



EKONOMIHÖGSKOLAN
Lunds universitet

Institutionen för Informatik

Knowledge Management

Knowledge dissemination through a knowledge management system

Bachelor thesis, 10 credits, within the Systems Science Programme

Presented: April, 2006

Authors: André Mazouch
Santhosh Nair

Supervisor: Dr. Jonas Hedman

Knowledge Management

Knowledge dissemination through a knowledge management system

© André Mazouch

© Santhosh Nair

Bachelor thesis presented April, 2006

Size: 50 pages

Supervisor: Dr. Jonas Hedman

Abstract

Knowledge is today considered to be a critical factor for organisations to survive within an increasingly competitive market. This has resulted in the fact that effective management of information and knowledge has become of crucial importance for companies. Knowledge management systems facilitate this management of knowledge and make it possible to develop new knowledge that can be shared and disseminated within the organisation. Knowledge management has become an increasingly popular term that with the support of information technology aims at enhancing the sharing and utilizing of within the organisation already existing knowledge and has created a new possibility for organisational knowledge sharing. Does a knowledge management system affect the knowledge sharing process within an organisation in reality? This thesis aims at providing the reader an understanding about if and how the knowledge sharing process is affected in reality by a knowledge management system within a specifically chosen survey company. The approach has been to collect literature and scientific articles from authors and universities with experience in knowledge management research. In addition we have also used web sources that we feel are reliable in order to obtain theoretical material. We have chosen to apply a qualitative research method with an abductive approach in order to work up and gain theoretical and empirical material for the thesis. A major part of this thesis is based on interviews we have conducted as a part of the conducted survey. In our conclusive thought we have found that use of the knowledge management system at the survey company has a significant affect on the knowledge sharing within the organisation. We have also found that the survey company applies a well-functioning knowledge sharing strategy which involves both the maintenance of a sound organisational knowledge sharing culture and utilising the existing knowledge management system. The study has further led to the development of the Techno-Structural Community Networking Model (TCN-Model), an integrated model, involving both social and technological aspect of knowledge sharing which aims to visualise the knowledge sharing strategy applied at the survey company.

Keywords

Knowledge Management, Knowledge Sharing, Knowledge Dissemination, TCN-Model

Preface

It has been a very learning and inspiring experience to work with this thesis and we think that we will have sufficient use of the knowledge and experiences gained through out this study in the future.

This thesis is targeted towards other people who aim to conduct studies within the field of knowledge management. Further we hope to encourage more people to gain interest in this field.

The field of knowledge management is a field with a diversity of viewpoints thus some readers may not fully agree on what we argue for in this thesis. Opinions concerning the content and structure of this thesis are most welcomed.

We would like to convey our thanks to all the people who have helped us gain the theoretical and empirical material which forms the base of this thesis and especially the interviewees at the survey company.

At last we would like to convey our sincere thanks to our supervisor Dr. Jonas Hedman and our fellow students for contributing with useful opinions concerning content and structure of the thesis.

Lund 19th of April 2006

André Mazouch

Santhosh Nair

Table of Contents

1	Introduction	1
1.1	Problem space	3
1.1.1	What is knowledge management?.....	3
1.1.2	Why knowledge management?	4
1.1.3	Knowledge management systems	4
1.2	Problem definition.....	5
1.3	Purpose	5
1.4	Delimitation.....	5
2	Methodology	6
2.1	Scientific viewpoint.....	6
2.2	Research Method.....	7
2.3	Objectivity	9
2.4	Validity, Reliability, Generalising	9
2.5	Course of action	10
2.5.1	Data collection procedure.....	11
2.5.2	The use of literature sources.....	14
2.5.3	Data analysis	15
2.5.3.1	Data reduction	15
2.5.3.2	Data display	15
2.5.3.3	Conclusion drawing and verification	16
3	Frame of reference	17
3.1	What is knowledge?	17
3.1.1	Data	18
3.1.2	Information.....	18
3.1.3	Knowledge	18
3.1.4	Types of knowledge	19
3.1.4.1	Explicit knowledge.....	19
3.1.4.2	Tacit knowledge	19
3.2	Knowledge management and ways of sharing knowledge	20
3.3	Knowledge management typology.....	21
3.4	Advantages and problems with IT-based solutions.....	23
3.5	Summary	24
4	Findings.....	25
4.1	Survey object.....	25
4.2	The KMS architecture and functions	26
4.3	Social and cultural aspects of the KMS	28
4.4	Summary	30
5	Discussion	31
5.1	The Knowledge Management System.....	31
5.2	Knowledge management: Networks and networking	31
5.3	Typology of the survey company's Knowledge Management System.....	32
5.3.1	Extended Library	32
5.3.2	Enacted Blueprints	33
5.3.3	Social and cultural aspects of the KMS	34

5.4	Knowledge management system; functions and limitations	34
5.5	The use of the KMS	34
5.6	The TCN-Model	35
6	Conclusions	37
7	References	39
7.1	Literature:	39
7.2	Interviews:	40
7.3	Scientific Articles:	40
7.4	Web Sources:	42
8	Appendix 1 – Interview Template (End-users and Male Executive)	43
9	Appendix 2 Interview Template (Female IT – executive)	45

1 Introduction

“The preservation of institutional knowledge has become a widespread concern. Institutional memory loss is a significant problem that can impact an organization’s ability to advance its mission successfully, its ability to avoid making the same mistakes it made in the past, and its ability to leverage the accomplishments of departing employees” (Coffey and Hoffman, 2003, p.38)

This thesis discusses how a specific knowledge company views and applies knowledge sharing. More specifically the thesis discusses how this case company applies knowledge sharing through their knowledge management system, *if* and *how* the knowledge management system really affects the knowledge sharing process, and problems connected to this.

Knowledge is today considered to be a critical factor for organisations to survive within an increasingly competitive market. This has resulted in the fact that effective management of information and knowledge has become of crucial importance for companies. Knowledge management systems facilitate this management of knowledge and make it possible to develop new knowledge that can be shared and disseminated within the own organisation. Knowledge management has become an increasingly popular term that with the support of information technology aims at enhancing the sharing and utilizing of within the organisation already existing knowledge (Alavi et al., 1999).

The fact that the world economy today to a great extent is built up on nonmaterial assets is something that has changed the competitive situation for many companies. To obtain a competitive lead concerning knowledge towards the competitors is a skill that has become of crucial importance for those companies who are eager to survive on the global market. The awareness of knowledge as the premier competitive asset and that the organisations’ personnel is in possession of this knowledge has resulted in the fact that the staff has become an asset of increasing importance for organisations (Daghfous, 2004).

How the companies shall be able to incorporate and utilize as much of the personnel knowledge as possible is an issue that has grown in importance especially during the late 1990s. Hoffman and Hanes (2003) mention the knowledge management craze of the late 1990s, when upwards of 25 percent of Fortune 500 companies (ranking list consisting of the top 500 companies in the USA) had a Corporate Knowledge Office (CKO) which shows that dissemination of the knowledge which exists within the companies is something that is taken seriously (Hoffman and Hanes, 2003).

According to a study conducted by the Delphi Group in Boston, knowledge sharing is however a phenomenon that is sluggishly emerging. More than half of the 650 interviewed IT-executives pointed out the organisational culture as a hinder for knowledge sharing (Tallmo, 1999).

It is difficult to change an organisational culture for it to promote knowledge sharing because this affects the foundation of the organisation it self. It is however not impossible to create an environment where everybody shares the knowledge. Knowledge based projects can work

eligibly in an organisational culture where a habit of sharing ones knowledge already has been established. Things which affect the co-workers motivation are however a requirement e.g. system for rewarding the staff for sharing the knowledge, organisational changes to enhance knowledge sharing, and a technological infrastructure that supports knowledge sharing (Mathi, 2004).

The awareness from the staff concerning the value their knowledge constitute for the knowledge companies, in many cases strengthens their position towards employers as well as towards other participants on the employee market. The degree of dependency is decreased for those individuals who possess the by companies sought knowledge. This in turn makes it possible for the employees to make higher demands on the employer concerning stimulating assignments, pleasant working environment, possibilities to evolve skills, technical tools, and different kinds of rewarding for the conducted work (Hoffman and Hanes, 2003).

Early information technologies were designed to assist managerial and professional workers by processing and disseminating vast amounts of information to managers organisation-wide. Over several decades systems evolved to systems focusing on providing tools for ad-hoc decision analysis to specific decision makers, and to systems designed to provide updated, often real-time, relevant information to senior and middle managers. These systems each contributed to individual and organisational improvements in varying degrees and continue to be important components of an organisation's information technology investment. An emerging line of systems targets professional and managerial activities by focusing on creating, gathering, organising, and disseminating an organisation's *knowledge* as opposed to *information* or *data*. These systems are referred to as knowledge management systems (Alavi et al., 1999).

With information technology (IT) as an enabler, a new economy starts growing in the west. IT is a changing power which affects all parts of our society both socially and economically. IT has changed structures of work, structures of industry, competitive situations, business possibilities, and given rise to new products and services. The development and spreading of information technology is a strong driving force for changes that affect us all. An emerging globalization, new markets and new forms of organisations with no dependency concerning time and place are examples of just a few of these changing factors (Falk and Olve, 1996).

Despite the fact that products and provisions have a great significance for most people, today nonmaterial assets like knowledge, care and service more and more characterize the working life of people. Ideas and knowledge is the frame for the new economy. The amount of companies with knowledge as the premier competitive asset is continually increasing. These organisations invest a significant amount of money in IT i.e. knowledge management systems (KMS) and other knowledge sharing technologies like intranet and e-mail to support and promote knowledge sharing. Knowledge management systems have a significant role in this process as they work as knowledge repositories; enhance communication and dissemination of knowledge (Falk and Olve, 1996).

Knowledge management is an area in which today intensive and extensive research is being conducted. The range of literature that discusses knowledge management from different viewpoints has increased significantly during recent times.

1.1 Problem space

The aim with this discussion of the problem space is to highlight relevant perspectives and aspects within the area of knowledge management and knowledge sharing and thus lead to a clear problem definition. We argue that a thorough discussion of the problem space is essential in order to approach the problems that are linked to the subject.

1.1.1 What is knowledge management?

Knowledge management is a phenomenon that has become a very current issue at many companies, but what is knowledge management and how is it that knowledge management during recent years has gained such sufficient attention? Alavi et al. (1999) states that knowledge management as a phenomenon is not a novelty.

“Historically knowledge management arose from early information technologies that were designed to assist mainly managers, such as management information systems, decision support systems and executive information systems. From this area emerged a line of systems focusing on creating, collecting, managing and spreading knowledge rather than information or data, which were called knowledge management systems. There’s nothing new about this idea, employee training, policies, routines, procedures, reports and manuals all aim for this direction. The novelty knowledge management introduces is the use of modern information technologies (e.g. intranets, data warehouses). By capturing, codifying and disseminating this knowledge, the company reduces the level of required know-how for its managers while improving the effectiveness and efficiency of its operations.” (Alavi et al., 1999, p3)

To assign knowledge a value within companies and to consciously allocate resources for managing knowledge effectively is however a novelty in modern organisations. Knowledge management is a topic that touches several areas and since there are no generally applicable definitions, we present two definitions stated by Newman (1991), a professional with experience in the field of knowledge management, to get an understanding of what the term knowledge management involves.

