knowledge structure, managers and other experts, in fact, ***cope with the excess of competitor information available*** about phenomena and occurrences in the competitive environment and various competitors' activities therein. By using the schema they are able to ***target their attention to the relevant, key bits of information and ignore irrelevances***. The schema acts as a kind of mental template that they impose on the competitive environment in order to simplify their conception of this environment and in order to be able to interpret the complex phenomena confronting them.

This behavior is understandable, because if a totally rational and analytical approach to perceiving the competitive environment and identifying competitors were accepted, this would in many cases leave organizational participants confronted with an impossible task. Assuming an all-inclusive assessment of the competitive environment and competitors therein not only ignores the limitations set by human information processing but could also prove difficult due to insufficient access to all relevant facts.

When management information processing is looked at from the cognitive perspective, the seemingly irrational managerial behavior recorded in, e.g., Mintzberg's studies (see e.g. Mintzberg, 1973 or Mintzberg, 1975) and many others can be explained. The managers and professional employees, in fact, do not behave in an irrational manner, but in the only way that ensures rational and efficient operation. They use the mental template, i.e. the schema containing previous experiences and accumulated knowledge in order to be able to act. If organizational participants behaved in a way prescribed in management literature, they would as Mintzberg notes "be paralyzed by analysis" and this would reduce the efficiency of their operations.

In addition it is interesting to note that at least ***participants in the same organization typically develop a shared schema***, i.e. ***organizational participants share their cognitions of the competitive environment***. An organizational level schema evolves over time as various organizational participants share their information and knowledge in interactive communication. In this process of sharing organizational members seek and achieve some kind of agreement on their perceptions of the competitive environment and on interpretations of their individual and collective experiences. Thus, in order for organizational knowledge and a collective schema to develop, a sufficient amount of organizational participants must achieve a consensus on their perceptions and interpretations of the competitive environment. This consensus leading to the formation of organizational level knowledge structures is not a sum or an aggregate of individual level knowledge structures but rather it emerges as a convergence of the various participants' perceptions and interpretations. This theoretical assumption is backed by empirical evidence - also from the empirical evidence gained in this study. Managers and professional employees in the studied forest industry company had developed a shared identification of the competitive environment and the groups that had high competition sensitivity defined competitors in the same way. This empirical result is, no doubt, affected by the fact that in the studied case company organizational participants typically have long tenure. In an organization, where rotation happens to a larger extent, the results might not be quite as clear as in this empirical study.

Although a shared perception of the competitive environment and competitors certainly develops in organizations, it is important to note, however, that there are differences in identification patterns. Various organizational functions have their own functional viewpoints and different perspectives regarding competition. In the empirical study carried out in a forest industry company, two principal patterns of identifying competition could be distinguished:

- Competition in a ***product/market space***. Competition was seen as ***a game*** - either a hostile or a cooperative game where actors in the competitive marketplace make moves and countermoves and try to optimize their own position compared to other players.

• Competition was looked at from the standpoint of resources and firms are predominantly seen as ***competing for superior capabilities and competencies*** rather than customers and markets.

In the studied forest industry company understanding competition as a hostile zero-sum game or to some extent as a cooperative game was typical especially of general and marketing management and also of professional employees in the marketing function. Instead, such functions as production, physical distribution or research and development and also many staff functions viewed competition above all as developing superior core competencies.

When competitor information and competitive knowledge management is discussed, it should be noted that an organization is not a monolithic entity. There are significant differences between different organizational groups both in sensitivity to competition and in competitor information processing patterns. All organizational groups are not equally alert or aware of occurrences and events in the competitive environment. In the studied forest industry company it was observed that general management and marketing, production, research and development and business development and marketing intelligence functions were more sensitive to competition than other organizational groups. These groups monitored competitors' activities closely and were aware of the competitiveness in the corporate environment.

When competitor information management is looked at from an organizational perspective and not only from the standpoint of individual participants, it is essential to discuss the ***utilization of competitor information and competitive knowledge***. Particularly from an organizational viewpoint, utilization of competitor information is the crucial issue, since competitor information has value to a corporate organization only if it is utilized in achieving organizational goals,. i.e. information does not have intrinsic value to an organization, even if the situation might be different seen from an individual's standpoint.

