



EXAM

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Doctoral thesis proposal:
 Competence and knowledge management in global organisations:
Utilisation of human resource information systems

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Competence and knowledge management in global organisations: *Utilisation of human resource information systems*

ABSTRACT

Global contexts increase the complexity and difficulties to apply appropriate human resource (HR) policies suitable to a global workforce. Strategic competence management is an important part of HR practices in a competence-based organisation. Information systems may be utilised to support human resource management processes locally and globally. This research focuses on how utilisation of human resource information systems can support competence management process and stimulate the knowledge transfer processes in global organisations. Global standardisation versus local flexibility are considered as contradicting issues which make global HR processes difficult to coordinate and integrate through common information systems. This research aims to reveal important globalisation issues which should be considered when organisations go global; how to make a balance between standardisation and flexibility to fit the local organisational identity.

1. INTRODUCTION

As multinational enterprises increasingly globalise their operations (Bartlett and Ghoshal, 1998), managing international human resources (HR) strategically becomes a critical factor contributing to overall organisational performance (Greengard, 1995; Berardine 1997; Niederman, 1999). Global contexts increase the complexity and difficulties to apply appropriate human resource policies suitable to a global workforce (Niederman, 1999). The role of human resource management (HRM) in organisations has been undergoing changes from measuring individual productivity among the employees and administration routines towards a more strategic management of the human resources which focus on competence development, human learning management and knowledge management and learning organisations. Strategic competence management is an important part of HR practices in a competence-based organisation and the strategic human resource management literature is increasingly concerned with whether human resources can be a source of competitive advantage (Lawler, 1993; Lai, 1997; Nordhaug, 1993; 1998a; 1998b). It has been argued that the mutually reinforcing interaction between the stock of knowledge, skills and expertise (resources) and the organisational routines and human resource policies and practices (capabilities) generates human resource competencies whose strategic value is realisable to the extent that they are linked with the core competencies (Bergenhengouwen, 1996; Hagan 1996; Kamoche 1996).

Information systems (IS) may be utilised to support human resource management processes locally and globally (Greengard, 1995; Berardine 1997; Baladi; 1999; Niederman, 1999; Hustad and Møll, 2002; Hustad et al., 2002). Initially, a human resource information system (HRIS) was meant to support transaction processes and maintain management control (Nordhaug, 1998a). Development of new information technology makes HRIS usable for efficiency purposes as well supporting leaders in decision making to ensure competitiveness (Agresso, 2002; SAP 2002).

The domain area of this research is related to utilisation of information technology to support human resource management processes, and the competence management process in particular, in global, knowledge-demanding organisations. Human resource management literature as well as knowledge management, globalisation theories and organisational

learning approaches, will be important scientific disciplines to frame this work where the information technology plays different roles of strategic significance.

In my research I will focus on utilisation of HRIS in the competence management process and more specifically on how this technology can stimulate the knowledge transfer processes in global organisations. The research approach towards these problems will be framed into a qualitative research design. The investigation is planned to be a case study carried out in one or several organisations that have implemented or are in the process of implementing HRIS supporting human resource management in a global setting. Ericsson is one organisation of interest, which is implementing HRIS on a global basis. They have chosen an Enterprise-Resource-Planning (ERP) system to globally integrate all their business functions including the HR processes.

The objective of this work is to explore *how* HRIS can support and stimulate the competence management process in global organisations and reveal how these systems can be used strategically to ensure that the competence development of the employees is adjusted to the strategic and critical competence goals of the organisation. Global issues concerning standardisation and flexibility are also important aspects of this research. It will also be focused on interdependent lines to confirm possible synergy effects and positive interactions between this particular class of information technology and the competence and knowledge management processes. Hopefully it will be possible to reveal how to initiate positive interaction mechanisms that will stimulate organisational learning- and innovation processes.

2. RESEARCH PROBLEM

The most important asset of any organisation is the knowledge and competencies of the employees. However, effective and strategic management of the human resources is crucial to successful business administration. It is e.g. essential to have qualified employees in the right place at the right time to cope with the needs of the business to quickly respond to the dynamics of the operation environment. Therefore management must pay attention to skill levels and training needs of the employees to ensure that the appropriate skills are available. An overview over the organisation skill matrix will also be helpful in assessing the requirement for future strategic competencies to achieve competitive advantages. In short, qualitative and quantitative information regarding competencies is required to develop and establish a successful human resource strategy.

HRIS may be utilised to support the competence management process by providing a comprehensive and integrated overview of available human resources and competencies. Besides, these information systems could indicate necessary links between management and employees objectives, career plans, competence development and the strategic goals of the organisation.

Several different types of information systems to handle human resource management and competence management are available (e.g. Agresso, 2002; Kompetanseweb, 2002; SAP, 2002).

Information systems to support global human resource management processes, is meant to be a valuable investment for large scale organisations working in a global environment (Greengard, 1995; Berardine 1997; Hustad et al., 2002).

However, so far as I know, it has not been done much research on *how* and *why* this type of information systems can be of strategic significance for organisations on a global basis. It is necessary to know how these systems will influence on the efficiency of the knowledge management processes and the knowledge transfer process particularly in the organisation,

and if the contributions may be characterised as valuable on different organisational levels. Besides, new information in this topic is needed to ensure further development of this information technology.

2.1 RESEARCH QUESTIONS

Main research questions are:

1. How can global organisations utilise human resource information systems (HRIS) to support competence management?
2. In what ways can these types of systems (HRIS) stimulate the knowledge transfer processes in (global) organisations?
3. How could these systems (HRIS) be implemented to achieve fitness between global standardisation and local flexibility?
4. How may these systems (HRMS) influence on a global IT-infrastructure for knowledge management?

Question 1:

Competence management becomes more and more important for global organisations to ensure critical and strategic competencies for their employees.

My main research focus is human resource information systems (HRIS) which handles competence management, and the strategic significance of these systems on different levels in the organisation. It would be useful to find good directives to ensure optimal use of these systems. First hand information may be achieved by studying organisations that have implemented this type of information systems (e.g. Ericsson, Telenor). Besides, such studies are worthwhile since their experiences could be very useful to other organisations that are considering the investment in such information technology.