“Knowledge management is the management of the organization towards the continuous renewal of the organizational knowledge base - this means e.g. creation of supportive organizational structures, facilitation of organizational members, putting IT-instruments with emphasis on teamwork and diffusion of knowledge (as e.g. groupware) into place.” (Newman, 1991, http://www.km-forum.org/what_is.htm)

“Knowledge management is an audit of "intellectual assets" that highlights unique sources, critical functions and potential bottlenecks which hinder knowledge flows to the point of use. It protects intellectual assets from decay, seeks opportunities to enhance decisions, services and

products through adding intelligence, increasing value and providing flexibility." (Newman, 1991, http://www.km-forum.org/what_is.htm)

These two definitions define knowledge management on different levels. The first definition gives an overall description of knowledge management and includes the use of IT-instruments. The latter definition mentions that knowledge management is an audit of "intellectual" assets and that it protects intellectual assets but does not explain the course of action to achieve this. If we however look further at both definitions and include what Alavi et al. (1999) mentions, we can argue that the common factor that the definitions argue for is that knowledge management in different ways aims to optimise the use of knowledge with the purpose of generating increasing value back to the company with IT in the form of knowledge management technologies, as an enabler for knowledge storing, sharing, and communication. This is what we refer to when we mention the term knowledge management.

1.1.2 Why knowledge management?

More and more companies today offer products and services that are mainly dependent on the knowledge of the co-workers in order to produce these, rather than access to special production equipment or company rules and routines (Blomqvist and Niward, 1997). Company managements within most industries have also increasingly begun to see the knowledge that the personnel possesses as an asset which can be utilised in a more effective way. A study conducted on executives at large American companies, showed that most of them agreed upon that knowledge is the most important asset and that knowledge based assets will form the base for success in the future (Wiig et al., 1997).

This tells us that finding ways to effectively manage the nonmaterial product resources within the own organisation is something that is becoming increasingly important. Governing, managing, dissemination and accumulation of knowledge shall reduce problems connected to knowledge not being shared, fully utilized or vanish along with the co-workers when they leave the work place or leave the organisation permanently.

1.1.3 Knowledge management systems

A knowledge management system should not be considered as a single distinctive technology. In Alavi et al. (1999) it is argued that knowledge management systems can be accomplished with different technologies such as data warehousing, enterprise wide systems, executive information systems, expert systems and the intranet. A knowledge management system can be defined as follows:

"Knowledge management systems (KMS) are distributed hypermedia systems for managing knowledge in organisations, supporting creation, capture, storage and dissemination of expertise and knowledge"
(Dictionary of Computing, <http://foldoc.org/>)

Another definition from the Encyclopedia Britannica is:

“Knowledge management systems provide a means to assemble and act on the knowledge accumulated throughout an organisation. Such knowledge may include the texts, images contained in patents, design methods, best practices, competitor intelligence, and similar sources”
(Encyclopedia Britannica, <http://www.britannica.com/>)

More precisely a knowledge management system could be seen as a cross-functional information technology system. Knowledge creation and transfer has occurred in different ways traditionally such as face-to-face interactions, mentoring, job relations, and staff development. However, as markets are becoming more global and move to virtual forms, these traditional ways may prove to be too slow and less effective and in need of being supplemented by a more effective electronic course of action. As a result, companies are beginning to implement information systems designed specifically to facilitate the codification, collection, integration, and dissemination of organisational knowledge. This is particularly true of firms which compete on the basis of services and expertise (e.g., management consulting and professional services firms). Such systems are referred to as knowledge management systems (Alavi et al., 1999).

1.2 Problem definition

The rise of knowledge management systems has created a new possibility for organisational knowledge sharing. Along with this, the concept of a knowledge society has emerged and organisations have started to realise that their accumulated knowledge becomes more vital. The problem definition can on the basis of the prior discussion of the problem space be stated as:

Does the use of a knowledge management system in reality affect the knowledge sharing process within an organisation?

1.3 Purpose

The aim with this thesis is through the result of a conducted survey provide the reader an understanding about *if* and *how* knowledge sharing is affected in reality by the knowledge management system used at the survey company.

1.4 Delimitation

We delimit our survey to the knowledge management system used at the survey company's local branch office and do not include the entire corporate system.

2 Methodology

In this chapter we want to clarify issues concerning our general approach towards scientific research and our scientific viewpoint. This chapter further aims at describing the methods we have applied for collecting theoretical and empirical material for the thesis.

2.1 Scientific viewpoint

In our viewpoint science involves interpreting, analyzing and understanding. We argue that through science it is possible to gain understanding about the reality we live in and that this gives us the possibility to understand the different factors leading to changes. What science involves and how scientific research should be conducted has been disputed for a long period of time and there exists a vast amount of different definitions and scientific directions. Bryman, (1997) argues that the author himself of a scientific report should emerge in the report. Bryman, (1997) further argues that the authors' values, theoretical framework, conception of the world, characteristics and the standpoint which is influenced by these factors are all behind a final scientific report. This view further reflects our approach towards scientific composition.

In other words we argue that it is not possible to compose a scientific report that does not reflect the personal opinions and viewpoints of the researcher. In order to interpret, analyze and understand it is suitable to reflect about what the purpose of the study is. This is important not least for those who shall read the report. To be able to understand the authors' interpretations and build further on the conclusions that have emerged it is required that the reader is aware of the authors' viewpoints. We further argue that it is not possible to reach objectivity when composing a scientific report, but by providing the reader the course of action that we as authors have applied, we then create reliability for the material which we intend to mediate.

Composing a scientific report could be seen as constructing a machine by using different mechanical parts. If someone is interested in knowing the course of action in constructing the machine it is not enough to simply provide the machine itself. It is instead necessary to provide a description of the course of action in constructing the machine, i.e. a step- by- step description of the work behind the construction, description of used material, tools etc.

We argue that this is similar to composing a scientific report. To provide the reader with a thesis where only the problem space is discussed does not provide an understanding of how the thesis is constructed. Instead it is as mentioned above in the case of constructing a machine, appropriate to provide a step- by- step description of the course of action concerning the composition of the thesis and in what purpose it was composed.

When describing the different tools used to compose a scientific report the difference from constructing a machine is that the tools instead of being spanner, screwdriver etc instead is collecting data (both theoretical and empirical), analyze, interpret and understand these. The question arises whether it is enough to describe the used tools and course of action. It could be enough, but it is appropriate to also explain *why* you have chosen a certain approach, because there is more than one course of action one can apply. When constructing a machine it is often

required by the engineer to explain why he has used certain mechanical parts. In the same way it is appropriate by the author to mention why he has chose to pursue a certain methodology.

2.2 Research Method

The choice of which method of research to apply often stands between a quantitative or a qualitative approach. In many scientific contexts it is often demanded that the method of data collection should be quantitative and that the findings should be presented in numbers. The following statements highlight this approach;

“Quantitative research that aims to reach a scientific explanation could simply be denoted as the scientific approach” (Kvale, 1997, p.67)

“To what extent the observations can be quantified is often a sign of a scientific maturity” (Kvale, 1997, p.67)

“Compared to qualitative methods quantitative methods have a privileged position thus quantitative methods rely on a mathematical ground for collection as well as analysis of data. In this sense it is easier to apply a quantitative method” (Edling and Hedström, 2003, p.11)

So does this mean that qualitative methods of research are not appropriate for scientific methods of data collection? In many situations it is necessary to apply both quantitative and qualitative methods. Miles and Huberman (1994) states that qualitative data, usually in the form of words rather than numbers, have always been the staple of some fields in the social sciences, notably anthropology, history, and political science. Miles and Huberman (1994) further state that from the mid 1980s and forward more researchers in basic disciplines and applied fields (psychology, sociology, linguistics, public administration, organisational studies, business studies, health care, urban planning, educational research, family studies, program evaluation, and policy analysis) also have shifted to a more qualitative paradigm.

“Qualitative data are sexy. They are a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts” (Miles and Huberman, 1994, p.1)

“With qualitative data one can preserve chronological flow, see precisely which events led to which consequences, and derive fruitful explanations” (Miles and Huberman, 1994, p.1)

“The findings from qualitative studies have a quality of undeniability. Words, especially organised into incidents or stories, have a concrete, vivid, meaningful flavour that often proves far more convincing to a reader, another researcher, a policy maker or a practitioner than pages of summarised numbers” (Miles and Huberman, 1994, p.1)

As we can see there are contradictory opinions about what is an appropriate method of research. We however argue that the choice of which method to apply foremost should depend on the problem space to be tackled.

In our case we have chosen to apply a qualitative research method. We base the choice of research method on the fact that our problem definition which involves studying the impact of a knowledge management system for the knowledge sharing process, is highly based on peoples' assumptions, opinions and interpretations, thus a qualitative approach is the most appropriate one (Miles and Huberman, 1994).

Through detailed interviews we have sought to obtain an understanding about the characteristic of the knowledge sharing process, the knowledge management system, and the use of the knowledge management system at the survey company. The awareness of the risks concerning misinterpretations when applying a qualitative method is not something that has discouraged us from using the concerned method. We argue that the qualitative method gives us reinforcement in what we want to mediate, which a quantitative method can not help us achieve due to the fact that knowledge sharing is highly based on peoples' subjective judgements in different situations. This is confirmed by Holme and Solvang (1991) where it is argued that:

“If one should be able to understand the situation which individuals, groups or organisations find themselves in one has to try becoming close in life to them, this is just the purpose of the qualitative approach”
(Holme and Solvang, 1991, p.100).

Bryman and Burgess (1999) argues that qualitative methods are attempts to overstep the subjective-objective relationship that distinguish the natural science, and this is possible to reach as a researcher through placing your self in the study persons' situation and view the world from their perspective (Bryman and Burgess, 1999).

In order to obtain a sound understanding about how knowledge can be shared through a knowledge management system and what problems may rise in connection to this, we have pursued a qualitative research method where the main part has involved conducting interviews with the personnel at a knowledge organisation, which possesses experience and sound knowledge within the actual area. This has given us closeness to the studied problem space which we have considered necessary in order to gain sufficient understanding about the subject.

To strengthen the information which emerged from the conducted interviews we have thoroughly interpreted these and reviewed literature sources. We have had the possibility to continuously analyse the obtained material in between the interviews in order to detect aspects which were not considered earlier. This possibility is not given in the same way with quantitative studies where working up the material usually is done when everything is collected (Bryman and Burgess, 1999).

Our interviews have been based on dialogs with the interview objects, during an interview the social interaction itself should be interpreted first (Kvale, 1997). How the interviewee behaves, speaks, if he is nervous or feels controlled by the interviewer is signals that we have tried to interpret. There after we have conducted an interpretation of the interview transcript itself. The

interview transcript was based on the interviewees' standpoints in different questions, and through these interpretations we argue that a broader and deeper understanding has been gained in spite of the fact that some parts of the interpretation have been affected by our own values and standpoints.

2.3 Objectivity

To strive for a high level of objectivity is often considered to be of great importance within scientific research. Since the qualitative research interview can be seen as an ensemble between human reflections, it is often stated that it lacks in objectivity (Kvale, 1997). But the question is, what does objectivity really mean? If the meaning of objectivity solely means that the task of the researcher is to reflect the nature of the object, and simply disregard his personal impressions, it is then possible to state that the qualitative research does not reach objectivity. The researcher always has his own theoretical frameworks, and unavoidably makes interpretations accordingly:

“This is also why the interpretation always possesses a relative objectivity, never an absolute one” (Alvesson and Sköldbberg, 1994, p.121)

In the role as researchers we however argue that it is not necessary to reach this kind of absolute objectivity in order to produce a scientific report, and neither is this our intention. Our intention is rather to reflect knowledge sharing from a perspective that can result in increased understanding about what we want to highlight.