Traditionally strategic management literature presents that competitor information and processed information in the form of competitor analysis is used principally in strategic and operative decision-making. General management, functional managers and the marketing function as a whole are considered to be the main groups that need and utilize competitor information and competitive knowledge.

In the empirical study carried out in a forest industry company it was observed that utilization of competitor information is much larger than previously assumed. The motives for utilization are more diverse than might be expected. Competitor information was used by

management and also by other organizational groups with high competition sensitivity mainly for the following:

- Strategic and operative decision-making
- Benchmarking - comparing own competencies and performance to that of competitors
- As a source of ideas and innovation
- Legitimation of proposals and decisions
- Motivating employees and committing them to decisions and solutions made
- Creating a competent professional image towards various interest groups
- Gaining personal power inside one's own organization

In competitor information and competitive knowledge management it is essential ***to ensure that the right information is in the right place at the right time***. Intraorganizational communication networks provide a means with which managers and other experts can solve this "logistics" problem of competitor information and competitive knowledge management. Shared cognitions, i.e. a shared schema, is a tool for dealing with the first dimension of this problem, in other words "right information". The solutions to the two other dimensions of this problem, i.e. "right place" and "right time", are embedded in the reciprocal and symbiotic nature of intraorganizational networks. As these network relationships often develop or are consciously planned with the aim of facilitating the flexible running of organizational activities, network members are often acquainted with what is "right place" and "right time".

Intraorganizational networks have the following functions in managing competitor information and competitive knowledge:

- ***Dividing the labor of competitor monitoring by delegating*** surveillance tasks to members in the network.

- ***Ensuring that right information is in the right place at the right time.***

In the forest industry company studied it was observed that the most valued competitor information was transferred mostly in intraorganizational networks covering line functions like marketing and production and also in general management. All these functions had high competition sensitivity, good competitor information access potential and high competitor information intensity. Most staff functions like research and development and intelligence functions were outside this collegial network, even if these functions' role in competitor monitoring activities was formally defined in the organization.

8.2. Validity and reliability of the study

When planning the research strategy of this study, the problems of validity were considered. The phenomena studied were complex in nature and involved both organizational and individual level phenomena. That is why it was not appropriate to choose a quantitative approach that would provide statistically representative results. Instead it was decided to study the phenomena through theoretical elaboration and empirically by carrying out a case study.

The theoretical elaboration was carried out first and it attempted to create a solid conceptual basis for the study. The principal aim of this conceptual analysis was to enhance understanding of the phenomena studied and of the different elements involved in competitor information and competitive knowledge management.The conceptual elaboration was used to improve the construct and internal validity of the empirical study (see Yin, 1989, p. 40-46). The patterns gained from the theoretical propositions were matched with the empirical evidence collected in the case study.

The construct validity of the case study was also increased by using multiple sources of evidence. In the case study many types of data were collected. The analyses and conclusions were based on interview data, archival records and participant-observation. No analyses or conclusions were based on one source of evidence only. An effort to increase construct validity was also made by making a draft case study report, which was reviewed and discussed in detail with the management group of the case company.

Because studying the phenomena of competitor information and competitive knowledge management involves in many corporate organizations an analysis of confidential material, it was not possible, because of practical difficulties, to carry out a multiple-case study. It has been claimed that carrying out the study in a single company can restrict the generalization of the results and that these types of studies lack external validity. It is argued in this study, however, that some kind of generalization can be made from the results of this single-case study, since these results are backed by conceptual analysis and also to some extent by previous empirical studies.

It should be noted, however, that the special features of the forest industry and the company which was the target of the case study certainly limit generalization efforts. To begin with, advanced functional differentiation is typical of the forest industry in general and the studied company in particular. If the case study were carried out in a company without such clear functional differentiation, the networking patterns between different organizational groups could be expected to be different. This functional differentiation certainly also creates

problems in communication that most likely are not present in a matrix structure. Furthermore, the forest industry and the studied company are clearly technologically oriented and the production function has a much more prominent role than in many other industrial sectors. It can be assumed that if the empirical study had been carried out in a company where technological competence is not a key issue, e.g. in a service sector company, this most likely would have affected the results and the role of the line functions in the communication of competitor information and transfer of competitive knowledge.