Question 2:

Knowledge transfer processes in organisations is of increasing research interest because of its potential as a significant resource as a knowledge sharing mechanism. It is of interest to know if use of information systems (like HRIS which support the competence management process) to increase knowledge and competencies among the employees is a process for stimulating knowledge transfer mechanisms between knowledge workers. Could this technology initiate the emergence of new groups of knowledge workers through a kind of natural establishment of virtual networks through different communities of practice also described as ‘communities of knowing’ (Ericsson’s intranet, 2002; Hustad et al., 2002). Such groups would be important for knowledge creation processes in organisations and for further development of existing knowledge (Wenger, 1998). Increased knowledge richness make companies more resistant to competition and could make them grow.

One aim is to reveal the impact implementation and use of an information system supporting human resource management and competence management in particular will have on a global organisation and possible effects this system can have on organisational learning processes. “Knowledge networking” is a philosophy based on networks of “communities of knowing” who are groups of people who share information, insight, experience and tools about an area of common interest (Wenger, 1998). This philosophy is the basis of knowledge-oriented work in Ericsson (Ericsson’s intranet, 2002). Knowledge Networking is supposed to make people share and reuse knowledge and experience in order to improve organisational performance.

This is done by creating, storing, sharing, applying, and developing knowledge, and experiences through people networking and databases. The philosophy emphasise that real “knowledge management” is not distributing documents or codifying information into databases. Knowing is a human act and always involves a person who knows. “To share tacit knowledge is to think together” (ibid.).

Question 3:

Implementing IT to support global processes in general will influence on the organisational hierarchical structure and it can be a struggling process that should not to be undervalued. However, information systems need to be situated to the local context of use (Rolland and Monterio, 2002; Hepsø et al., 2001; Hellström et al., 2000, 2001). Never the less it may be a great challenge to find a balance between the local culture and specific business tradition on one hand and the need for standardisation of business processes across different geographical units in a global organisation on the other. It is of extremely importance for organisations to find a workable solution when they are searching for the right fitness between global standardisation and local flexibility.

The Ericsson -company is in its process of becoming a global organisation; trying to generate benefits from coordination and standardisation worldwide. The organisational structure is based on decentralised units where each unit are quite independent of the mother organisation, and they often have individual innovation patterns. As a decentralised organisation, Ericsson’s knowledge needs may be of a local nature, and knowledge management (KM) initiatives would benefit from being of a local nature as well. One weakness of Web-based KM and competence networking lies in its lack of face-to-face interaction, which its extension risks losing continuity and responsiveness in knowledge build and competence sharing. Ericsson has developed a number of competence-oriented initiatives that attempt to overcome this obstacle by making personal contact as the most central activity. These initiatives seem to create lasting network which is not always the case for Web-based tools (see Hellström et.al, 2000). On the other hand, some scientists argue that the Ericsson has a need for more globalisation in their business processes; culture and knowledge-sharing in contrast to their traditionally decentralised organisation (see Baladi, 1999).

Question 4:

HRIS which supports the competence management process could be an important part of an IT-infrastructure for knowledge management. It would be interesting to know if or why HRIS is of significance in this kind of infrastructure, and the coherence and synergies between HRIS and the emergence of ‘communities of knowing’.

3. MOTIVATION

The motivation for this doctoral research is mainly based on my former research studies accomplished during my master thesis (Hustad and Møll, 2002). The study involved problems towards implementation of large scale information systems (Enterprise Resource Planning-systems) which causes needs for organisational changes and in some cases business process reengineering (BPR). The study had a qualitative approach where interviews and documents were gathered and analysed. The information system which was implemented was a global HRIS system which should support different levels of the organisation regarding the competence management process and knowledge networking; the corporation managers for strategically purposes, the line managers for carrying out the competence management in

practice and all employees who should be more responsible and aware of their own career development. The system was based on self-service routines through a web-based user interface which made user commitment to the system important. One important aim of this information system was to support leaders in their decision processes concerning strategic competence development on both individual and organisational level in a global organisation. Several challenges related to the implementation of this system were confirmed during the study; like global standardisation versus local flexibilities, realistic competence assessments, the specifications and details on competence elements, changing of the employees' mindset to ensure commitment, and participation and motivation from the leadership. Mapping of positive and negative attitudes towards the system as well as the users expectations were also important topics in the study. The relationship between competence management, knowledge networking and the human resource information system were an important theme of the study. I found this work very interesting and would like to go deeper into these problems during my doctoral thesis by doing a more in-depth investigation on some of these themes.

The utilisation of information technology for efficient and strategic purposes and interaction between information technological and organisational contexts are exiting dynamic processes which gives possibilities to combine multidisciplinary topics, e.g. human resource management and organisational learning.

My aim is to increase further knowledge about relationships and interactions between information systems, human resource management and knowledge management, and how these relations can give sustainable competitive advantage; e.g. develop new core competences and secure continuous learning organisations. I also want to gain knowledge about global issues regarding utilisation of information technology for global HR-processes which require balancing of standardisation, flexibility and fitness in different contexts worldwide. I think this project will give many personal and interesting challenges on my way.

4. RESEARCH DESIGN AND RESEARCH METHODS

In the following I will discuss research perspectives, research design and strategy, and methodology in qualitative approaches. Different techniques for sampling and analysis data are also discussed. In the end of this section I argue for my choices of the overall research approach I am planning to use to frame my empirical part of this doctoral project.

4.1 RESEARCH PERSPECTIVE

Orlikowski and Baroundi (1991) provide an overview over possible research approaches and assumptions in information system (IS) research. Three distinct epistemological categories are discussed; interpretive, positivism and critical. It is a fundamental distinction between the interpretive and the positivist worldview due to ontological and epistemological assumptions. Interpretivism asserts that reality, as well as our knowledge thereof, are social products and hence cannot be understood independent of the social actors (included the researcher(s)) that constructs and make sense of that reality. Positivism assume an objective physical and social world that exists independent of humans, and whose nature can be relatively unproblematic apprehended, characterised and measured (see also Remenyi et al., 2000). Critical researchers on the other hand assume that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances, critical researcher recognise that their ability to do so is constrained by various forms of social, cultural and political domination (Myers and Avison, 2002). It is important to underline that in practice these distinctions are not always so clear-cut, and debates are going on about if they are necessarily opposed or whether they can be

accommodated within the same study (ibid.).

Qualitative research may be interpretive, positivist or critical. However, IS-related research in organisations has been strongly influenced by a positivist perspective (Orlikowski and Baroundi, 1991). It signifies that choice of a specific qualitative research method is independent of the underlying philosophical assumption of the researcher. E.g. a case study can be interpretive (Walsham, 1993), positivist (Yin, 1994) or critical (Hirschheim and Klein, 1994).