Bryman (1997) argues that hermeneutic researchers approach the object of research subjectively on the basis of own pre-conceptions. This pre-conception and the knowledge the hermeneutic researchers possess is often considered by themselves as an asset and not an obstacle in order to interpret and understand the research object (Bryman, 1997). Holme and Solvang (1991) argue as follows:

“It is not possible in either everyday situations or in research to liberate your self from these theoretical and subjective frameworks. Every research situation is with necessity characterised by this. There for the understanding that is based upon ones educational background will be objective in proper sense” (Holme and Solvang, 1991, p.104)

2.4 Validity, Reliability, Generalising

Within science, the importance of validity and reliability is often mentioned. Admittedly verification and validation does not play a decisive role within interpreting research, and Alvesson and Sköldbberg (1994) argue that the result of the research does not stand and fall with this; however we still think that this is a concept that is important to mention.

“Then how do one know if the gained interpretation is true or not, if it corresponds to the reality or not? The answer to this question is that it is wrongly posed, while truth for hermeneutics is not a question of static

correspondence between interpretation and facts [...] No one can uphold that a certain interpretation is final or even temporally 'true' in any sense of correspondence between theory and facts; however arguments saying that a certain interpretation is reasonable or even the most reasonable can be submitted with the time we are living in and the questions at issue that is at our disposal as a starting point.” (Alvesson and Sköldbberg, 1994, pp.167-168)

We talk about reasonableness and reliability in those interpretations that we have made, and do not strive for total validity and reliability.

“Validation of qualitative research, method and analysis include control of the trustworthiness, an assurance that there is empirical evidence and that one has made a reasonable interpretation.” (Svensson and Starrin, 1996, p.211)

Since we have concentrated our selves at one specific organisation we realise that the ability to generalise is limited but it is however not our aim to do so. We do not argue that the result of this study can be applied to other organisations; however we propose future research to investigate *if* the result could be applied to other organisations.

2.5 Course of action

In this section we will give an account of the course of action we have applied to collect the theoretical and empirical material which form the base for this thesis.

We have chosen to pursue an abductive approach in order to work up the theoretical and empirical material collected for the thesis. The abductive way is a combination of an inductive and deductive approach.

An inductive approach involves drawing common conclusions on the basis of empirical facts. This is done through a somewhat imprecisely and vaguely defined presentation of the problem. The main purpose of an inductive approach is to obtain a good overall perspective of the research subject (Bryman and Burgess, 1999). A deductive approach involves drawing logical conclusions that are considered to be valid if logically coherent. However they do not have to be true in the sense of corresponding to reality (Ezzy, 2002). The abductive approach is a combination of the two prior mentioned ones. When applying an abductive approach the researcher uses the empirical facts as a base but does not reject theoretical pre-conceptions. During the research process there will thus be alternation between prior theoretical and empirical material, which leads to the fact that both can be reinterpreted through the support of each other (Ezzy, 2002).

Our approach is deductive to a certain extent as our way of reasoning takes a starting point in relevant theoretical references. Our aim is to obtain an overall perspective of the problem space thus we have to approach the problem space somewhat unprejudiced. This makes our approach inductive to a certain extent. Since we are applying a combination of both an inductive and deductive approach, our course of action becomes abductive.

With an abductive approach it is thus possible to use theory in prior literature as a source of inspiration for discovering patterns that provides an understanding for the research subject (Ezzy, 2002).

2.5.1 Data collection procedure

A major part of this thesis is based on the interviews we have conducted. Knowledge management is a field where discussions quite recently have begun to seriously flourish, thus our opinion is that a good understanding is gained by interviewing individuals that are working within and are familiar with the subject. In selecting the company where we conducted our study, we deliberately focused on finding an organisation where the business is built up on knowledge.

Alvesson and Kärreman (2001) mention some factors that characterise knowledge intensive work. Key factors mentioned are that:

- The work should involve creative problem solving.
- The level of education should be high.
- Regular raw material is not a determining factor compared to the employees' knowledge.
- An existing high dependency of the personnel loyalty.

Alvesson and Kärreman (2001) states that knowledge intensive firms, in particular professional service companies (e.g. management and IT consultancies) are frequently represented in knowledge management literature, mainly perhaps, because there are good reasons to believe that knowledge management - to the extent that the label corresponds to ambitious corporate practices and ideologies - has a strong presence there (Alvesson and Kärreman, 2001). Alavi et al. (1999) mentions that in a study involving accounting and consulting firms among others, almost all the accounting and consulting firms created internal knowledge management systems over the past few years (Alavi et al., 1999).

On the basis of the above mentioned we came to the conclusion that consultant firms are largely dependent on the knowledge which their co-workers posses and accordingly consider them as a prime asset and thus it would be proper to select a consulting firm as a study object. We have searched through a vast amount of corporate web-pages and utilized personal contacts to find a consulting firm that fits into the prior mentioned key factors for knowledge intensive work.

The companies that we considered interesting for our study were more thoroughly investigated through their web pages and in some cases through studying their annual reports. We eventually reached a decision to select a prominent consultant firm active in the accountant field. The organisation in it self is described later on in the thesis.

As mentioned earlier we are of the opinion that our prior experiences, values and frame of reference affect our standpoints. The fact that we deliberately have chosen to contact a certain company prior to others when selecting a research object is something that we consider as a natural part of the qualitative research methodology. We however do not think that this has affected the reasonableness or reliability of the study.

When it comes to selecting respondents for qualitative studies the aim is to find individuals with a variety of skills. The selection should thus be heterogeneous to a certain extent (Troost, 1997). To make the selection heterogeneous Troost (1997) presents a way of strategic selection. Strategic selection involves making a selection based on the pre-conceptions and prior theory that the researcher possesses at the initiation of the research process (Troost, 1997). The first step in a strategic selection is to determine certain variables that are of theoretical relevance. Here Troost, (1997) points out that gender and age almost always are of theoretical relevance. The next step is to choose the study object which is the company where the survey was conducted in our case. The last step involves determining categories or variable values. Gender for example consists of two categories; male and female. We chose gender, and position at the company as variables. The categories for gender thus become male and female. For position at the company, we chose executive, IT-executive, and end-user as categories. The reason for disregarding age as a variable is based on the fact that we would have been forced to conduct interviews with a vast number of individuals in order to be able to categorise the variable, which the given timeframe did not allow.

Accordingly, six respondents were chosen, three among three females and three males with different positions as follows:

- Interview 1: Executive (male, interview took place at the company's local branch office; February the 2nd between 9.00am and 10.15am 2006, Lund, Sweden)
- Interview 2: IT-executive (female, phone interview, February the 4th between 9.00am and 9.45am 2006)
- Interview 3-6: End-users;
 - End-user 1 (male, interview took place at the company's local branch office; February the 6th between 9.00am and 10.00am 2006, Lund, Sweden)
 - End-user 2 (male, interview took place at the company's local branch office; February the 8th between 8.30am and 9.45am 2006, Lund, Sweden)
 - End-user 3 (female, interview took place at the company's local branch office; February the 10th between 9.00am and 9.50am 2006, Lund, Sweden)
 - End-user 4 (female, interview took place at the company's local branch office; February the 12th between 10.15am and 11.15am 2006, Lund, Sweden)

We have been aware of the possibility that conceivable incongruities within the area that are existing at the company might not have emerged during the interviews, this due to the fact that the company to a certain extent has controlled what individuals we have been given the opportunity to interview. To obtain a correct opinion as possible we have aimed at comparing the empirical material to studies of literature and articles which discuss knowledge dissemination. The interviews have been conducted as dialogs where the interviewees have shared their experiences and opinions.

The opening question at all conducted interviews involved asking the interviewee if he or she wanted the information that emerges from the interview to be treated as confidential. Due to the fact that the majority of the interviewees wished for us to do so we chose to treat all the interviews as confidential. The important issue for us was to ensure that the interviewees would not hesitate to present valuable opinions and information due to the possibility of sensitive information being revealed.

Since the interviews were treated as confidential, the name of the company and the personnel has been excluded. The company where we conducted our survey is in the thesis always referred to as the *survey company*.

There are four main types of interviews: unstructured, structured, semi-structured, and group interviews (Preece et al., 2002). The first three types are named according to how much control the interviewer imposes on the conversation by following a predetermined set of questions. The fourth involves a small group guided by an interviewer who facilitates discussion of a specified set of topics (Preece et al., 2002).

The most appropriate approach to interviewing depends on the evaluation goals, the questions to be addressed, and the method of research adopted. If the goal is to gain an overall impression of a subject, then an informal, unstructured interview is often the best approach. But if the goal is to get feedback about a specific issue, then a structured interview or a questionnaire is often better. This is because the goals and questions are more specific in the latter case (Preece et al., 2002).

Since we have adopted a qualitative method, the choice of questionnaires naturally disappears. Since our aim is to obtain both an overall understanding and answers about specific issues concerning the company's knowledge management system we chose to conduct semi-structured interviews. Semi-structured interviews combine features of structured and unstructured interviews and use both closed and open questions. For consistency the interviewer has a basic script for guidance, so that the same topics are covered with each interviewee. The interviewer starts with pre-planned questions and then probes the interviewee to say more until no new relevant information is forthcoming (Preece et al., 2002).

An interview template should according to Preece et al. (2002) involve 5 main sessions namely: *Introduction, warm-up session, main session, cool-off period, and a closing session*. With the above mentioned base, a pre-planned interview template was made (Appendix 1) as follows:

1. First an introductory session in which we introduce our selves and explain why we are conducting the interview, reassure interviewees about the ethical issues concerning confidentiality, and asked if they mind being recorded.
2. A warm-up session where easy, non-threatening question come first. These include questions about information such as "What position do you have at the company?", "How long have you been working within the organisation?"
3. The main session in which the questions are presented in a logical sequence with the more difficult ones at the end. Here we pose questions about the knowledge management

system and its use, also questions about the company knowledge sharing process and strategy are included here.

4. A cool-off period consisting of a few easy questions such as “Do you have any additional opinion or information concerning knowledge sharing within your organisation that you would like to add?”
5. A closing session in which we as interviewers thank the interviewee and switch off the recorder, signalling that the interview has ended.

By not having too standardised questions and rather focusing on certain themes we have aimed at not controlling the interviewees too much. To gain further understanding about the company knowledge management system itself, a separate interview template (Appendix 2) was made (according to the same procedure as the first template was made) and used when interviewing the company IT-executive, with the difference that the questions on the second template were targeted at gaining specific information concerning functionality and architecture of the company knowledge management system.

To obtain a basic understanding concerning extent, structure, and functionality of the knowledge management system a test of the system was also conducted, which can be considered as a form of observation, this was conducted at the company's local branch office in Lund, Sweden.

By applying this approach we believe that the gained answers correspond more to the interviewees' standpoints and associations concerning the subject. The advantage with this approach is that we have avoided controlling the gained answers too much compared to if the interview solely would have been built up on highly structured questions. The disadvantage is that it sometimes can be difficult to know when to change on to a new theme.

Essential parts of the interviews were transcribed afterwards. Interpreting the interview material has been further facilitated through the use of audio recording equipment in the form of a Mini Disc player.

2.5.2 The use of literature sources

Our approach has been to collect sources of literature from authors and universities with experience in knowledge management research. Our collected material consists of scientific articles and literature published at recognised universities and composed by professionals within the area of knowledge management. In addition we have also used web sources that we feel are reliable in order to obtain theoretical material.

When searching for theoretical material we have used different keywords concerning our problem space. We have used international as well as Swedish literature from different periods of time in order to gain a broad insight of the subject.