These problems and limitations restrict the generalization of the results to large industrial corporate organizations which are functionally organized. It should be noted, however, that even if lateral relationships have been designed in the organization structure as, e.g., in a matrix structure, a large industrial organization still includes various functions, i.e. the division of labor with which things get done effectively. The results of this study are to some extent generalizable to these organizations as well.

Both the validity and reliability of this study have been problematic because of the active role that the author has in the competitor monitoring and analysis activities of the case company. As the researcher has been an actor in the studied phenomena, i.e. at the same time a conductor of the research and a target of study, the problem has been to ensure that no preconceived attitudes have affected the conceptual elaboration or decreased the validity and reliability of the case study. These problems were taken into consideration in all phases of the study by being aware of the risks involved. On the other hand, being an insider in the case company has certainly also in some ways increased the reliability of the interviews, since the respondents revealed to the interviewer facts that they would never have reported to an outsider.

In order to be confident of the reliability of the empirical results, the case study procedure and the collected material was carefully documented and classified. Unfortunately for reasons of confidentiality and business secrets this entire documentation could not be presented in this report. Furthermore, including the vast amount of documentation to this report would have decreased the readability and clarity of the report. However, an effort was made to report the procedure sufficiently accurately that, if necessary, the case study procedure can be repeated in the same way based on the documentation of this report and in this way auditing is possible.

8.3. Managerial implications

The principal emphasis of this study has been on getting a holistic view and describing and understanding the phenomena of competitor information and competitive knowledge management in a corporate organization and not so much to concentrate on providing prescriptions and guidelines of how to plan and implement these activities in the most efficient way. The descriptions and understanding resulting from the theoretical elaboration and the empirical findings provide, however, some useful implications for management regarding organizing these activities in a corporate organization.

Based on the results of this study it can be concluded that ***managing competitor information and competitive knowledge is not simply a question of managing information flow***, but the crucial question to be solved is rather, ***how to improve the cognitive capabilities connected to identifying and making interpretations of the competitive environment and how to increase learning***. Traditionally, however, competitive intelligence activities, which can be seen as an organizational effort to deal with competitor information and competitive knowledge management, have concentrated on managing the information flow and improving the sophistication of analysis activities rather than improving cognitive capabilities.

The basic assumption in the traditional way of organizing competitive intelligence activities has been that competitor information and to some extent also competitive knowledge can be treated like physical goods. According to this school of thought, information can be collected, analyzed and distributed in a process that bears resemblance to a manufacturing process. This organizing mechanism has, however, serious shortcomings. Indeed, it has been stated in some empirical studies (see .e.g., the works of Fuld, 1991 and 1995) that most corporate organizations have underutilized, "hidden" competitor information resources. The recipe for better exploitation of these resources has been to increase systematical collection and distribution of competitor information. This observation of underutilization, recorded especially in the works of Fuld, is, however, understandable, if looked at from a cognitive perspective. There obviously always are "hidden" resources in any organization, but these resources can not be exploited in such a straightforward a manner as recommended by competitive intelligence literature.

Traditionally, in large corporate organizations competitive intelligence activities have been organized based on the ideas discussed above. Typically the collection, interpretation, analysis and communication of competitor information has been assigned to specialized intelligence or competitor analysis units in order to exploit the synergy created by centralization. Thus, competitive intelligence and competitor analysis activities have been organized in

much the same way as any other organizational function following the Taylorian principle of organizational division of labor. Competitive intelligence and competitor analysis in this organizing mechanism are, in fact, treated like production or marketing or research and development. This organizing mechanism assumes that monitoring of the competitive environment is a task that can be delegated to an individual or a group of individuals. It is assumed that these specialized and skilled experts monitor and interpret the competitive environment on behalf of other organizational participants allowing them to concentrate on performing their own functional duties.

Of course, organizing competitive intelligence and competitor analysis activities as the task of a centralized organizational unit has its undeniable advantages. This kind of division of labor allows specialization in intelligence and analysis tasks and in this way creates efficiency and probably also sophistication of analysis results. This organizing mechanism does not, however, take into consideration the characteristic properties of information as a resource, i.e. that because of limitations set by cognitive capabilities information can not be treated like physical goods. This organizing mechanism overlooks the fact that collecting and utilizing competitor information and competitive knowledge is above all a process in which managers and other knowledge workers in a corporate organization process information themselves in order to utilize it in their work processes or to learn from it and thus improve organizational performance.