4.2 RESEARCH APPROACH

The overall research approach should be based on the researcher's philosophical perspective that will represent the underlying ontological and epistemological assumptions. The overall research approach includes three levels of decisions; research strategy, research design and research methodology (McGrath, 1982).

4.2.1 RESEARCH STRATEGY

Research strategy specifies how knowledge is to be gained and points to the basic philosophical orientation of the research; whether it is theoretical or empirical. The research strategy gives the overall direction of the research including the process by which the research is conducted. At a strategic level, the research process is defined in broad terms considering the underlying assumptions of the researcher's philosophical perspective. The research strategy will also include choice of the research setting.

4.2.2 THE RESEARCH DESIGN

Yin (1989) defines *research design* as... "an action plan for getting from here to there, where "here" may be defined as the initial set of questions to be answered, and "there" is some set of conclusions (answers) to these questions. Research design will include decisions about *where*, *what*, *how much* and *when* data is to be collected; i.e. the overall plan that the researcher propose to follow in the conduction of the research.

4.2.3 RESEARCH METHODOLOGY - QUALITATIVE RESEARCH

In studies regarding implementing and utilisation of information technology in organisations, it will be of great importance to understand the context(s) within which the research is being conducted by considering social or cultural factors that impinge on the research problem. Research of information systems has changed its scope and picture from issues being pure technological based towards more comprehensive and complex aspects where organisational and managerial aspects are included, hence an increasing interest in the applications of qualitative research methods. The context and culture characteristic of one organisation are often important to investigate and to reveal the social processes and changes in attitudes which will occur when information systems are implemented and adopted in a specific context (Myers and Avison, 2002).

4.2.4 QUALITATIVE METHODS

Research methodology is a strategy of enquiry that comprises the underlying philosophical assumptions, the research design and the data collection.

Qualitative research includes different methods as action research, case study research, ethnographic research and grounded theory where case study has become the most commonly used method in qualitative IS research.

◆ CASE STUDY RESEARCH

In a case study a phenomenon is examined in its natural setting, by multiple methods of data collection to gather information from one or a few entities as people, groups or organisations (Benbasat et al., 2002). Yin (1994) defines a case study as follows: ...*"an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between the phenomenon and context are not clearly evident"*...

◆ ETHNOGRAPHIC RESEARCH METHOD

Ethnographical design of qualitative research has also become widely used in the study of information system in organisations. The approach is developed from the discipline of social and cultural anthropology (Myers and Avison, 2002). Ethnographic research requires that the researcher becomes part of the 'tribe' and fully participate in its society for a substantial period of time, months or even years. Such research is essential phenomenological but is clearly not reproducible (Remnyi, 2000). However, it offers a rigorous approach to the analysis of the institutional contexts of information systems practices. It gives rich insights into humans, social and organisational issues of information systems development and application. Ethnographic research develop useful knowledge for practitioners since the researchers are dealing with real work situations developing frameworks which can be used by both practitioners and researchers. There is no need for artificially constructed experimental investigations (Harvey and Meyers, 1995).

◆ ACTION RESEARCH

Action research is an established method that produces highly relevant results as it is founded on practical action and aimed at solving an immediate problem situation (Baskerville, 1999).

French and Bell (1978) define action research in a way that support the idea of an iterative cyclic process: "The process of systematically collecting research data about an ongoing system relative to some objective, goal or need of that system; feeding these data back into the system; taking action by altering selected variables within the system based on both data and on hypotheses; and evaluating the results of the action by collecting more data."

The strength of this approach is the strong integration of research and practice: the practitioners are involved in the research process and the scientists gain firsthand experiences. In action research the emphasis is on what practitioners do more than what they say they do (Avison et.al, 1999, Baskerville 1999).

◆ GROUNDED THEORY

Grounded theory

The qualitative method approach *grounded theory* is a useful method in developing context-based, process-oriented descriptions and explanations of a phenomenon (Myers and Avison, 2002). Theory is derived from systematically collected data that is analysed through the research process (Strauss and Corbin, 1998). In this method the researcher begins with an area of study and allows the theory to emerge from the data. As grounded theories are based on data, they may offer insight, enhance understanding and provide a meaningful guide to action and according to Strauss and Corbin (1998) "*Analysis is the interplay between researcher and data*". The procedures for grounded theory are not meant to be followed statically but rather to be used in creative and flexible ways.

Grounded theory involves three levels of coding (Strauss and Corbin, 1998):

1. *Open coding*; the analytical process through which concepts are identified and their properties and dimensions are discovered in data. Data are broken down into discrete parts, closely examined and compared for similarities and differences. Then theory building occurs through conceptualising which is an abstraction of the data, doing comparative analysis to find common characteristics of objects and happenings. The concepts are then categorised into main- and subcategories.
2. *Axial coding*; the process of relating categories to their subcategories, termed “axial” because coding occurs around the axis of the category, linking the categories at the level of properties and dimensions. Categories are more related to their sub-categories, to form more complete explanations of the phenomenon done in a systematically way.
3. *Selective coding*; the process of integrating and refining the theory. The categories are integrated and refined and relationships between them are recognised. Integration here involves identifying of the central or core category which is the main theme of the research. It will represent the analyst interpretation of what the research is all about, which means that another researcher coming from a different theoretical orientation and with another research question, could arrive a different interpretation and main theme. However, it should always be possible to follow the path of logic regardless of perspectives, and agree that the interpretation is one plausible explanation.

4.2.5 DATA COLLECTION

In qualitative research data is collected by observations, interviews and documents to understand and explain a social phenomenon as e.g. how do the employees involved in the competence management process utilise the system which supports the process, and how the interaction between the system, process and employees do occur.

4.3 MY CHOICES

My research strategy will include both theoretical and empirical research. The former will involve a development of a theoretical framework based on literature review related to the different disciplines: human resource management, knowledge and competence management, organisational learning and globalisation perspectives. This theoretical foundation will be a helpful directive for the empirical work. However, it is not meant to be a barrier for development of new themes during the investigation and the theoretical frame will not be used to create hypothesis; conscious or unconscious. The empirical approach in this study is phenomenological.

I plan to use an interpretive research design, because I believe that it is not possible to do research objectively; it will always be influenced by personal views and experiences. However, most important is to try to reproduce all the variations from different subjective meanings to illuminate all interpretations of the phenomenon you are studying. I think it is important to build-in flexibilities that allow for discoveries of new and unexpected empirical results and for growing sophistications. This makes the design iterative and is opening for improvisations during the research process.