When collecting literature sources we have found it to be important to have a critical viewpoint toward the sources we found. We also found it important to be critical when interpreting the

material it self. Some material is old and reflects a different outlook on life than that we have today. The purpose of the actual message given by the author varies and is important to understand. Much of the recent literature tends to glorify the trends that are present today. We have compared both old and recent literature in order to base a solid viewpoint.

2.5.3 Data analysis

Miles and Huberman (1994) define qualitative data analysis as consisting of three concurrent flows of activity: data reduction, data display, and conclusion drawing/verification. In this section we aim at describing how our work has emerged through these three flows of activities.

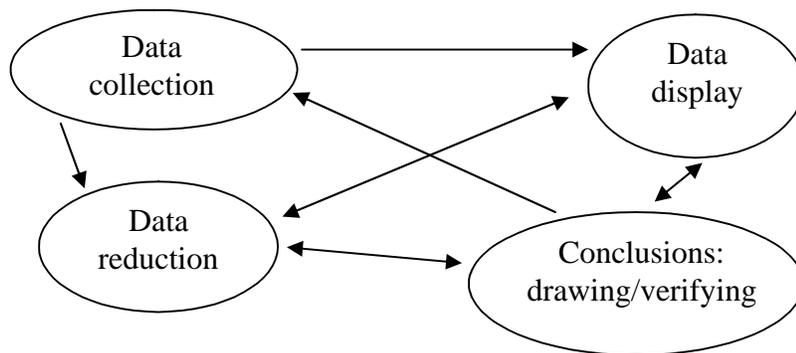


Figure 2.1 Components of Data Analysis; Interactive Model (Miles and Huberman, 1994)

2.5.3.1 Data reduction

Data reduction refers to the process of selecting, focusing simplifying, abstracting, and transforming the data that appear in written-up field notes or transcriptions (Miles and Huberman, 1994). This has been occurring through out our project work as we have decided which research questions, and data collection procedures to choose. As our data collection proceeded, further data reduction occurred by writing summaries, making clusters, and making partitions of the empirical material. Our aim with the data reduction has continuously been to subsume the empirical and theoretical material to fit in to a larger pattern. For example when posing the question concerning the amount of information existing within the KMS several interviewees provided the same answer namely that the amount of information was extensive, in this case we don't provide every interviewee's individual statement but rather select one statement and inform the reader that several interviewees replied similarly. Also when searching for definitions of terms like *knowledge*, *knowledge management*, *knowledge management system* we found many literature sources providing similar definitions to the terms thus we selected and presented those we felt appropriate for the purpose of our thesis. Thus our approach has been to sharpen, focus, discard and organise the data in such a way that conclusions can be drawn and verified.

2.5.3.2 Data display

Generically, a display of data is an organized, compressed assembly of information that permits conclusion drawing and action (Miles and Huberman, 1994). We have mainly used extended text

as a form of display of the collected data. However humans are not very powerful processors of large amounts of information; our cognitive tendency is to reduce complex information into selective and simplified gestalts or easily understood configurations (Miles and Huberman, 1994). Therefore we have also used pictures of models to clarify the context of different kinds and mediate a simplified and enlightening image of the reality that we have studied.

2.5.3.3 Conclusion drawing and verification

When data reduction and data displays are made the remaining data analysis activity is to draw conclusions and to do verifications based on the reduced and displayed data. Our approach has as mentioned earlier, through an abductive approach been to use theoretical material along with the collected empirical data to draw conclusions.

We emanate from two theoretical models created by Swan et al. (1999), namely *the community network model* and *the cognitive network model* which describes knowledge sharing from a social respectively a technological point of view. We also make the use of a theoretical knowledge sharing typology described by Alvesson and Kärreman (2001) which is distinguished by terms like *enacted blueprints*, *extended library* which views knowledge sharing from a technological viewpoint respectively *normative control* and *community* that describes knowledge sharing from a socio-structural view point.

The above theoretical models and typology along with the survey data that aims at describing to what extent a knowledge management system affects knowledge sharing within the survey organisation, leads in the discussion to the development of a conjoined and integrated model for knowledge sharing which involves both technological and social aspects of knowledge sharing.

3 Frame of reference

In this chapter we will present the theoretical foundation for our study. We will use mainly two models by Swan et al. (1999), *the cognitive network model* and *the community network model* as well as a *knowledge management typology* of Alvesson and Kärreman (2001) for our analysis. To understand these models it is necessary to define what knowledge is and then we will illustrate the literature we used as a basis for our work. This chapter explains different ways of knowledge sharing and possible downsides.

3.1 What is knowledge?

Most people agree in general on what knowledge is. The definition of knowledge though has been of great interest for philosophers, social scientists and historians. The term knowledge which is derived from the Greek language originally means *education/culture*. The fact that the term has a significantly broader meaning is evident when looking at the following quotes which explain the meaning of the term with words like: *"insight, awareness, proficiency, enlightenment, learning, reading"* (Walter, G., 1991). Knowledge is with other words a complex term to define. The meaning of knowledge can involve different things to different people in different contexts.

In Encyclopedia Britannica it is stated that Plato, when he analyzed the term knowledge, asked him self what the difference were between possessing an opinion and possessing knowledge i.e. to truly know something. He came to the conclusion that knowledge, in addition to the prior mentioned involves that one has a solid base for the opinion that he or she possesses, the advantage of this is that the opinion do not tend to "fly away" easily.

Karl M. Wiig (2005) describes knowledge as:

"The insights, understandings and practical know-how that we all possess" (Wiig, 2005, <http://www.km-forum.org/wiig.htm>)

Karl M. Wiig (2005) further argues that,

"Knowledge is the fundamental resource which allows us to function intelligently" (Wiig, 2005, <http://www.km-forum.org/wiig.htm>)

In the field of knowledge management it is common to divide the term knowledge and its elements in to (Van Beveren, 2002):

- *Data*
- *Information*
- *Knowledge*

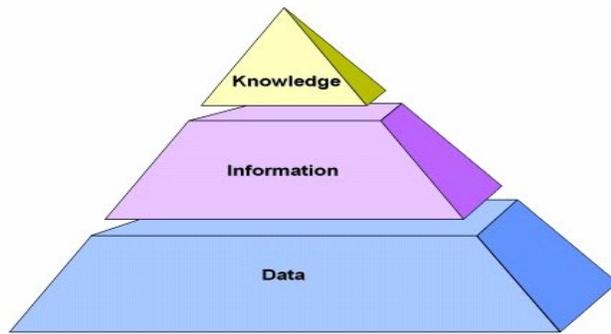


Figure 3.1 Knowledge pyramid; Picture to describe knowledge and its elements (<http://www.tdan.com/i024fe02.htm>)

3.1.1 Data

Data can be seen as raw facts without structure or relevance (Van Beveren, 2002). Examples of data could be: 345, cold, last year, to the right etc. Facts of this kind lack context. We don't know if 345 means 345kg of sand or if cold means cold water or cold climate i.e. pure data does not make much sense to us if not placed in to a context. By placing the number 345 in to a context that make sense it could constitute a fundamental part of information as well as knowledge.

3.1.2 Information

Information is a word which has many different meanings in everyday usage and in specialized contexts but generally it is a message, something to be communicated from the sender to the receiver.

"Information is data within a context, where data are raw facts that can be shaped and formed to create information" (Van Beveren, 2002, p.20)

On the basis of the above mentioned we can state that *information*, in difference of *data* could be seen as specifically chosen data, placed in to a sensible context or data that has been placed for a certain purpose e.g. research data placed together to form a research documentation report.

3.1.3 Knowledge

"Knowledge refers to an individual's stock of information, skills, experience and memories." (Van Beveren, 2002, p.23)

As the quote shows, *knowledge* can be difficult to categorize and contains actually more than *information* or *skill* only. *Knowledge* involves the ability to combine information from different areas, reasoning and draw conclusions based on prior experiences. This is in our opinion what the term *knowledge* constitutes.

There are different points of view concerning the difference between the terms *information* and *knowledge*. Wiig et al. (1997) provide a statement that clarifies this difference:

"Information is converted to knowledge once it is processed in the mind of individuals and knowledge becomes information once it is articulated."
(Wiig et al., 1997, p.17)

With the base of the above mentioned statement we can argue that knowledge in fact can not exist outside the human brain, because when the knowledge is articulated it becomes information. This argument is further strengthened by Van Beveren (2002) who argues in a similar way to that of Wiig et al. (1997). Van Beveren (2002) states that:

"Data and Information are the only forms that are captured, transferred or stored outside the brain. Knowledge can only exist within individual human brains. Information is acquired through the sensors to be processed in the brain, and new knowledge is created from the processing of information" (Van Beveren, 2002, p.25).

Considering these quotes, we argue that the way knowledge is acquired is linked to learning and experience thus organisational learning. The kind of learning we will focus on in this thesis is an intra-organisational one, where the members of an organisation learn with each other and from each other. This since we have chosen to study how knowledge sharing is applied within a specifically chosen survey company through the support of a knowledge management system.

3.1.4 Types of knowledge

Most literature agrees on that there are at least two different types of knowledge, namely *explicit* and *tacit*, which we will explain briefly.

3.1.4.1 Explicit knowledge

Explicit knowledge is written or spoken and can be transferred through formal and systematic language (Nonaka, 1994). According to Nonaka (1994) only *explicit* knowledge can be codified. We further argue that the terms *explicit knowledge* and *information* are synonyms because explicit knowledge is knowledge that can be transferred via formal language i.e. it can be articulated thus it is the same as information.

3.1.4.2 Tacit knowledge

Tacit knowledge is unspoken, not-codified knowledge that usually is embedded in a person's skills, routines and experiences (Koskinen et al., 2002). *Tacit knowledge* is more difficult to communicate as it is embedded in the consciousness of individuals and could be seen to have an individual quality, which makes it difficult to formalize. In other words we know more than we can verbalize and we know things that we can but do not want to or dare to communicate, or as Polanyi (1997) states:

"We know more than we can tell" (Polanyi, 1997, p.307)

3.2 Knowledge management and ways of sharing knowledge

Swan et al. (1999) argue as Levinthal and March (1993) that KM can have two objectives, enhance knowledge *exploitation* or knowledge *exploration*. Enhancing knowledge exploitation refers to capturing existing knowledge, transferring it and deploying it in similar situations. Knowledge exploration points to the situation where new knowledge is created by knowledge sharing and subsequent composition. The social factor of exploration makes it similar to what Hansen (1999) calls strategy of personalisation. Exploitation is reducing the occurrence of “reinventing the wheel” by efficiently reusing existing knowledge, which is describing basically the same strategy as codification in Hansen (1999). The authors point out a dilemma between efficiency and innovation as most IT-driven approaches emphasise increasing efficiency by exploitation of existing knowledge rather than focusing on exploration which is necessary for the creation of new knowledge (Levinthal and March, 1993, Clark and Staunton, 1989). Focusing on the processes of exploitation and exploration, the contrast between them led Swan et al. (1999) to the development of two alternative models of KM:

1. *The cognitive network model*
2. *The community networking model*

The cognitive network model addresses static It-based networks with a linear flow of information while the community networking model is describing social networking with an emphasis on dialogue.

The cognitive network model has as a core assumption that technology can provide a network between geographically dispersed groups and individuals that enables knowledge sharing and that the transfer of knowledge through networks works unhindered. The aim is knowledge management in the sense of increasing the flow of information and thus distributing increasingly more codified knowledge. An organization using this model relies on information technology for the problem of KM. The idea is that information technology creates a network that provides knowledge that the individuals in the organization can use in order to create new innovative solutions.