It should be noted that organizational participants use two types of information and knowledge in decision-making situations:

- ***Information that they systematically collect*** to support them in decision-making when a problematic situation arises.

- ***Previous experience organized into a knowledge structure*** i.e. a schema.

The role of an intelligence or analysis unit is assisting the managers and experts to acquire the first type of information. In order to be able to help organizational participants in their problematic decision-making situations, intelligence staff and analysts will have to be part of these managers' or experts' networks. Being outside this network means that intelligence staff and analysts have difficulties in knowing the constantly changing information needs and uses of managers and experts.

Competitive intelligence and competitor analysis units face the same problem as other intraorganizational service staff units. They do not participate in the daily operations of the line functions and therefore these units do not obtain competitor information in a "natural"

way, i.e. in connection with daily operations in the competitive marketplace. Also it is likely that analysts, sooner or later, do not share the same schema as the participants in the line functions. Therefore, the results achieved in the empirical part of this study - that staff functions are outside the intraorganizational, collegial networks where the most valuable competitor information and competitive knowledge is exchanged is not surprising.

Based on the results of this study, it is obvious that competitor information and competitive knowledge management can not be organized like any other organizational function, since this organizing mechanism has serious shortcomings. Instead these activities should be seen as a horizontal or lateral process, where all organizational actors that are sensitive to competition contribute. Efforts to improve the utilization of "hidden" competitor information resources in an organization should be targeted at increasing the lateral relationships between different functions with high competition sensitivity, good competitor information access potential and high competitor information intensity. In this way competitive knowledge capabilities could be increased and the information potential better exploited.

8.4. Suggestions for further research

The purpose of this research project has been to carry out an exploratory study of how a corporate organization makes sense of the competitive environment, processes and utilizes competitor information and how these activities ultimately contribute to the formation of competitive knowledge. The need for this kind of research has evolved from the obvious shortcomings of the traditional approach in strategic management literature, where the focus of attention has been on developing and improving the methodology of competitor analysis and intelligence.

The present study looks at competitive intelligence and analysis activities from the standpoint of information processing and a cognitive perspective is introduced. The results have aimed to enhance understanding of the actual processes that a corporate organization uses in managing competitor information and competitive knowledge. This study does not, however, provide any detailed tools for management to plan and organize intelligence activities in an efficient manner.

The results of this exploratory study provide, however, some interesting implications for developing methods of competitive intelligence and competitor analysis and also for organizing these activities. As the previous methodology developed for competitor analysis and competitive intelligence has been based on insufficient knowledge of the actual ways that organizational participants process and utilize information, the present study could

contribute as a basis for further developing the methodology of competitive intelligence and competitor analysis.

A challenging direction for further studies would also be to examine, how the lateral relationships between different competition sensitive functional groups could be designed in the formal organization structure. A further elaboration on Galbraith's work (1977) would be needed in the particular case of managing competitor information. A study of the potential of groupware information systems, which have been introduced fairly recently, in enhancing lateral relationships, is especially necessary.

Furthermore, neither this study nor strategic management literature has discussed, how an effective management of competitor information and competitive knowledge actually affects the overall performance of a corporate organization. It is self-evidently assumed that improving this process has positive effects. Certainly there is, however, a saturation point after which the acquired information does not improve decision-making. Further study would be needed on the actual effects of competitive intelligence activities on organizational performance in order to be able to plan the efforts put into intelligence activities. To further elaborate the results of this study : from the standpoint of a corporate organization, it is not only essential that the right information is in the right place at the right time, but also at the right cost.

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MANAGEMENT INTERVIEW / Interview outline

1. Who or what are the competitors of your own company? Could you mention ten competitors that you consider to be the most significant ones?

2. What kind of information about competitors do you need in carrying our your tasks? Do you scan or monitor competitors' activities actively? What kind of things do you scan or monitor in competitors' activities?

3. How do you use the competitor information that you said you require? What kind of decision-making do you use it to? What kind of other uses do you have for competitor information? Could you mention some examples of situations where you have utilized competitor information?