This flexible design which I want to use, will be a contrast to a positive research design which makes a more precise identification of research questions, hypothesis, and sampling strategies

on an early stage. In interpretive research, a priori design could block the introductions of new understanding (Denzin and Lincoln, 2000). The central premise of non-positive research is that the researcher should be concerned to understand phenomena in-depth and that this understanding should result from attempting to find tentative answers to questions such as ‘What?’ ‘Why?’ and ‘How?’ Phenomenology contends that such an understanding can result from using methods rather than measurement. This is different from a positivist’s point of view, who is concerned with answering questions of ‘How many?’ and ‘How much?’ (Remenyi et al., 2000).

My research want to explain *how* IT can be utilised in the competence process, *why* IT’s role(s) is of strategic significance, *how* it can stimulate knowledge transfer processes and *what* kind of processes, and *what* kind of implication it has on organisational learning. It could naturally be framed into a non-positivist research design.

In this study social and cultural questions will be central in trying to resolve how organisations are able to use IT in a proper way to support competence management and knowledge transfer processes. The significance of culture is especially important due to the globalisation perspective. Based on these foundations, the decision on using qualitative research methods is not difficult. Further, I intend to do a single case study (or multiple) in organisational settings. The flexibility in case studies gives the freedom to work almost entirely positivistic or almost entirely phenomenological or anything between these two extremes. As the case study is an umbrella term which include a wide range of evidence capture and analysis procedures, all these different orientations and approaches may fall within its domain. I think this gives me as researcher good opportunities to use all the variations and flexibilities which will be needed during a research process and the freedom to improvise to get the most out of the data gathering as well as the interpretations.

The data collection I plan to do in the traditional way in qualitative research, by observations, interviews and documents. In the following I will give a short description of these techniques and the information I expect to gain from each.

4.3.1 OBSERVATIONS

Observation has been characterised as the fundamental of all research methods on social and behavioural science, and the mainstay in ethnographic enterprise. Even in studies based on direct interviews observational techniques is used to note body language to extend the meaning of the words from persons being interviewed. Observations includes both human activities and the physical settings in which such activities take place (Angrosino and Mays de Pérez, 2000). Whyte (1997) points out that participant observation should not be a set of random activities, but should be done in a systematically way, trying to get beyond personal impressions. He thinks it is important to place a structure first before focusing on the contents conveyed.

Observations I – competence management processes

In a pilot study (Hustad and Møll, 2002) we used mainly interviews and information from internal documents. In the doctoral project I want to extend the data collection techniques by applying more observations, mainly as a passive participant. This could be observation in meetings and workshops where competence managers and leaders are discussing design and/or updating of new competence areas which should be aligned with the superior business strategy. During these observations I may get first hand information about what kind of role(s)

and appearances a HRIS which support competence management could have in these dynamic contexts, and how each sub-process in the competence management process are designed and which practical directives these processes are meant to follow. Through observation I will hopefully get more in-dept knowledge than through the former data collection.

Observations II - Communities of knowing

I also want to use observation techniques to achieve more information about knowledge transfer processes by being a virtual observant in some groups of “communities of knowing”. In that way I will be able to observe how the members of the groups are sharing knowledge. The observations could be done during videoconferences, telephone meetings or discussion groups but also by participating in some of their physical meetings based on real human interactions.

Writing down notes and reflections will mostly do the registration during the observation, but I will also use visual methods like video camera. The latter method will be used very carefully and not at all if it possible could influence on behaviours.

All research is based on some underlying assumptions which represent the researcher’s philosophical perspectives which relate to the underlying epistemology that guide the research. Orlikowski and Baroundi (1991), provide an overview over different research approaches and assumptions due to IS research. Three distinct epistemological categories are discussed; positivist, interpretive and critical. It is a fundamental distinction between the interpretive and the positivist worldview; ontological and epistemological assumptions. Interpretivism asserts that reality, as well as our knowledge thereof, are social products and hence incapable of being understood independent of the social actors (included the researcher(s)) that constructs and make sense of that reality. Positivism assume an objective physical and social world that exists independent of humans, and whose nature can be relatively unproblematic apprehended, characterised and measured (Remenyi et al., 2000). Critical researchers assume that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances, critical researcher recognise that their ability to do so is constrained by various forms of social, cultural a political domination (Myers and Avison, 2002).

It is important to underline that in practice these distinctions are not always so clear-cut, and debates are going on about if they are necessarily opposed and whether they can be accommodated within the same study (Myers and Avison, 2002). Qualitative research can be positivist, interpretive or critical. However, IS-related research in organisations has been strongly influenced by a positivist perspective (Orlikowski and Baroundi, 1991). It signifies that choice of a specific qualitative research method is independent upon the underlying philosophical assumption of the researcher. E.g. a case study can be positivist (Yin, 1994), interpretive (Walsham, 1993) or critical (Hirschheim and Klein, 1994).

4.3.2 INTERVIEWS

Interviewing is yet one of the most common and powerful ways that we try to understand fellow human beings. The most common forms of interviewing are individual, face-to-face group interchange, mailed or self-administrated questionnaires and telephone surveys. It can be structured, semi structured or unstructured (Fontana and Frey, 2000).

The interview should be a part of the whole fieldwork process rather than an isolated exercise. During observations, the interviewing will be more informal; just listening to what people are saying and sometimes asking them to explain their personal feelings about the situation they are describing (Whyte, 1997).

In my research I will use interviews both during observations and interviews that are appointed. The former will be less structured than the latter, but both types will be based on certain themes which are important to reveal. Appointed interviews will be based on a semi structured interview-guide. The interview-guide will be developed from the research questions, results from the pilot study (Hustad and Møll, 2002; Hustad et al., 2002) and information in internal documents from the company. The interviews will be tape-recorded if possible.

Interviews I - Competence management process

I plan to do my investigation on different levels in the organisation; line leaders, competence managers, section leaders and human resource managers, corporate leaders and employees from the engineers' level. Snowball sampling method (Jacobsen, 2000) will be used to generate a list of key guides and informants for further contacts.

The aim is to get more knowledge about the practical performance of the competence management process, like the personal-development talks and how the competence development programs of each employee are carried through in practice, and the role of the competence management system in these processes.

Interviews II – Communities of knowing

It would also be interesting to perform interviews with some of the members in different groups of “communities of knowing” asking about the emergence of the group and the role of the competence management system in the HRIS.