The cognitive network model according to Swan et al. (1999) is distinguished by:

- Knowledge for innovation is equal to objectively defined concepts and facts
- Knowledge can be codified and transferred through networks: information systems have a crucial role
- Gains from KM include exploitation through the recycling of existing knowledge
- The primary function of KM is to codify, capture and transfer knowledge through networks
- The critical success factor is technology
- The dominant metaphors are the human memory and the jigsaw (fitting pieces of knowledge together to produce a bigger picture in predictable ways)

In *the community networking model* the importance of relations between individuals and groups is emphasized (Swan et al., 1999). According to Davenport and Prusak (2000) information technology cannot replace human knowledge and skill. However, information technology can be

seen as a channel and repository for knowledge exchange. The community networking model assumes that knowledge is created and distributed through social relations. According to the model it is relatively easy to spread knowledge within local and homogenous groups rather than in delocalized and heterogeneous groups. The problem is that it is just in these delocalized and heterogeneous groups where knowledge is most wanted for innovations (Swan et al., 1999). Norms and values forming the corporate culture are important for how successful knowledge is distributed. Especially routines, values and norms influence the behaviour of employees which in return influences the way knowledge is created, applied and distributed in the organization. The corporate culture must be aligned to knowledge sharing (Davenport and Prusak, 2000). In order to establish such a form of communication information technology plays a major role. The idea is that IT creates a channel for active and systematic interaction instead of being a channel for linear flow of knowledge.

The community networking model according to Swan et al. (1999) is distinguished by:

- Knowledge for innovation is created through social activities and is based on experience.
- Most of an organization's knowledge is tacit. It gains sense by interaction between individuals and groups working together.
- Gains from KM are exploration through sharing and synthesis of knowledge between social different groups.
- The primary function of KM is to encourage knowledge sharing through social interaction.
- Trust and the ability to cooperate is the most important success factor.
- Metaphor: Human society and a kaleidoscope: Creative interaction creates new knowledge, sometimes in an unexpected way.

3.3 Knowledge management typology

Alvesson and Kärreman (2001) have identified four distinctive orientations rather than strict and separate categories of knowledge management existing in both theory and practice. They argue that these four orientations, *extended libraries*, *community*, *normative control* and *enacted blueprints*, can be aligned along two dimensions, *medium of interaction* and *mode of managerial interaction*. The authors emphasise that there is a continuum between the end poles and that the boundaries should be downplayed. They recognise Swan's et al. (2001) *cognitive network model* and *community networking model* as a useful distinction between focusing on either IT and information processing or dialogue and sense making through active networking.

The first dimension Alvesson and Kärreman (2001) use in their typology, *medium of interaction*, addresses whether an organisation uses a *technostructural* or *social* medium for interacting. A *technostructural* medium would e.g. be an IT-based medium, the *social* is pointing towards personal meetings, for example. This composition is also found in Swan et al. (1999) e.g. where Knowledge Management is viewed either technological or based on social relations.

The other dimension, *mode of managerial dimension*, having *co-ordination* and *control* as the two end poles, is distinguishing whether managers rather channel information and resources (*co-ordination*) or powerfully target norms and/or behaviour (*control*).

Thus, in our view, Alvesson's and Kärreman's (2001) typology is a refinement of Swan's (1999) two models, extended by the dimension of managerial mode. They divide Knowledge Management into four different orientations, *extended libraries*, *community*, *normative control* and *enacted blueprints*, compiled in a matrix according to the dimensions. In the following we will explain briefly these orientations.

		Mode of managerial intervention	
		Co-ordination	Control
Medium of interaction	Social	Community (sharing of ideas)	Normative control (prescribed interpretations)
	Technostructural	Extended library (information exchange)	Enacted blueprints (templates for action)

Figure 3.2: A KM typology: Mode of managerial intervention (Alvesson and Kärreman, 2001)

Extended libraries: This type of KM makes extensive use of all kind of existing systems, e.g. enterprise systems, databases, communication systems. The information found here is explicit and codified, which means the information is a collection of different projects and experiences which are transformed to general methods and solutions. Following this approach KM becomes a process run by a central group taking care of compiling, refining and integrating work and project experiences in order to create more knowledge for the organisation. The first possible result of this will be management enforcing rules and prescriptions for working, which comes close to what is normally called bureaucracy. The other possible result of this kind of KM would be information stored in databases or similar, and shared with the help of IT-solutions accessible as a support for those who need the information (Alvesson and Kärreman 2001).

Community: A much softer approach to KM and less technocratic. Based on an interest in tacit knowledge, management is much more concerned with influencing workplace climate and coping with diversity in order to make employees share their knowledge on a voluntary basis. Alvesson and Kärreman (2001) claim that community actually is a subset of corporate culture and due to the difficult properties of tacit knowledge community that becomes more difficult to manage. The authors quote four challenges arising from this. It is necessary to establish human and

information systems that provide people with available information that helps people to think together. It is furthermore necessary to develop communities that share knowledge whilst maintaining diversity. Another challenge for management would be to 'create an environment that truly values sharing knowledge'. The challenge for the employees would be to be open to the ideas of others and to share their own knowledge. Accomplishing or controlling this form of KM is difficult. The authors argue that a company is not a form of organisation which encourages community formation. As some companies taking corporate culture seriously have had success in cultivating communities across the organisation, certain measurements taken may support experiences of community across the organisation, which leads us to the next type of KM (Alvesson and Kärreman 2001).

Normative control: This is the case when leadership not only facilitates but even encourages and emphasizes personal knowledge sharing as seen in communities. Following the argumentation about community, knowledge management can thus be viewed as an attempt from management to exercise normative control. Actions are on a cultural level, for example creating a strong corporate identity which values knowledge sharing (Alvesson and Kärreman 2001).

Enacted blueprints: This type of KM has some similarities to knowledge management as *normative control*, but is completed with a set of templates and guidelines that are supposed to produce the wanted action regardless of the employees' norms and values and thus has more emphasis on behavioural aspects similar to Hansen's et al. (1999) strategy of codification. Here also information is processed, codified and stored in databases, producing templates for thinking as well as action. As an effect of this workers might be deskilled or empowered. Workers become deskilled when their knowledge is no longer necessary to accomplish a task but on the other hand workers can become empowered as they are able to perform tasks previously unknown to them. The difference to Extended Libraries is that this is not a support function. Codification is motivated by an economics of reuse because employees are expected to follow the templates and rules rather than keep reinventing the wheel. By this information is hoped to be reused and built up (Alvesson and Kärreman 2001).

These four strategies are all able to use information technology to a different extent but in different ways. Both Extended Libraries and Enacted Blueprints are dependent on IT-support in order to make the strategies effective. Even Community and Normative Control are able profit from technical systems for knowledge sharing to create the basis for knowledge transfer and communication which is necessary (Alvesson and Kärreman 2001). The technostructural or IT-based strategies are completely isolated from tacit knowledge whilst the social aspects work on both parts of knowledge.

3.4 Advantages and problems with IT-based solutions

According to Ruppel and Harrington (2001) the biggest advantages of intranets are increased productivity and moral, decision making and knowledge distribution. Intranets support knowledge sharing in three different ways, time- and space saving, flexibility in knowledge exchange and information exchange without direct contact between users. The problem of user acceptance or -resistance is rather a managerial and corporate cultural problem than a technological one. This makes corporate culture a critical success factor. The authors name the

corporate culture supporting intranets as the culture which rewards its members for innovative thinking and teaching.

Relying solely on IT-systems for knowledge sharing involves the risk of only sharing explicit knowledge. The fact is that tacit knowledge is a far more important factor in innovation processes (Swan et al., 1999). By solely sharing explicit knowledge organizations limit their opportunities for innovation. Organizations relying mainly on IT-based systems often do not realise the problems arising from the lack of possibility to share tacit knowledge. On the other hand organizations using IT-systems in a supportive way for KM processes often show understanding for this problem.

IT-tools have ample possibilities for spreading existing information and knowledge within an organization but this is only a small part of KM. Creating and investigating new knowledge is another part of KM. For this purpose IT does not have a clear function, it can act supportive but not in a decisive sense. By creating IT architectures without encouraging staff to personal interaction organisations miss opportunities for innovation (Swan et al., 1999).

3.5 Summary

The models by Swan (1999) have an overall perspective of KM which closely matches Hansen's strategies (1999) of personalisation / codification, on the other hand we have Alvesson's and Kärreman's (2001) models which have a finer granulation, namely two cases for personalisation / codification each. Swan's (1999) community networking model describes knowledge sharing on a social basis emphasising tacit knowledge sharing by exploration with IT in a supportive function, whilst the cognitive network model describes sharing of codified knowledge by exploiting and reusing knowledge through IT-based networks. The starting point in Alvesson's and Kärreman's models is community and extended libraries one could argue, and then looking at the degree of managerial control, a stronger implementation of each of the cases is normative control and enacted blueprints. This is the main difference to Swan's models which does not regard the amount of power administrated by the management. As a basis for our survey we think it is natural to have Swan's (1999) models as a starting point and then using Alvesson's and Kärreman's (2001) typology we take a closer look at the survey company's knowledge management system.

4 Findings

In this chapter we present the survey company and the result of the study we conducted. The findings will be presented without analysing or personal reflections, which will be done in the following chapter.

4.1 Survey object

The survey company is one of the world's leading companies in the accounting consulting sector. With many offices in Sweden they also have a leading position and good reputation in this market. They offer besides consulting in accounting also consulting in business, tax and transaction issues and deliver knowledge intensive, complex services which are based on their employees' operations and competence. They emphasise their look upon knowledge and use the term "knowledge" frequently in their publications, sales promotion and annual report. They point out their ability to knowledge sharing among employees and among their customers through global knowledge databases as well as through group work where opinions and knowledge are shared. They state as their main business assets the ability to quickly form teams with the help of their strong international network, the width of the knowledge present in their firm and their global accounting methodology and models leading to a common behaviour pattern which is what they regard as the only way to success. They have a reputation of being of high quality and reliability, and strongly emphasize knowledge sharing and employee personal skills development.

The company's Knowledge Management System was introduced in the late 1990's. The content, presentation, and use have changed over time. In the late 1980's the IT-infrastructure consisted of a few file servers and was thus not an essential part of the employees' work. In the early 1990's the basic foundation for the today existent KMS started to develop. Over the years as the system has evolved, the use has become more elaborate.

"When I started to work here in the mid 1980s the information technology was not an essential part of our daily work, however the system has evolved to such a significant extent that today it has become a vital part of our every day work" (Interview with male executive)

Today the employees use the KMS based on what assignments or duties they have, in fact the system is used on an everyday basis by the employees.

"The use of the KMS is often dependent on which customers we are working with currently and what services they need" (Interview with male executive)

"We are in fact highly dependent of the system. We interact with the KMS everyday in order to obtain information or contact someone, and without it would not be possible to execute our work as effective as now" (Interview with female end-user 3)

Employees can access information and tools relevant to their role but also general information available to all employees, for example executives can access parts relevant to their position which are not accessible to their subordinates. The aim of the system is for employees to be able to access all relevant information which is necessary for their work.

4.2 The KMS architecture and functions

As we described earlier a KM system is often constituted by different technologies, the company's KMS consists of mainly three parts: Intranet, knowledge repository and enterprise system which was confirmed by the IT-executive (Interview with female IT-executive).