4. What are your principal sources of competitor information?
   - Public information sources
   - External personal sources outside own company
   - Intraorganizational sources in own company and in parent company / personal sources and reports
   - Intraorganizational competitor information systems in own company and in parent company
   - Other possible information sources

5. How would you appraise the usefulness of these competitor information sources? Could you select of those that you mentioned the three most valuable information sources that are important for you in carrying out your own work?

6. What competitor information systems existing in your own company or in the parent company have you used? How many intraorganizational competitor information systems do you know? Are there such information systems that you are acquainted with, but do not use? If there are, is there any particular reason for not using these information systems?

7. What kind of expectations do you have for distribution or communication of competitor information? Are you satisfied with the competitor information that you receive at present? What kind of distribution or communication do you prefer?
   - Competitor information system containing selected reports
   - Competitor information database, where it is possible to search for many types of information according to needs

- Written report distributed as paper copy
- Oral reports
- There is no need for any type of organized distribution
- Some other way. What?

8. The intraorganizational flow and communication of competitor information has been investigated in this study by following how an interesting piece of news about a competitor's investment is communicated within this company. This piece of news tell about a competitor X's renewal of a paper machine aiming a significant improvement in the competitive product. Where of from whom did you first hear from this investment? When? What is the exact version that you heard of this piece of news? Did you convey this piece of news to anybody after you had heard it? If you did, whom did you convey it to?

9. What kind of intraorganizational contacts do you have? With organization is here meant own company, the parent company and all other subsidiaries of the parent company. Could you mention ten persons outside your own immediate surroundings / your own department that you have a close contact with or that you consider to be important for carrying out your work? Please mention both the contacts that provide you with competitor information and also those that you consider to be otherwise significant.

10. What is your principal way of communication with these persons? What type of communication is the most frequent way of conveying messages or information, meeting or discussing with these persons?
- Regular meetings
- Other planned appointments, face-to-face meetings
- Ad hoc face-to-face meetings
- Written reports
- Phone conversations
- Electronic mail
- Other way of communication. What?

11. Have you noticed or do you feel that there would be any restraints in intraorganizational communication of competitor information or other information? Deliberate or unintentional restraint? Are there such restraints in intraorganizational communication either within you own company, between own company and parent company or between own company and other subsidiaries of the parent company? Have you noticed and such restraints that you consider as harmful for carrying out your own work? Can you give examples of these? Have you any suggestions for improving the flow or communication of competitor information?

JOHDON HAASTATTELU / Haastattelurunko

1. Ketkä tai mitkä ovat yrityksen keskeiset kilpailijat? Mainitse kymmenen keskeistä kilpailijaa.

2. Mitä kilpailijatietoa tarvitset omassa työssäsi? Seuraatko kilpailijoiden toimintaa aktiivisesti? Mitä asioita seuraat kilpailijoiden toiminnassa?

3. Mihin käytät edellä luettelemiasi kilpailijatietoja? Millaiseen päätöksentekoon? Mihin muihin käyttötarkoituksiin? Mainitse muutamia esimerkkejä käyttötilanteista.

4. Mitkä ovat pääasialliset kilpailijatiedon lähteesi?
   - Julkiset lähteet
   - Henkilökohtaiset lähteet yrityksen ulkopuolella
   - Yrityksen sisäiset lähteet / henkilölähteet ja raportit
   - Yrityksen sisäiset ja konsernissa olemassa olevat tietojärjestelmät
   - Muut mahdolliset lähteet

5. Miten arvioisit näiden lähteiden käyttökelpoisuutta? Mainitse kolme itsellesi omassa työssäsi tärkeintä kilpailijatiedon lähdettä.

6. Mitä yrityksessä olevia kilpailijatietojärjestelmiä tai muita olemassa olevia kilpailijatietorekistereitä olet käyttänyt? Kuinka monta tunnet? Onko sellaisia, joita tunnet, mutta et käytä? Jos et käytä, niin miksi et?

7. Millaisia toiveita sinulla on kilpailijatiedon jakelulle? Oletko tyytyväinen nykyiseen tiedon saantiisi? Millaisessa muodossa haluaisit tiedon?
   - Tietojärjestelmä, jossa valikoidut raportit
   - Tietokanta, josta voi itse etsiä kulloinkin tarvitsemaansa tietoa
   - Kirjallinen, paperimuotoinen raportti
   - Suullinen raportointi
   - Ei tarvita lainkaan järjestelmää kilpailijatiedon välittämiseksi
   - Muu tapa. Mikä?