4.3.3 DOCUMENT REVIEWS

Internal documents as internal reports, information from the intranet, newsletters, brochures, annual reports, strategy plans, manuals and specifications of systems may give useful information to the research. Such evidence, unlike the spoken word, endures physically and thus can be separated across space and time from its author, producer or user. Different types of texts have to be read in the contexts of the conditions at the time of production (Hodder, 2000). It is important that the researcher do not use text-based documents as stand-ins for other kinds of evidence. The documents are social products and not transparent representations of organisational routines or decision-making processes (Denzin and Lincoln, 2000).

4.3.4 DATA ANALYSES TECHNIQUES – OR ‘MODES OF ANALYSES’

It is quite difficult to make a clear distinction between data collection and data analysis in qualitative research. The analysis affects the data and vice versa. Therefore it is more accurate to speak of ‘modes of analysis’ rather than ‘data analysis’ in qualitative research. The common thread is that all qualitative modes of analysis are concerned with textual analysis; verbal or written.

There are different approaches to analysing and interpreting qualitative data; e.g. hermeneutics, approaches which focus on narrative and metaphor, semiotics and grounded theory (Myers and Avison, 2002).

In my research a combination of interpretation techniques will be used. Both linguistic tradition and sociological tradition are alternatives. The former treats text as an object of analysis in itself and includes narrative analysis, conversation (or discourse) analysis, performance analysis and formal linguistic analysis. The latter distinguish between free-flowing text like narratives, discourse and responses to open-ended interview questions, and words and phrases generated by techniques for systematic elicitation. These are described in detail by Ryan and Bernard (2000)

Grounded-theory is a possible choice for coding of the data in this work. The good iteration between the data and concepts can be useful my research and helpful in generation of categories and subcategories, and also to identify potential links between the categories and identify the main theme or core category of the research.

Interviews will be transcribed and software supporting qualitative analysis could be used helping in categorising of the themes.

After transcriptions of interviews, document analysis and reflections from interviews and observation are done, writing of the analytical memos can start.

4.3.5 SELECTION OF CASE(S)

is an important part of the research design, and also if it should be a single or multiple case study. A multiple case design gives the possibilities for comparing and contrasting a phenomenon across different contexts and settings. If the data points are rich, generalisation to the contexts of the organisations involved could be done viewed in the light of regularities found across them. A single case gives a more comprehensive in-depth study in one organisation. All the specificities which are unique for this organisation could be looked into more carefully; a single case study is believed to be an important source for generating knowledge. However, it could be difficult to understand one case without knowing about other cases if we want to explain a general phenomenon. But while we are studying, our resources are concentrated on trying to understand this specific case's complexities (Stake, 2000). Comparison between cases is competing with learning about and from that particular case, and by facilitates comparison, case knowledge may be obscured. Comparative description is the opposite of 'thick description' (Geertz, 1973), which is essential in a qualitative approach where one phenomenon is explored through a narrow in-depth modes of analysis. Comparison does not need to be ignored in case studies, but should not be the main concentration (Stake, 2000).

To do an investigation in a global company will give the possibilities to compare a phenomenon across different settings inside one organisation, but should not be the main focus which could prevent in-depth knowledge about each location's specificities.

Access and entry are sensitive components in qualitative research, and will be crucial for the feasibility of doing the study in this particular research setting. However, to generate knowledge about this phenomenon, will not be restricted to do empirical research in one specific organisation. Other large-scale knowledge-intensive organisations which are utilising IT for competence and knowledge management could be possible trade-offs to explore this phenomenon.

4.4 LIMITS OF THE RESEARCH

The research will always be influenced of the researcher's personal experiences and how she/he does the interpretation. A single case study will not give the possibilities to compare and contrast a phenomenon across different organisational contexts, but will be very specific to this particular organisational setting, indicating different variations and patterns through the stories from the informants. Developing good relationship and building trust between the organisational members and the researcher is important to get honest descriptions from the informants, and to get to know as much as possible of the phenomenon studied. The atmosphere were interviews and observations are carried out are also important to get relaxed conditions. Qualitative research in general does not open up for generalisation of your data. Even with rich data material blocks and thick descriptions you could only carefully indicate (but not confirm) patterns and variations observed. To do the assessment and evaluation of your qualitative research according credibility, transferability, dependability and confirmability, I think is difficult process especially when you are an inexperienced researcher, but also generally because assessments will always be affected of the researcher own objectives and attitudes.

4.5 SUMMARY OF THE RESEARCH PROCESS

The whole research process¹ can be divided into different phases, or sub-processes (based on Remenyi, 2000; Denzin and Lincoln, 2000):

1. The researcher as a multicultural subject; every researcher collects empirical materials bearing out questions and then analysis and write about them. Every researcher speaks from within a distinct interpretive community that configures, in its special way, the multicultural, gendered components of the research act.
2. Theoretical paradigms and perspectives; like epistemological and ontological assumptions, e.g. interpretive or positive perspective
3. Reviewing the literature; make a theoretical framework
4. Research strategies; design of the study; selection of research strategy and methodology based on the research questions, selection of cases
5. Methods of collection and analysis
6. Interpretation; Developing theories and /or conclusions
7. Understanding the limitations of the research
8. Suggestions for further research and practical guidelines
9. Publishing the research results

In a grounded theory approach 5 and 6 are strongly iterative sub-processes.

4.6 QUALITY OF THE RESEARCH

Evaluating the quality of an interpretive research is normally based on the criteria credibility, transferability, dependability and confirmability (Guba and Lincoln, 1989). These criteria are called parallel criteria and were developed as an alternative to the traditional positivist criteria construct, internal, external validity and reliability (Yin, 1994). The latter is based on objectivity and conflicts the interpretive view.

¹ Appendix includes a preliminary time table of the research progress.

4.7 RESEARCH SETTING AND CONTEXTS

The plan for this research is to do a case study in some different geographical locations in the company Ericsson; Norway, Sweden and Croatia. However, generally selection of cases will be restricted due to resources available in a research project and the possibilities for access to these locations of the organisation. Other possible organisational contexts are Deloitte and Touche, and Gard which both are global organisations utilising information technology for knowledge and competence management processes. Telenor is another alternative and is an interesting setting because the company has just started implementation of a distributed human resource information system (HRIS).

4.7.1 ERICSSON

Ericsson is one of the largest suppliers of mobile systems in the world. Ericsson provides total solutions covering everything from systems and applications to services and core technology for mobile handsets. With Sony Ericsson they are also a supplier of complete mobile multi-media products.