The system is a set of clients and web-based clients combined with an enterprise system which access different local and centralized databases and file servers. On the first page of the system users can see up to date news regarding the latest developments and other relevant new information according to the user's role. From the first page users can navigate to different parts of the KMS, look up documents, persons competent in different areas, rules, models, templates, tools, guidelines, methodologies, policies and even online courses. Working as an accountant involves being up to date and informed about legal issues in order to be able to give the clients eligible advises and recommendations. One example is the news section which contains changes in law concerning the company's area of business among other things. Users emphasise that the information in the system is generally well structured and is following a general pattern but there are exceptions and room for improvement.

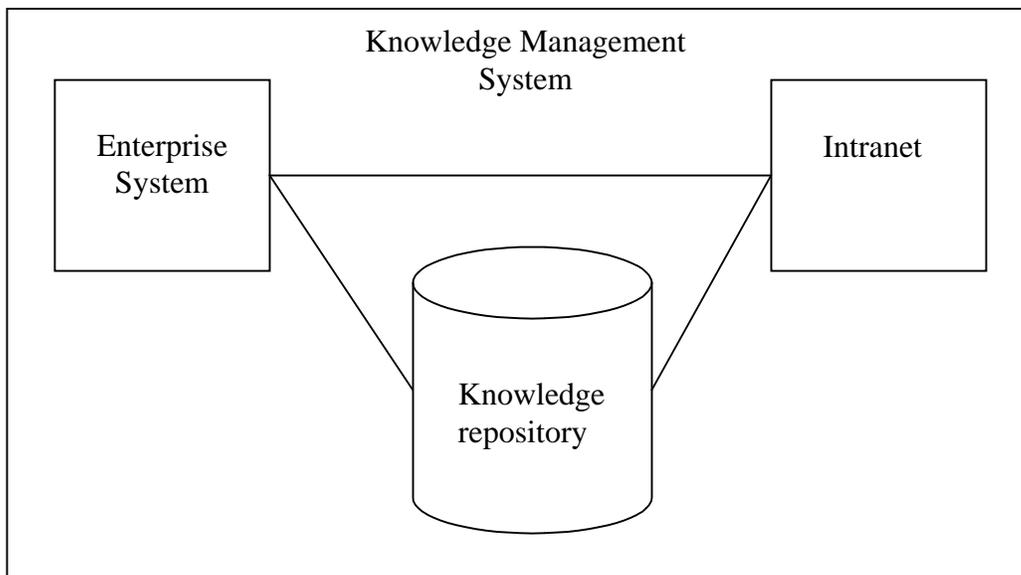


Figure 4.1: The company KMS structure: Main parts of the company KMS

When viewing the whole organisation's knowledge management system, the fact that it is very extensive becomes evident, an opinion shared by all the interviewees. According to the IT-executive, plans for improving the system are always in discussion. The aim is to make the KMS more unanimous, and reduce the amount of parts (Interview with female IT-executive).

Looking at the subsystem that is used by the branch office where we conducted our study, one could behold that it was not as extensive as the whole organisation's system itself. It is reasonable to argue that this is a specific part of the whole KMS aimed at a specific target group among the personnel.

The KM system's functionality as a mean of communication between colleagues is implemented through the intranet. The knowledge repository is a source of information and knowledge that the employees use in their everyday work. The enterprise system consists among other things of models, templates, tools, guidelines and policies about how to perform certain tasks.

“A huge advantage of using a IT-support of this kind with a variety of tools and functions is that you reduce unnecessary time consumption since you don't have to ask other people all the time when you wonder about something since the information is easily accessible in the KMS”
(Interview with male end-user 1)

The system also contains a Q&A section where employees can pose questions and accordingly provide answers. The company management encourages frequent visits to this section by the employees.

“The Q&A section is visited regularly, and is a very useful section where you can exchange thoughts and expert opinions. This is also a very good section to evolve your personal knowledge base” (Interview with female end-user 4)

The KMS possesses a search engine that includes the whole company knowledge management system. The search engine is considered by the end-users as somewhat dissatisfying.

“When I sometimes enter a keyword to search for a document the system might come up with hundreds of documents with superfluous information which in my opinion is too time consuming to search through” (Interview with male end-user 2)

This opinion is shared by all the interviewees however one of the end users also states that:

“The problem is that the information that is superfluous to one individual may be of relevance for another individual” (Interview with male end-user 1)

According to the IT-executive the search engine is too good and thus experienced by many as a disturbing factor.

“Searches with the tool are conducted with free text which means that every document within the system containing the entered keywords will appear” (Interview with female IT-executive)

The IT-executive argues that there is a possibility to use a function to narrow down the hits by filtering them. However that this function is used by the interviewees is not something that has emerged from our study, which the prior opinions from the end-users confirm. The interviewed executive states that:

“The quality of the information available within the system is very good most probably because we apply thorough quality assurance, the huge amount of information available is not a disadvantage either in my opinion, but perhaps the search engine could be further enhanced to narrow down searches” (Interview with male executive)

The KMS also offers possibilities to search after specific personnel within the whole company. This function, named “*who is who?*” makes it possible to search by name, phone number, position or field of specialisation in the company. This is a function considered by the interviewees to be useful and working well.

This function is very convenient. If I want to get in touch with someone at another branch office in the country I can easily look up the contact information in the system” (Interview with female end-user 4)

4.3 Social and cultural aspects of the KMS

The knowledge management system has brought by that the employees themselves have to search for the needed information. The fact that this responsibility has been transferred over to the employees is something that some end-users to some extent find time consuming.

“I don’t see any problem in searching by my self for the needed information, but because of the vast amount of information that one has to search through it can sometimes be tiring and time consuming” (Interview with male end-user 2)

“I know that it sometimes can be time consuming to search through information in the KMS because of the significant amount of information being existent. However I think it is necessary for the employees to learn how to search for needed information by them selves. We can not encourage a culture where you run to “daddy” all the time when the needed information exist in our KMS. However it is important to find a balance so that you do not discourage the personnel to communicate with each other when they need help” (Interview with male executive)

Within the survey company a significant amount of trust is existent between the co-workers. The employees trust the answers given by their colleagues and point out that there exists no prestige or rivalry between them and thus no reason to purposely provide incorrect information. The co-workers share their knowledge with each other and further build on it with the support of others. The over all aim is to be able to share clients and to support each other. The employees argue that

it is the clients who judge the knowledge of an accountant and in order to provide as eligible results as possible the employees support each other.

The company management encourages knowledge sharing and teamwork. The aim is to consider all opinions, ideas and suggestions as valuable. It is part of the annual employee evaluation to bring up the subject of knowledge sharing in order to reward active knowledge sharing as part of the complete employee evaluation in the company. One basis for this is that it is possible to discern who contributes with what to the KMS, and personal knowledge sharing among employees also comes into play, which is not easy to measure and therefore a matter of reputation.

“We are a knowledge company; our prime asset is the knowledge that our employees possesses, therefore it is crucial for us to encourage them to share their knowledge. This is especially important since they might leave the organisation someday and at that point we do not want to realise that the knowledge they possess is leaving with them” (Interview with male executive)

The employees state that their attitude towards knowledge sharing is highly affected by the organisational culture and the management’s attitude towards knowledge sharing. A contributing factor for the knowledge sharing process is also employee rewards in the form of expanding duties, responsibilities, and assignments.

“Of course my attitude towards knowledge sharing is affected by the company management view point. You are naturally more motivated to share your knowledge within an organisation where a knowledge sharing culture already has been established. When I share my knowledge I also know that it always is to my advantage too because new challenging assignments will come my way, therefore knowledge sharing among the employees has become an everyday habit here” (Interview with female end-user 4)

Concerning the use of the KMS compared to other sources of knowledge, all the respondents answer that the system is not the primary knowledge source. This is further clarified by the following statement.

“Even though we have a good knowledge management system that provides lot of important information I still argue that our primary source of knowledge is the employees them selves. The knowledge and experience that exist within each employee which he or she has obtained when working with several clients can simply not be compared to an information system ”(Interview with male executive)

All the respondents revealed that they do not hesitate asking a colleague if they wonder about something. None of the respondents had misgivings concerning the colleagues providing them with incorrect or poorly substantiated information, with the motivation that this would not benefit anyone. If a colleague provides an unsatisfying answer to a question the next step is to use the

knowledge management system. In those cases the information is insufficient or additional information is needed the person who published the information is contacted, which is facilitated by the fact that all information has a publisher and links to experts in the field.

Another function concerns personal meetings and the KMS. The complete information of meetings is published in the system so that employees who missed a meeting can still access the information concerning this.

The material on the KMS is passed through thorough checks regarding legal compliance due to the field of work the company is doing business in. There are policies regarding publishing of information but generally employees are strongly encouraged to share their all their knowledge. Information regarding legal matters is certified by a central quality assurance group responsible for legal compliance.

“We cannot afford to publish let’s say a model for a certain tax calculation on the system without making sure that it follows current regulations” (Interview with male executive)

Concerning statistics of the system use the IT-executive mentions that various statistics are kept in order to gain an image of how the system is used and get information on needed improvements concerning contents and technical infrastructure (Interview with female IT-executive).

4.4 Summary

Introduced in the late 1990’s, the KMS consists of different subsystems, namely intranet, knowledge repository and enterprise system. It is used as a mean of communication, source of information and as a support for conducting everyday work. It contains a large amount of information, rules, guides, policies and tools both regarding local, country specific as well as global issues and several means of communication, e.g. forums and email. The employees use the functions in the system to a great extent and their experience is that the system helps them conducting their everyday work as well as solving more complex situations. They further state that they both share their knowledge through the system and learn through it. The company management actively encourages knowledge sharing on a social basis as well as through the KMS, e.g. by integrating knowledge sharing and learning in their annual employee evaluations.

5 Discussion

5.1 *The Knowledge Management System*

All functions, knowledge repository, mean of communication and enterprise system enable it to spread knowledge. The possibility to find facts and figures but also models, templates, guidelines, rules and policies on routines where users can benefit of experience from other users in order to improve their own work, defines it as a KMS according to our definition. The way the system works enables it also to control the way employees perform their work and by this the system contributes to work routines being performed consistent and in a unified way throughout the organization.

Working as an accountant involves being up to date and informed about legal issues in order to be able to give the clients eligible advises and recommendations. This work has to some extent become trivialised due to the KM system's news section which provides latest news in the field. This has also brought by that the employees have the possibility to provide equivalent advice to clients based on the same information.

On the basis of the findings we can argue that the fact that users consider the search engine as somewhat dissatisfying is not due to the quality and amount of information itself, the problem is rather the lack of structure of search results obtained. When considering the extent of the whole system it is not difficult to realise why too many hits appear. That the number of hits is often considered as too extensive is not surprising since the appearing documents can derive from any branch office.

In the next chapter we will describe how the KMS functions can be related to the models by Swan et al. (1999) and Alvesson and Kärreman (2001) explained earlier.

5.2 *Knowledge management: Networks and networking*

We have earlier described how the company KMS is structured, its usability and how it is used by the personnel. In the following discussion we aim to analyse how knowledge sharing as a whole appears within the branch office we have studied, and what significance the KMS has in this context. To our support we aim to use the two models that we discussed earlier by Swan et al., 1999, the cognitive network model and the community networking model.

The survey company can as earlier stated be classified as a knowledge company and the level of innovation is significant since the major work is related to developing guidelines, policies, rules and the fact that the company is one of the worlds leading within its business area. Those innovations (e.g. working out guidelines etc) that occur emerge through personal interactions that are later published through the system. This only gives the KMS a supporting function in innovation processes. Innovations constitute a large part of the business and they occur in a way that is recommended by the community networking model.