8. Tiedonkulkua on pyritty tässä tutkimuksessa selvittämään muun muassa seuraamalla erään kilpailijan investointia koskevan uutisen kulkua organisaatiossa. Tämä uutinen koskee kilpailijan X tuoteparannukseen tähtäävää koneuusintaa. Mistä kuulit tämän uutisen ensimmäisen kerran? Milloin? Missä muodossa? Kerroitko uutisen eteenpäin? Jos kerroit, kenelle kerroit?

9. Millaisia kontakteja sinulla on yrityksen sisällä? Yrityksellä tarkoitetaan tässä konsernia kaikkine tytäryhtiöineen. Mainitse oman lähipiirisi / osastosi ulkopuolelta kymmenen sellaista henkilöä, joihin sinulla on tiivis kontakti tai joita pidät oman työsi kannalta tärkeinä. Mainitse sekä sellaiset kontaktit, joista saat kilpailijatietoa kuin myös ne, jotka koet muuten tärkeiksi kontakteiksi.

10. Millainen on pääasiallinen kontaktitapasi näiden ihmisten kanssa? Millaisissa yhteyksissä vaihdat viestejä, tapaat tai keskustelet heidän kanssaan?
    - Kokoukset ja palaverit
    - Muut ennalta sovitut, henkilökohtaiset tapaamiset
    - Henkilökohtaiset tapaamiset, ad hoc - tyyppiset
    - Kirjalliset raportit
    - Puhelinkeskustelut
    - Sähköposti
    - Muu kontaktitapa. Mikä?

11. Onko kilpailijatiedon kulussa tai tiedonkulussa yleensä yrityksen sisällä mielestäsi esteitä? Tahallisia tai tahattomia? Entä tytäryhtiön ja emoyhtiön välisessä tiedonkulussa? Entä oman yrityksen ja muiden samaan konserniin kuuluvien tytäryhtiöiden välillä? Oletko törmännyt toimintaa haittaaviin tiedonkulun esteisiin? Millaisiin? Missä yhteyksissä? Mainitse esimerkkejä. Miten tiedonkulkua voitaisiin sinun mielestäsi parantaa?

INTERVIEW OF EXPERTS / Interview outline

1. Who or what are the competitors of your own company? Could you mention ten competitors that you consider to be the most significant ones?

2. Do you need information about competitors in carrying our your tasks? Do you scan or monitor competitors' activities actively? What kind of things do you scan or monitor in competitors' activities?

3. How do you utilize the competitor information that you said you require? What kind of uses do you have for competitor information? Could you mention some examples of situations, where you have utilized competitor information?

4. What are your principal sources of competitor information?
   - Public information sources
   - External personal sources outside own company
   - Intraorganizational sources in own company and in parent company / personal sources and reports
   - Intraorganizational competitor information systems in own company and in parent company
   - Other possible information sources

5. How would you appraise the usefulness of these competitor information sources? Could you select of those that you mentioned the three most valuable information sources that are important for you in carrying out your own work?

6. Have you ever received competitor information that you consider to be valuable from outside sources? How about intraorganizational sources? What was the exact information source? In what kind of situation did you receive this information? During a training course, face-to-face meeting, visiting a customer....?

7. If you have received this kind of information that you consider to be valuable or if in a hypothetical situation you would receive this kind of information, whom have you communicated this kind of information to or whom would you communicate this information to inside your own company?

8. What kind of competitor information do you think that management is interested in? Do you believe that management is interested in such information that you have access to through your own information sources or your own personal contacts?

9. What competitor information systems existing in your own company or in the parent company have you used? How many intraorganizational competitor information systems do you know? Are there such information systems that you are acquainted with, but do not use? If there are, is there any particular reason for not using these information systems?

10. What kind of expectations do you have for distribution or communication of competitor information? Are you satisfied with the competitor information that you receive at present? What kind of distribution or communication do you prefer?
    - Competitor information system containing selected reports
    - Competitor information database, where it is possible to search for many types of information according to needs
    - Written report distributed as paper copy
    - Oral reports
    - There is no need for any type of organized distribution
    - Some other way. What?