Ericsson is a global organisation and has been active worldwide since 1876. The company has today around 71,700 employees in more than 140 countries. The headquarters is located in Stockholm, Sweden. Kurt Hellström is the President and CEO of Ericsson.

For quite some time now, Ericsson has experienced a downhill slide. The Ericsson Corporation has decided to concentrate its development operations into larger units. This will have dramatic repercussions also in Norway, and 250 to 300 employees in Asker and Grimstad are involved (Ericsson, 2002).

Implementation of global human resource information system

Ericsson has chosen an Enterprise-Resource-Planning (ERP) system to support global business processes and to ensure integration of all business functions. SAP R/3 has been chosen as the platform to facilitate integration of all functional areas. Within HR, the Human Resources Management System (HRMS) based on SAP R/3 will enable HR to be closely integrated with the business. The global processes supported by HRMS are basic personnel administration, recruitment, and management planning and competence management (Ericsson's intranet, 2002).

Implementation of this global competence management system is a decision from the corporate management, a centralised initiative which gives consequences for all the units in the company and their local practices for use of different competence management tools. Existing local HR systems shall be phased out by 2002 and replaced with HRMS (ibid.).

Metaphors and graphical representations

Based on our earlier research results (Hustad and Møll, 2002; Hustad et al., 2002) the concepts of "knowledge networking" and "communities of knowing" can be considered as conceptual metaphors which will make important implications for shaping the modes of analysis during this research study. Observations and interviews on how these "communities of knowing" are sharing and transferring tacit knowledge (Nonaka and Takeuchi, 1995) and if it is mainly based on real human interactions, and if or how virtual interaction can support this transfer processes.

Graphical representations like the competence model (the triangle), competence rose or spider's web showing competence gap (see Baladi, 1999 or Hustad and Møll, 2002) and one of the company's image showing relations between competence management, knowledge

networking and a learning organisation (figure 1) are all interesting metaphors which require further in-depth investigation and will give implications for the design of the analytical process.

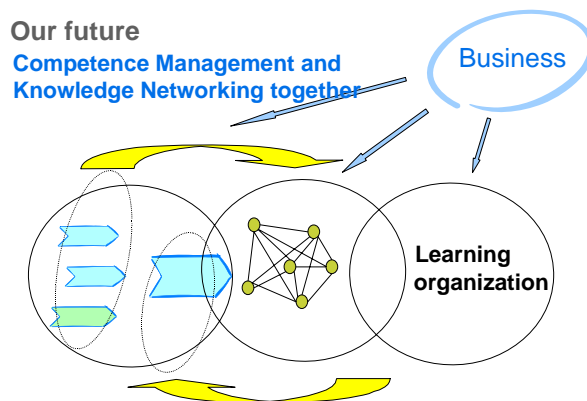


Figure 1: Relations between competence management, knowledge networking and organisational learning

5. PRELIMINARY LITERATURE REVIEW

The literature review is based on theory in human resource management, knowledge management and globalisation. Further browsing of literature and theories in these topics are planned, in addition to a review of organisational learning approaches which is not performed at this stage.

5.1 HUMAN RESOURCE MANAGEMENT

A human resource management strategy of an organisation involves implementation of HR policies and practices to get effective administration of the human resources. Essential dimensions of the human resources function are human resource planning, recruitment and selections, appraisal, reward, competence management and staff development.

Development of the role of human resource management in Norway
(Adapted from Munkvold, 2002)

1950: To improve relationship between the employees and leadership in organisations the personal function was introduced as a kind of welfare arrangement.

1960: The human resource function got more centralised due to increasing demands of efficiency towards human resource administrative routines like payroll, absent registrations and training.

1970: It was increased focus on the human value and more staff planning and management of the human resources.

1980: The organising of the human functions got more decentralised and line managers got

increased responsibility for administration of the human resources.

1990 → : A more strategic view on human resource management are developing and the key issues of their function focus on competence development, human learning management, knowledge management and learning organisations.

The role of human resource management in organisations has been undergoing changes from measuring individual productivity among the employees and administration routines towards a more strategic management of the human resources.

The strategic human resource management literature is increasingly concerned with whether human resources can be a source of competitive advantage. Kamoche (1999) argues that the mutually reinforcing interaction between the stock of knowledge, skills and expertise (resources) and the organisational routines and human resource policies and practices (capabilities) generates human resource competencies whose strategic value is realisable to the extent that they are linked with the core competencies. The literature has begun to draw from the resource-based view of strategy (e.g. Wernerfelt 1984; Barney, 1991) towards the resource capability view of strategy which is concerned with actions, processes and related behavioural efforts to attain competitive posture (e.g. Ulrich and Lake, 1990). Hagan (1996) utilises a strategic framework for human resource management to develop hypotheses concerning the implications of core competence management (Hamel and Prahalad, 1994) for HR practices.

5.1.1 HUMAN RESOURCE INFORMATION SYSTEM

“A human resource information system (HRIS) is a system used to require, store, manipulate, analyse, retrieve, and distribute pertinent information about an organisation’s human resources.” (Tannenbaum, 1990). Initially, such system was used in human resource management to support transaction processes and maintain management control. Today, new information technology is used both for efficiency purposes and to improve decision making and support competitiveness. HRIS improves efficiency by streamlining, automating and eliminating repetitive and routine functions with the intention of establishing lower costs and higher reliability for these functions, and improves management by extracting and storing information from human transactions. Less routine paper handling tasks give the human resource professionals more time developing service oriented tasks and to participate in strategic decision making. (Tannenbaum, 1990; Berardine, 1997; Niederman, 1999). However, important these benefits that computerization may procure, several scientist in this area are arguing for more comprehensive research on HRIS effectiveness is required (Haines and Petit, 1997; Kavenagh et al., 1990)

Global human resource information systems (GHRIS) will have many of the same functionalities as a local system. The structure of a GHRIS makes it possible to use common definitions and do a standardisation of data which makes data access easier and more cost-efficient. However, standardisation and homogeneity makes flexibilities and dynamic difficult in each local context. Essential components of both HRIS and GHRIS are: basic employee information, applicant tracking, recruiting, position control, performance management, compensation, payroll, benefits, training, career development/skill inventory, and human resource planning. Each of these areas presents its own set of difficulties in expanding from a single country to multinational database. Global organisations face a range of technical issues to gather and integrate these pieces of information across boundaries, and managerial, organisational and cultural aspects are involved in using this information in new ways within the organisation. Employees may find themselves facing increasing levels of competition for

promotions or choice assignments. The critical question for this area of GHRIS is how technical solutions, organisational policies and managerial practises should be combined to ensure superior human resource allocation within the firm, and at the same time consider the variations in the different local contexts (Niederman, 1999). The interaction of information technology and human resource management in a global context is a largely unstudied area (ibid) which indicates the importance for further investigation in this area of domain.