The amount of tacit and explicit knowledge existent within the company is very large. However it is clear that the employees primarily recommend personal interaction rather than using the KMS.

This in itself does not prove that tacit knowledge is more existent than explicit, but it implies that there is a greater possibility to share tacit knowledge compared to if the KMS had been of primary use. The knowledge management system however exists as a support and due to the fact that it contains such a vast amount of information and codified knowledge it becomes essential for the business.

On the basis of the above discussion we can then state that the knowledge sharing within the survey company primarily occurs according to the community networking model rather than the cognitive network model, but not exclusively. Both employees and the management point out the importance of social relations within the organisation, this is evident thus the employees rather discuss an issue with a colleague than using the KMS, despite the fact that the information can be found there. It has out of the survey emerged that the reason for this is that the employees have a significant amount of trust between them concerning their knowledge.

5.3 Typology of the survey company's Knowledge Management System

We want to examine in what ways the survey company's KMS can be classified according to Alvesson's and Kärreman's typology (2001) in order to understand how the KMS affects knowledge sharing. According to the model IT-based solutions can either be extended libraries or enacted blueprints, therefore we will mainly focus on these two aspects and try to examine whether the KMS can qualify for either or both of them. The social aspects of the model, community and normative control, will also be covered but as they are rather hard to grasp they will not be the focus of our attention.

5.3.1 Extended Library

According to Alvesson and Kärreman (2001) all parts of the KMS qualify as extended libraries if we follow their argumentation, which is that all IT-based solutions can be considered as Extended Libraries.

The knowledge repository contains facts and figures as well as guides, models, routines, rules and policies on how to conduct certain tasks. The knowledge repository contains many categories and subcategories and is organized in a hierarchical way. It also contains information on what people to contact in a certain situation or for a specific problem. All subcategories and topics follow a unified pattern but with varying quality and quantity concerning the contents and tools. Thus, as the employees consult this material when in need of it, it corresponds to extended libraries according to Alvesson's and Kärreman's (2001) model.

Addressing the differences between the parts accessible to only specific employees according to their role, there is no significant difference concerning their classification as extended library.

There are parts of the enterprise system which leave room for the employee on how to perform a task and by this do not control strictly how the task is to be solved and therefore do not qualify as enacted blueprints but as extended library.

5.3.2 Enacted Blueprints

The classification of parts as enacted blueprints in the survey company's KMS is not as obvious as in the case of extended libraries. This seems to be due to the fact that the company consists of well trained personnel and therefore are not dependent on standardized templates and guidelines. The character of the work tasks can be described as evaluating given information in order to find the best possible solution. According to Alvesson and Kärreman (2001) the main purpose of enacted blueprints is to standardize knowledge demanding work tasks and as an effect of this workers might be deskilled or empowered. Workers become deskilled when their knowledge is no longer necessary to accomplish a task but on the other hand workers can become empowered as they are able to perform tasks previously unknown to them. One example for this might be an unusual calculation. This process might have used to require a number of qualified and well trained employees. Nowadays this process might be done by an expertsystem where the user enters customer information and seconds later the result is presented. In this example the expertsystem corresponds to an enacted blueprint.

The most obvious parts of the KMS that can be associated with enacted blueprints are tasks which are accomplished by using the enterprise system. The reason for classifying these parts as enacted blueprints is that they act as tools and control strictly how a certain task is to be performed. Without this strict control these parts would not classify as enacted blueprints. Due to the links between the knowledge repository and enterprise system there is a connection between enacted blueprints and extended libraries within the survey company.

The guides and rules in the knowledge repository are meant to assist in routine tasks the employees may encounter during their work, but also to assist in solving complex problems or calculations. The guides and rules act in many cases as checklists and enable together with the tools employees to accomplish previously unknown or partly unknown tasks which correspond to enacted blueprints in Alvesson's and Kärreman's (2001) model. Not all of these guides, rules and tools qualify as enacted blueprints but those cases qualify as extended libraries.

On the basis of the prior discussion we can argue that the KMS is implemented both as an extended library and as enacted blueprints. The part of the system concerning the knowledge repository which operates as a source of information and knowledge for the employees can be considered as extended library and the enterprise system part that among other things contain: rules, models, templates, guidelines, methodologies, policies, online courses, and tools can to a certain extent be considered as enacted blueprint. Alvesson and Kärreman, 2001 states that:

“Knowledge management, as enacted blueprints targets intellectual work. It is not an attempt to make most out of workers physically, but rather to standardize and simplify – possibly trivialize- the amount of intellectual knowledge necessary for carrying out various tasks”
(Alvesson and Kärreman, 2001, p.1007)

Since the purpose of enacted blueprints is to simplify the amount of intellectual knowledge needed to execute a task, this only matches the purpose of the enterprise system part to a certain extent. The guidelines, policies, templates and models existing within the this part of the KMS is

admittedly designed to trivialize the employees' work however it does not decrease the level of qualifications needed to execute tasks to that extent that it could be seen as an enacted blueprint.

5.3.3 Social and cultural aspects of the KMS

The central quality assurance group's influence could be considered as a kind of normative control, however not quite in the way that Alvesson and Kärreman, 2001 argue. They refer to the phenomenon where influential individuals mediate knowledge and standards in a social context. In this case the effect will rather be that the way the latest information and news is presented will form a standard for how it shall be interpreted. However it has to be mentioned that all the information is not delivered all worked up, thus there are cases where further analysis and interpretation is necessary. There are though influential individuals mediating knowledge and standards, as the employees state, which indicates normative control but as the survey company already has a high regard of knowledge management it is not clear whether it is normative control or a case of a well established community in the sense of Alvesson and Kärreman (2001). As there is an interest in tacit knowledge and a lot of knowledge sharing taking place on a voluntary basis, KM in the form of community is taking place in the survey company.

5.4 Knowledge management system; functions and limitations

An extended library is well suited for environments where high control is not a necessity, in this case due to the fact that the employees possess a high level of competency and conduct a variety of sophisticated tasks. It is though notable that most end-users including the male executive consider searching for information in the KMS as somewhat time consuming, however the amount of information that is accessible through this relatively simple manner would most probably be very difficult to mediate with an alternative approach. Another factor contributing to this approach is that an extended library, one of the used strategies, is based on that the user independently comes across the sought information when it is needed.

How the information shall be structured and searchable is an ongoing work, and as we have mentioned earlier this KMS is not in any way a perfect one. The risk of it never becoming a perfect one is also existent. The knowledge repository is constantly expanded, and to structure new information in an eligible way is not a simple task. Important is that this structuring and developing work is taking place, thus enhancements can be introduced with time.

5.5 The use of the KMS

In earlier chapters we have stated that the system in its nature foremost facilitates knowledge dissemination as extended library or enacted blueprints. The answers of all respondents point out that the system is mostly used as an extended library.

Those cases of Enacted Blueprints we identified, namely the sections containing guidelines and rules on how to conduct different tasks are used regularly. When guidelines and rules are used, sometimes the employee consults a colleague concerning the execution of a specific task but rather in order to double check or to gain additional insights and aspects of the problem.

We however gained the impression that the awareness and humbleness concerning insufficiency of the possessed knowledge is good. This means that the employees often refer to sections in the KMS where sufficient information exists rather than providing an incorrect answer. In this way the technostructural knowledge sharing is linked together with the social knowledge sharing in a functional way. This is also evident concerning personal meetings and the KMS. The complete information of meetings is published in the system so that employees who missed a meeting can still access the information concerning this.

5.6 The TCN-Model

Even if the employees rather use personal interaction than the KMS to share and obtain knowledge and information the fact remains that a significant amount of information that is necessary in order to execute different tasks is accessible within the KMS e.g. latest updates concerning legal issues, latest news in field protocols of meetings, contact information of colleagues etc. This implies that their work to a large extent is affected by the knowledge management system and without it they would not be able to execute the task as currently.

“We are in fact highly dependent of the system. We interact with the KMS everyday in order to obtain information or contact someone, and without it would not be possible to execute our work as effective as now”
(Interview with female end-user 3).

As the survey company integrates several points of the models we describe in the frame of reference, we propose an integrated model of KM which takes greater account of localised communities and the importance of social networking. Thus the model is an illustration of how KM is implemented in the survey company. We name it the *technostructural community networking model (TCN-Model)*, which is distinguished by:

- Knowledge for innovation is partly equal to knowledge creation through social activities based on experience but also to objectively defined concepts and facts.
- Most of an organization’s knowledge is tacit. It gains sense by interaction between individuals and groups working together.
- Knowledge for innovation is created through social activities and is based on experience, optimally implemented as community, and cases of normative control where appropriate.
- Knowledge which can be codified and transferred through networks should be codified and reused: information systems should function as extended libraries and enacted blueprints.
- The primary function of KM is to encourage knowledge sharing through social interaction and secondary to codify, capture and transfer knowledge through networks.
- Trust and the ability to cooperate is the most important success factor, followed by technology.
- Gains from KM include exploration through sharing and synthesis of knowledge between social different groups and exploitation through the recycling of existing knowledge.

- The dominant metaphors are the human society and the jigsaw (Creative interaction creates new knowledge, sometimes in an unexpected way, through fitting pieces of knowledge together in order to produce a bigger picture).

There is a natural conflict arising between enacted blueprints and community, as enacted blueprints strictly control the way employees are supposed to accomplish their work and the nature of community which involves a lot of given freedom to the individual employee in order to explore new knowledge. In the case of the survey company this conflict is solved by the original organisational culture and spirit which lead to the evolvement of the company's unique attitude towards knowledge and learning.

The idea behind the TCN-Model is that technological and social knowledge sharing should be considered equally important, but has to be based on a basic trust and ability to cooperate as one of them missing, no technostructural or social solution for knowledge sharing can work optimally.

6 Conclusions

In this final chapter we present the conclusive thoughts and facts, link the problem with the purpose with the help of the findings we presented along with our own reflections.

In the beginning of the thesis we formulated a purpose as the basis for our research and analysis. The purpose we put up was to investigate:

“If and how knowledge sharing is affected in reality by the knowledge management system used at the survey company”

On the basis of the investigation and analysis of the material we obtained, we come to the conclusion that the survey company’s Knowledge Management System affects knowledge sharing to a very high degree but the social factors play a crucial role as well. Information and even knowledge can be spread throughout the organisation with the help of the KMS because all employees continuously are able to access it and contribute to it. In the survey company, knowledge sharing takes place either by employees asking colleagues for help when they have a problem or by employees independently searching for answers in the KMS. In the case of asking colleagues, the colleague either is able to help the co-worker very quickly or refers him to the KMS where he thinks the solution to the problem might be. As the analysis showed there seems to be a couple of factors explaining this behaviour, for example trust in colleagues, the work environment policies of the company and leadership encouragement to personal knowledge sharing.

The survey company’s employees are affected to a strong degree by the KMS and as knowledge management has a high profile in the company most of the employees have a positive attitude towards it. The KMS gives them information they need for their daily work and for more complex problems. Without the KMS information transfer and knowledge sharing would take place to a significant slower degree. The KMS also increases flexibility and unifies the way work is conducted at the survey company, one example for this would be advisory tasks which can be handled in less time. One point of critique of the KMS is that it sometimes takes too long to use, is valid in the case of simple information at least. On the other hand it would be impossible to make this amount of information accessible to employees in a way as simple as that. Without the KMS the information would either be of lower quality or it would take more time to find it.

The way the KMS is constructed makes it mostly a knowledge repository and an enterprise system in the sense of extended library and enacted blueprint but also the social aspects are considered, mainly in the sense of community according to Alvesson and Kärreman (2001). The system is though not flawless, there are certain things missing according to the interviewees and on the other hand the amount of information seems to be too big in certain cases, which makes it sometimes difficult to find the right information.