11. The intraorganizational flow and communication of competitor information has been investigated in this study by following how an interesting piece of news about a competitor's investment is communicated within this company. This piece of news tell about a competitor X's renewal of a paper machine aiming a significant improvement in the competitive product. Where of from whom did you first hear from this investment? When? What is the exact version that you heard of this piece of news? Did you convey this piece of news to anybody after you had heard it? If you did, whom did you convey it to?

12. What kind of intraorganizational contacts do you have? With organization is here meant own company, the parent company and all other subsidiaries of the parent company. Could you mention ten persons outside your own immediate surroundings / your own department that you have a close contact with or that you consider to be important for carrying out your work? Please mention both the contacts that provide you with competitor information and also those that you consider to be otherwise significant.

13. What is your principal way of communication with these persons? What type of communication is the most frequent way of conveying messages or information, meeting or discussing with these persons?
- Regular meetings
- Other planned appointments, face-to-face meetings
- Ad hoc face-to-face meetings
- Written reports
- Phone conversations
- Electronic mail
- Other way of communication. What?

14. Have you noticed or do you feel that there would be any restraints in intraorganizational communication of competitor information or other information? Deliberate or unintentional restraint? Are there such restraints in intraorganizational communication either within you own company, between own company and parent company or between own company and other subsidiaries of the parent company? Have you noticed and such restraints that you consider as harmful for carrying out your own work? Can you give examples of these? Have you any suggestions for improving the flow or communication of competitor information?

ASIANTUNTIJATYÖNTEKIJÄN HAASTATTELU / Haastattelurunko

1. Ketkä tai mitkä ovat yrityksen keskeiset kilpailijat? Mainitse kymmenen keskeistä kilpailijaa.

2. Tarvitsetko kilpailijatietoa omassa työssäsi? Seuraatko kilpailijoiden toimintaa aktiivisesti? Mitä asioita seuraat kilpailijoiden toiminnassa?

3. Mihin käytät edellä luettelemiasi kilpailijatietoja? Millaisiin käyttötarkoituksiin? Mainitse muutamia esimerkkejä käyttötilanteista.

4. Mitkä ovat pääasialliset kilpailijatiedon lähteesi?
   - Julkiset lähteet
   - Henkilökohtaiset lähteet yrityksen ulkopuolella
   - Yrityksen sisäiset lähteet / henkilölähteet ja raportit
   - Yrityksen sisäiset ja konsernissa olemassa olevat tietojärjestelmät
   - Muut mahdolliset lähteet

5. Miten arvioisit näiden lähteiden käyttökelpoisuutta? Mainitse kolme itsellesi omassa työssäsi tärkeintä kilpailijatiedon lähdettä.

6. Oletko koskaan saanut arvokkaaksi kokemaasi kilpailijatietoa oman yrityksen ulkopuolelta? Entä yrityksen sisältä? Mistä lähteestä? Millaisessa tilanteessa olet saanut tällaista tietoa? Koulutustilaisuudessa, henkilökohtaisessa tapaamisessa, asiakaskäynnillä...?

7. Jos olet saanut tällaista arvokkaaksi kokemaasi kilpailijatietoa tai jos saisit tällaista tietoa, niin kenelle olet siitä kertonut tai kenelle kertoisit yrityksen sisällä tällaiset tiedot?

8. Millaisesta kilpailijatiedosta uskot yritysjohdon olevan kiinnostunut? Uskotko, että yritysjohto on kiinnostunut sellaisesta tiedosta, jota saat omista tiedonlähteistäsi tai omista kontakteistasi?

9. Mitä yrityksessä olevia kilpailijatietojärjestelmiä tai muita olemassa olevia kilpailijatietorekistereitä olet käyttänyt? Kuinka monta tunnet? Onko sellaisia, joita tunnet, mutta et käytä? Jos et käytä, niin miksi et?

10. Millaisia toiveita sinulla on kilpailijatiedon jakelulle? Oletko tyytyväinen nykyiseen tiedon saantiisi? Millaisessa muodossa haluaisit tiedon?
- Tietojärjestelmä, jossa valikoidut raportit
- Tietokanta, josta voi itse etsiä kulloinkin tarvitsemaansa tietoa
- Kirjallinen, paperimuotoinen raportti
- Suullinen raportointi
- Ei tarvita lainkaan järjestelmää kilpailijatiedon välittämiseksi
- Muu tapa. Mikä?