5.1.2 THE CONCEPT OF COMPETENCE

The concept of competence has been assigned highly different meanings and is among the most diffuse in the organisational literature (Nordhaug, 1993). The term originates from Latin verb 'competere' which means to be suitable. In psychology the concept characterise individuals' ability to respond to demands placed by their environment (White, 1959). The focus on the individual characteristic has also its intellectual roots in the literature on traits, skills and personal dispositions (e.g. Minzberg, 1973; Katz, 1974; Chatman, 1989), and intellectual and cognitive processes (e.g. Hunter, 1986; Carroll and Gillen, 1987). But also more integrated and work-related approaches have been applied to describe an underlying characteristic of person which results in efficient work-performance (e.g. Boyatzis, 1982). The prime focus is on competent people having the ability or capability in terms of knowledge, skills and attitudes (e.g. relevant personal characteristics) that underlie competent performance, which will enable a satisfactory completion of some tasks (Gonczi and Hager, 1996).

This integrated approach is supported by the denotation from Concise Oxford Dictionary where competence is defined as "ability to do" or the "ability for a task", and from Macquarie Concise dictionary "the quality of being competent", where competent means "properly qualified" or "capable".

Hall (1980) builds his definition on White's (1959) discussion around motivation and competence:

"Competence, as a state of adaptive fitness and response readiness, is the sustained capacity to people to respond in a committed and creative fashion to the demands placed on them by their environments".

Lai (1997) emphasise the competence definition to include both individual- and organisational level regarding knowledge, skills, abilities and attitudes to reach the aims of the organisation, where the concept of competence on the organisational level is applied to organisational skills (see Nelson and Winter, 1982), organisational knowledge; e.g. information and knowledge stored in the databases of the company, and organisational abilities; e.g. one organisation's ability to change (Løwendal, 1998).

5.1.3 STRATEGIC COMPETENCE MANAGEMENT

Strategic competence management is an important part of HR practices in a competence-based organisation (Lawler, 1993) where individual competences are given a central place in the organisation. The primary emphasis here is not on the job description and duties, but on the description, stimulation and development of the competences of the employees. This requires a recording (combinations) of duties and responsibilities and the reorganising of employees with the right competences. The combination of competences, duties and responsibilities determines and influences the core competences of the organisation which can lead to competitive advantages (Bergenhengouwen, 1997).

Competence management in practice involve mapping of the organisational competencies, determine the requirements of competencies and future needs, calculation of competence gap and establishing of development plans (Lai, 1997; Nordhaug, 1998b)

5.1.4 COMPETENCE MANAGEMENT IN PRACTICE

It is important to establish a system or framework for competence management in a company. Then you will know which processes are important and which should be supported by a HRIS. I will use the competence management system in Ericsson to describe (shortly) and emphasise important processes in strategic competence management and how a HRIS could be utilised.

Competence management at Ericsson is a system or framework for establishing strategic (long-term) and critical (short-term) competence needs (Hellström et al., 2000; Hustad and Møll, 2002). The core concepts here are: Competence requirements (what is the competence level of the organisation, and what is needed); present competence (what is the competence level of the individual employee); and competence gaps (the difference between competence requirements and present competence). Based on these gaps, development plans for the organisation and for the individual will be established, which describe requirements and actions aimed to bridge the competence gap. These plans are reviewed and updated regularly. The competence requirements are established on the basis of the Ericsson strategic Plan (ESP), budgets, scenarios, etc., and the present competence is mapped through individual tests pertaining to a competence profile; a triangle where the three sides represent:

1. Technical / professional competence (e.g. competencies specific to certain operations, occupation or task; technical design, product knowledge, finance)
2. Business competence (e.g. understanding of the business, general Ericsson knowledge and customer treatment)
3. Social competence (e.g. team work; knowledge sharing)

Each of these dimensions is further classified into competence areas and competence elements which constitute a foundation for a global competence dictionary which the competence-module in a HRIS (e.g. competence planning module in the SAP R/3 HRMS) are based on.

Some examples of what this information system can support regarding competence management are:

- self-assessment of individuals competencies of today
- organizational analysis of strategic competencies
- common access to individual data for PD discussions (planning & development talks) such as performance appraisal, competence analysis, development needs and action plan
- search functionalities for competencies on certain levels
- search for an individual meeting certain requirements
- starting the work with open market place for match of competence needs and interesting candidates
- search for amount of people in a certain job areas
- cascade global competence requirements to a market or business unit from corporate mandatory and business division/market area mandatory
- summaries and report changes in competencies

A HRIS will also include other facilities which support basic personal administration, recruitment, payroll, management planning, organisational planning, and project planning among others. These facilities are beyond the scope of this project.

5.2 GLOBALISATION

Bartlett and Ghoshal (1998) have developed four global business strategy models for which a multinational corporation can choose in its process for going global. In the process for going global the organisations goes from multinational to international, to global and finally to transnational. Globalisation and technology are mutually reinforcing drivers for change. The role of IT can enhance control, standardisation and coordination which are necessary to control worldwide operations and get access to new global markets. However globalisation is creating increasingly dynamics and an unpredictable world which influence technological, political and cultural aspects as well as our personal lives and traditions (Giddens, 2002). Coordination of complex global processes and standardisation will be in contradictions to this dynamic and unpredictably global environment. A strategy for coordination of world activities involves control from headquarters to achieve global efficiency through standard product design and centralisation of assets and resources. Each national department has little influence and independency and the global managers have less understanding of local environmental differences (Hanseth and Braa, 2000).