In the discussion chapter the connection between social and technological knowledge sharing becomes obvious. One example is documenting meetings, where material for analysis is presented among other things. One important aspect here is that comments and different points of views during the meeting are being published.

A large part of the knowledge sharing takes place via the KMS in the survey company, it is though interesting to see the importance of the social part. The KMS affects social knowledge sharing by discussions about the information contained in the KMS. The fact that it seems natural to conclude that these two aspects complete each other and knowledge sharing would not be functioning if one of them would be missing, led to the development of our TCN-Model. The TCN-Model describes how knowledge sharing takes place in the survey company, integrating both the social and technological aspects of the knowledge management system. We argue that without either the social and technological aspects knowledge sharing would not take place optimally and they are depending on each other as our survey shows. Thus, we have to state that the survey company has implemented both the social and technostructural parts of Alvesson's and Kärreman's (2001) typologies as well as the corresponding cognitive network model and community networking model (Swan et al., 1999).

Our conclusive thoughts can be summarised as:

- The knowledge management system does affect knowledge sharing in the survey company
- The knowledge management system increases efficiency by reducing “reinventing the wheel”, however it is not flawless regarding quantity and quality
- Both the social and technological aspects complement each other and form the base for a sound knowledge sharing process within the survey company as the TCN-Model aims to display

7 References

7.1 Literature:

- Alvesson M., Sköldbäck K., (1994), *"Tolkning och reflektion"*, Studentlitteratur, Lund.
- Bryman A., (1997), *"Kvalitet och kvantitet i samhällsvetenskaplig forskning"*, Studentlitteratur, Lund.
- Bryman A, Burgess RG, (1999), *"Qualitative Research"*, Thousand Oaks, California.
- Cambridge Learner's Dictionary, (2001), Cambridge University Press.
- Edling C., Hedström P., (2003), *"Kvantitativa metoder; Grundläggande analysmetoder för samhälls- och beteendevetare"*, Studentlitteratur, Lund.
- Ezzy D., (2002), *"Qualitative Analysis: Practice and innovation"*, Taylor & Francis Ltd.
- Falk, T., Olve, N-O., (1996), *"IT som strategisk resurs, Bättre Ledarskap"*, Kristianstad.
- "Harvard Business Review on knowledge management"*, (1998), Boston, Massachusetts: Harvard Business School, The Harvard Business Review paperback series.
- Holme I. M., Solvang B. K., (1991) *"Forskningsmetodik"*, Studentlitteratur, Lund.
- Kvale, S., (1997), *"Den kvalitativa forskningsintervjun"*, Studentlitteratur, Lund.
- Macmillan P., (2003), *"Knowledge management research & practice"*, Basingstoke.
- Miles M. B., Huberman A. M., (1994), *"Qualitative Data Analysis"*, SAGE Publications, Thousand Oaks, California, USA.
- Preece, J., Rogers, Y. & Sharp, H., (2002): *"Interaction Design - Beyond Human-Computer Interaction"*, John Wiley & Sons.
- Svensson P.G., Starrin B., (1996), *"Kvalitativa Studier i teori och praktik"*, Studentlitteratur, Lund.
- Trost J., (1997), *"Kvalitativa intervjuer"*, Studentlitteratur, Lund.
- Walter G., (1991), *"Bonniers synonym ordbok"*, Bonnier fakta Bokförlag, Smedjebacken.

7.2 Interviews:

Interview 1: Executive, male, February the 2nd between 9.00am and 10.15am (2006), Lund, Sweden.

Interview 2: IT-executive, female, phone interview, February the 4th between 9.00am and 9.45am (2006).

Interview 3: End-user, male, February the 6th between 9.00am and 10.00am (2006), Lund, Sweden.

Interview 4: End-user, male, February the 8th between 8.30am and 9.45am (2006), Lund, Sweden.

Interview 5: End-user, female, February the 10th between 9.00am and 9.50am (2006), Lund, Sweden.

Interview 6: End-user, female, interview, February the 12th between 10.15am and 11.15am (2006), Lund, Sweden.

7.3 Scientific Articles:

Alavi M., Leidner D.E., (1999), "*Knowledge Management Systems: Issues, Challenges, and Benefits*", Communications of the Association for Information Systems.

Alavi M., Leidner D.E., (2001), "*Knowledge Management and Knowledge management systems: conceptual foundations and research issues*", MIS Quarterly.

Alvesson M., Kärreman D., (2001), "*Odd Couple: Making Sense of the curious concept of knowledge management*", Journal of Management Studies, 38:7, Blackwell Publishers.

Biggam J., (2001), "*Defining Knowledge: an Epistemological Foundation for Knowledge Management*", Glasgow Caledonian University.

Blomqvist P, Niward H, (1997), "*Knowledge Management Practices*", Chalmers Tekniska Högskola, Göteborg.

Clark P., Staunton N., (1989), *Innovation in Technology and Organization*, Routledge, London.

Coffey J. W., Hoffman R. R., (2003), "*Knowledge modelling for the preservation of institutional memory*", Journal of Knowledge Management, Vol. 7 No. 3 , pp. 38-52).

Daghfous, A. (2004), "*Knowledge management as an organisational innovation: an absorptive capacity perspective and a case study*", Int. J. Innovation and Learning, Vol.1 No. 4, pp. 409-422. American University of Sharjah, School of Business and Management.

Davenport T., Prusak L., (1998), "*Working Knowledge*", Harvard Business School Press: Boston.

Gurteen D., (1999), "*Creating a Knowledge Sharing Culture*", Knowledge Management Magazine Volume 2, Issue 5, February 1999.

Hansen M. T., Norhia N., Tierney, T., (1999). 'What's your strategy for managing knowledge?', Harvard Business Review, 77, 2, March-April, 106-16.

Hoffman R. R., Hanes L. F., (2003), "*The boiled frog problem*", IEEE Intelligent Systems, published by the IEEE Computer Society.

Koskinen U. K., Pihlanto, Pekka, Vanharanta, Hannu, (2002), "*Tacit knowledge acquisition and sharing in a project work context*", International Journal of Project Management.

Levinthal D., March J., (1993), "The myopia of learning", Strategic Management Journal, Vol. 14, pp.95-112.

Marwick A. D., (2001), "*Knowledge Management Technology*", Knowledge Management, Volume 40, Number 4, IBM Systems Journal.

Mathi K., (2004), "*Key Success Factors for Knowledge Management*", Internationales hochschulinstitut Lindau, University of applied sciences/ FH Kempten, Germany.

Nonaka, I., (1991), "*The Knowledge Creating Company.*" Harvard Business Review, November-December: 96-104.

Nonaka, I., (1994), "*A dynamic theory of organizational knowledge creation*", Organizational Science Vol. 5.

Plant R., Gamble R., (2003), "*Methodologies for the Development of Knowledge-Based Systems, 1982-2002*", The Knowledge Engineering Review, Vol 18:1, 47-81, Cambridge University Press.

Polanyi, M., (1997), "Tacit Knowledge," Chapter 7 in *Knowledge in Organizations*, Laurence Prusak, Editor. Butterworth-Heinemann: Boston.

Ruppel C, Harrington S, (2001), "Sharing knowledge through intranets: a study of organisational culture and intranet implementation", IEEE Transactions on professional communication, vol 44:1, pp.37-52.

Swan J., Newell S., Scarbrough H., Hislop D., (1999), "*Knowledge management and innovation: networks and networking*", Journal of Knowledge Management, Volume 3 – Number 4, MCB University Press.

Truch E., (2003), "*What Value Knowledge?*", Management Services, ABI/INFORM Global p.22.

Van Beveren J., (2002), "*A model of knowledge acquisition that refocuses knowledge management*", Journal of Knowledge Management.

Wiig K. M., De Hoog R., Van Der Spek R., (1997), “*Supporting Knowledge Management: A Selection of Methods and Techniques*”, Expert Systems With Applications, Vol.13, No. 1, pp. 15-27.

7.4 Web Sources:

Dictionary of computing, <http://www.instantweb.com/D/dictionary/about.html>, 2006-02-03.

Encyclopedia Britannica, Encyclopedia Britannica Corporation, <http://www.britannica.com/>, 2006-02-02.

<http://www.tdan.com/i024fe02.htm>, 2005-11-27.

Newman B, “*An Open Discussion of Knowledge Management*”, KM Forum Archives, http://www.km-forum.org/what_is.htm, 2005-09-10.

Tallmo, K-E, Knowledge-on-demand, <http://art-bin.com/art/akn/-on-demands.html>, 2006-01-24.

Wiig K.M., “*On The Management of Knowledge*”, <http://www.km-forum.org/wiig.htm>, 2005-10-11.

8 Appendix 1 – Interview Template (End-users and Male Executive)

Introduction

- Would you like the interview to be treated confidentially?
- Do you mind being recorded during the interview?

Warm-up

- What is your age?
- What position do you have at the company?
- How long have you been working for the company in this position?
- What is your educational background?
- What working experience do you have?

Main Session

Knowledge Management System and Knowledge Sharing

- To what extent do you use the KMS?
- How has your use of the system changed through time?
- What do you use the KMS for? What effect does the KMS have on your daily work?
- Are there functions you wish to improve?
- What can you tell us about the amount of information existing in the KMS?
- What can you tell us about the level of difficulty in understanding the information contents of the KMS?
- How do you adopt the information?
- Do you have to process the information?
- What can you tell us about the information structure in the KMS?
- Do you have guides and policies for working with the KMS?
- Are you being rewarded for knowledge sharing?
- What are your general sentiments concerning cooperation and knowledge sharing?
- Are your sentiments influenced by the leadership's attitude towards knowledge sharing?
- Do you experience any advantage by using the KMS?

- How often do you think you share knowledge during a one month period? To what extent of that do you share knowledge through the KMS? In what other ways do you share knowledge?
- How could the KMS be improved out of a knowledge perspective?
- If you need help regarding some form of knowledge, where do you turn?
- What is your primary source of knowledge?
- Do you have the feeling that you develop yourself personally regarding knowledge by the information given in the KMS?

Cool-off session

- Would you like to add anything further concerning knowledge sharing or the use of the knowledge management system within your organisation?

Closing session

- At last we would like to thank you for taking valuable time to answer all our questions.

9 Appendix 2 Interview Template (Female IT – executive)

Introduction

- Would you like the interview to be treated confidentially?
- Do you mind being recorded?

Warm-up

- What is your age?
- What position do you have at the company?
- How long have you been working for the company in this position?
- What education do you have?
- What working experience do you have?

Main Session

Knowledge Management system

- When was the KMS introduced?
- What is the purpose of the system?
- Could you provide information concerning the architecture of the KMS?
- How is the information on the system controlled?
- Who is responsible for the publications?
- Who is creating the material in for the KMS?
- What kind of information is published on the KMS?
- Are there rules and norms for what is published?
- Is the information quality checked before it is published in the KMS?
- Do different subsidiaries get different information?
- Can you tell us about the search functions you have in the KMS?
- How do they function? Do they for example on search through certain parts?
- Can you search for employees with certain competency or expertise?
- Do you have statistics concerning the use of the KMS? What does it look like?
- Have you identified more useful parts of the KMS than others, or expected?
- Are there parts or functions practically not being used?

Cool-off session

- Would you like to add anything further concerning knowledge sharing or the use of the knowledge management system within your organisation?

Closing session

- At last we would like to thank you for taking valuable time to answer all our questions.