11. Tiedonkulkua on pyritty tässä tutkimuksessa selvittämään muun muassa seuraamalla erään kilpailijan investointia koskevan uutisen kulkua organisaatiossa. Tämä uutinen koskee kilpailijan X tuoteparannukseen tähtäävää koneuusintaa. Mistä kuulit tämän uutisen ensimmäisen kerran? Milloin? Missä muodossa? Kerroitko uutisen eteenpäin? Jos kerroit, kenelle kerroit?

12. Millaisia kontakteja sinulla on yrityksen sisällä? Yrityksellä tarkoitetaan tässä konsernia kaikkine tytäryhtiöineen. Mainitse oman lähipiirisi / osastosi ulkopuolelta kymmenen sellaista henkilöä, joihin sinulla on tiivis kontakti tai joita pidät oman työsi kannalta tärkeinä. Mainitse sekä sellaiset kontaktit, joista saat kilpailijatietoa kuin myös ne, jotka koet muuten tärkeiksi kontakteiksi.

13. Millainen on pääasiallinen kontaktitapasi näiden ihmisten kanssa? Millaisissa yhteyksissä vaihdat viestejä, tapaat tai keskustelet heidän kanssaan?
- Kokoukset ja palaverit
- Muut ennalta sovitut, henkilökohtaiset tapaamiset
- Henkilökohtaiset tapaamiset, ad hoc - tyyppiset
- Kirjalliset raportit
- Puhelinkeskustelut
- Sähköposti
- Muu kontaktitapa. Mikä?

14. Onko kilpailijatiedon kulussa tai tiedonkulussa yleensä yrityksen sisällä mielestäsi esteitä? Tahallisia tai tahattomia? Entä tytäryhtiön ja emoyhtiön välisessä tiedonkulussa? Entä oman yrityksen ja muiden samaan konserniin kuuluvien tytäryhtiöiden välillä? Oletko törmännyt toimintaa haittaaviin tiedonkulun esteisiin? Millaisiin? Missä yhteyksissä? Mainitse esimerkkejä. Miten tiedonkulkua voitaisiin sinun mielestäsi parantaa?

Appendix 3

	Score	GENERAL MANAGEMENT	PRODUCTION	PRODUCTION	MARKETING	MARKETING	R&D	R&D	TECHNICAL STAFF	TECHNICAL STAFF	ADMINSTR STAFF	ADMINSTR STAFF
		Parent company & case company	Managers	Professional empl.	Managers	Professional empl.	Managers	Professional empl.	Managers	Professional empl.	Managers	Professional empl.
Competitor A	45	9	5	4	6	5	1	6	1	0	5	3
Competitor B	35	8	5	2	6	4	1	5	1	0	3	0
Competitor C	34	7	5	4	5	3	1	6	0	0	3	0
Competitor D	23	9	3	1	6	2	0	1	0	0	1	0
Competitor E	24	5	4	2	4	3	1	0	1	0	3	1
Competitor F	43	5	4	7	4	3	1	5	2	4	5	3
Competitor G	41	6	4	6	4	3	1	6	2	3	4	2
Competitor H	32	5	2	8	4	1	0	0	1	6	4	1
Competitor I	35	7	4	3	6	4	1	5	1	0	4	0
Competitor J	46	9	5	7	4	5	1	5	2	4	4	2
Competitor K	24	6	2	2	5	3	1	2	0	0	3	0
Competitor L	7	4	0	0	3	0	0	0	0	0	0	0
Competitor M	7	2	1	0	2	2	0	0	0	0	0	0
Competitor N	9	3	1	1	1	0	0	0	0	1	2	0
Competitor O	8	3	1	0	2	1	0	0	0	0	1	0
Competitor P	11	4	0	2	3	1	0	0	0	0	1	0
Competitor Q	20	0	4	3	1	2	0	0	2	7	1	0
Competitor R	3	0	1	0	0	0	0	0	1	0	1	0
Competitor S	5	1	1	0	2	0	0	0	0	0	1	0
Competitor T	3	1	1	0	0	0	0	1	0	0	0	0
Competitor U	2	1	0	0	0	0	0	0	0	0	1	0

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