Computer-Supported-Cooperative-Work (CSCW) or groupware involves information technology supporting collaboration between people. Increasingly turbulent environment in which business operates in has lead to the need for better ways of organising and coordinating work activities, with more ad hoc project groups and the need for flexible communication structure (Bannon, 1993). Organisational requirements are demanding better integration, updated information and easy access to the information sources time-and- place independently. A networked organisation is becoming more and more usual; CSCW activities can in many ways address these aspects by emphasising collaboration and coordination through groupware applications built upon an infrastructure of information and communication technology. The evolution of the Internet as a global information system (Kahn et al., 1997) has because of its technology nature as an open-architecture framework, facilitated connection between lots of different networks, and in this way made collaboration and interactions between individuals and their computers independently of geographical locations. It has been argued that CSCW-solutions mostly support works in local contexts because adoption patterns and fitness between the organisation and the technology is related to local conditions and CSCW-solutions cannot be viewed as a universal solution supporting global “anytime, anywhere dimensions” (e.g. Rolland and Monteiro, 2002). The new global environment requires cooperation and collaboration between the different company units intra- organisational, or between different companies, inter-organisational supported by information technology to increase the efficiency of global business processes, which is in contradiction to what CSCW solutions can perform in practice.

Research related to investigation of the nature in globalisation processes have increasing interest; what kind of dynamics do they generate and to what extend can increased control be combined with increased integration as well as increased flexibility, are important topics to explore (e.g. Rolland and Monteiro, 2002; Hanseth and Braa, 2000)

The quality of the human resource management programs will strongly influence the

profitability of the company. However, discussion concerning utility value regarding intellectual capital, knowledge management and organisational learning in local organisations and one domestic economy, will be more pronounced in a global organisation. Global context increase the complexity and difficulties to apply appropriate human resource policies suitable to a global workforce. Cultural and language differences, no understanding of local policies, the lack of physical proximity are examples of issues which increases the complexity. This requires long-term planned global human resource management strategy.

5.3 KNOWLEDGE MANAGEMENT AND COMPETENCE

Knowledge and competence have become increasingly relevant for organisations since the shift from an industrial economy based on assembly lines and hierarchical control to a global, decentralized, and information-driven or knowledge based economy. Due to the global economy, organisations now work, compete, and cooperate on a world-wide scale. As a consequence, they must be able to maintain and reproduce their core competencies and corporate identity regardless of the geographical distance. They must also be capable of creatively enriches such competencies which knowledge coming from the local communities that participate in the global workforce (Borghoff and Pareschi, 1998).

Marchand (1998) is using Nonaka and Takeuchi's (1995) theoretical framework for knowledge conversion to exemplify processes for converting knowledge to/from information. Meta-information is characterised as information about information and will among others contain indexes; e.g. maps and catalogues to locate expertise and specific competence elements among the employees in the organisations. These directories and maps for locating people or information are being supplemented by 'knowledge maps' or metaphors like 'yellow pages' and other representations of who possesses what knowledge or expertise in the organisation and how it might be accessed and tapped.

Borghoff and Pareschi (1998) focus on information technology to support knowledge management architecture. They consider this architecture to be a theoretical extension of Nonaka and Takeuchi's notion of knowledge conversion to cover IT support, and since Nonaka and Takeuchi's model can be seen as a purely social characterisation of the knowledge environment, Borghoff and Pareschi (1998) are more directly related to the management of the IT infrastructure in the knowledge management processes. The knowledge cartography in this knowledge management architecture covers an IT infrastructure supporting knowledge navigation, mapping and simulation (ibid.).

Alavi and Leider (2001) have framed the knowledge management processes and the potential role of IT supporting these processes. In knowledge transfer processes IT is enabling faster access to knowledge sources like knowledge directories and discussion forums. These knowledge directories can include knowledge maps giving information regarding the employees' competencies, and utilisation of IT could bring faster access to these knowledge sources.

Knowledge management and the role of Human resource management are seen as an important relation to handle the intellectual capital sufficiently in organisations. Knowledge management to be effective must encapsulate the idea that it is through the acquisition of knowledge by individuals and their willingness to apply their knowledge for the benefit of the organisation that competitive advantage and service excellence are achieved. The human resource function has a central role to play regarding knowledge management where the key

role is to bridge the gap between what people know and what they do. To put emphasis on knowledge, skills and creativity on the capturing and sharing of information, is important issues in the role of human resource regarding knowledge management (Harman and Brelade, 2000a; 2000b).

Harman and Brelade (2000a; 2000b) define the concept of knowledge management which they call a “working definition” which seek to encapsulate these elements:

“Knowledge management is the acquisition and use of resources to create an environment in which information is accessible to individuals and in which individuals acquire, share and use that information to develop their own knowledge and are encouraged and enabled to apply their knowledge for the benefit of the organisation. “

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APPENDIX

Table 1: Preliminary time table for doctoral research

Activity	Time frame	Parallel activities	Time frame
Choose topic for doctoral research project	Done	Attending doctoral courses	Autumn 2002
Write doctoral proposal and get feedback from supervisors and students	Sept.- Dec.2002	Attending doctoral courses	Spring 2003
Extended literature review – make a theoretical framework	Jan-June 2003	Preparing first paper for international IS-conference (based on NOKOBIT-paper)	Spring 2003
Selection of cases; Contact actual companies to ensure access, e.g. Ericsson, Telenor, Gard, Deloitte and Touche	July 2003	Attending doctoral courses	Summer & Autumn 2003
Decide the overall research approach; design the study, define research strategy and methodology	Autumn 2003	Preparing 2nd paper for international conference	Autumn 2003
Browse theory regarding case study methodology	Autumn 2003	Lecturing – duty work	Autumn 2003
Choose a methodology and choose of a qualitative design	Autumn 2003	Lecturing – duty work	Spring 2004
Prepare research; make decisions for methods of collection and analysis	Autumn 2003	Preparing 3rd paper for journal publishing	Spring 2004
Starting the field work; and the ‘soft’ research approach. Building trust in the company and prepare the design of interview-guides	Spring 2004	Attending international conference	Spring 2004
Carry out pilot interviews and observations	Spring 2004	Writing 4th paper for publishing	Autumn 2005
Adjusting interview guides; continue interviews, documents sampling and further observations	Spring 2004	Writing 5th paper for publishing	Spring 2006
Iterative circle of mode of analysis; analyse interviews, categorise themes, do new interviews and observations	Spring 2004	Writing 6th paper for publishing	Summer 2006
Transcriptions of interviews, writing reflections and analytical memos	Summer 2004		
Get feedback on memos from colleagues, supervisors and informants	Summer 2004		
Adjust research design (if needed) and continue data collection and analysis in new iterative circles	Autumn 2004		
Continue investigation	Spring 2005		
Close up the practical field work	Summer 2005		
Preparing the dissertation report	Summer 2005		
Preparing the dissertation report	Autumn 2005		
Writing the dissertation report	Spring 2006		
Writing the dissertation report and Defending the dissertation	Summer 2006		