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**IMPROVING PRODUCTIVITY BY DEVELOPING KNOWLEDGE
MANAGEMENT PRACTICES FOR A CONSULTING COMPANY**

Master's thesis 2015

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ABSTRACT

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Keywords: Knowledge management, productivity, business process, knowledge transfer, knowledge sharing, knowledge conversion, knowledge worker	
<p>The objective of the research was to identify knowledge conversion states in consultancy sales and delivery processes for the company's one business unit, to know where to store certain types of information and knowledge, and to create best practices for the company's knowledge management activities in the selected business processes.</p> <p>The used research methodology was action research. The current business processes were analyzed by interviewing people involved in them. The results were documented and categorized, and based on them the target states of the processes were developed. Knowledge management activities were integrated to the business processes.</p> <p>The main findings of the research were that roles and responsibilities in the processes were not clear to people, information systems did not fully support individuals and time was wasted searching for information and knowledge. There were also many variations of how the processes actually realized, which affected the overall quality of the process.</p> <p>The conclusions of the research were that knowledge management activities should be highlighted in businesses where knowledge workers are the main assets of the company. Knowledge management practices can be supported by company culture, leadership and information systems. However, one main factor is each individual's willingness to share knowledge. By integrating knowledge management activities to business processes and having information systems supporting knowledge management, individual productivity can be improved.</p>	

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Tutkimuksen tavoitteena oli tunnistaa tiedon muuntamisen tilanteet yrityksen yhden liiketoimintayksikön konsultoinnin myynti- ja toimitusprosesseissa, tietää mihin minkäkin lainen tieto tallennetaan sekä luoda parhaimmat käytännöt yrityksen tietojohdamisen toimintatavoille valituissa liiketoimintaprosesseissa.

Käytetty tutkimusmetodologia oli tapaustutkimus. Prosessien nykytilat analysoitiin haastatteleamalla niissä toimivia henkilöitä. Tulokset dokumentoitiin ja luokiteltiin, ja niiden pohjalta prosesseille kehitettiin tavoitetilat. Tietojohdamisen toimintoja sisällytettiin liiketoimintaprosesseihin.

Tutkimuksen myötä tuli esiin, että prosesseissa toimivilla ei ollut selkeää kuvaa rooleista ja niiden vastuista, tietojärjestelmät eivät täysin tukeneet toimintaa ja aikaa hukattiin tiedon etsimiseen. Käytännössä prosesseja vietiin läpi hyvin eri tavoin, mikä vaikutti prosessin laatuun.

Tutkimuksen johtopäätöksinä voidaan todeta, että yrityksissä, joissa tieto on pääasiallinen pääoma, tulisi tietojohdamisen toiminnot sisällyttää liiketoimintaprosesseihin. Tietojohdamisen tapoja voidaan tukea yrityskulttuurilla, johtamisella ja tietojärjestelmillä. Yksittäisen henkilön halukkuudella jakaa tietoa on kuitenkin suuri vaikutus tietojohdamisen onnistumiseen. Sisällyttämällä tietojohdamisen toiminnot liiketoimintaprosesseihin sekä käyttämällä oikeanlaisia tietojärjestelmiä voidaan yksilön tuottavuutta parantaa.

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1 INTRODUCTION

1.1 Background of the study

A consulting company relies on the knowledge gathered and shared by its employees. Consultants are working on different cases and their experiences and knowledge is different. Sharing their accrued knowledge of the methodologies and methods they have experience in and applying them, is crucial to a consulting company's vitality and competitiveness in the market. As Jordan and Jones (1997) put it, "competitive advantage depends on how efficient the firm is in building, sharing and utilizing the knowledge of its members". Sharing and capturing knowledge from the individuals is a key factor for a consulting company's success. Even though people might leave the company, the mindshare needs to stay within the company. This is a high risk of consulting companies (Jordan & Jones, 1997). The most valuable assets for the twenty-first century are knowledge workers and their productivity (Drucker, 1999a).

The challenge in the case company at the moment is knowledge sharing and documentation. People are using working time searching for information within the company. People are also producing similar types of material because they are not aware that such material already exists or they cannot find it in shared locations. Knowledge gathered through consulting projects at customers is not shared well enough within the company. Every consultant is an expert in their own areas and have a lot of knowledge to share to other experienced consultants and especially to junior consultants. Now this knowledge transfer doesn't happen well and systematically enough. This makes the company very dependent on individuals and there might be knowledge gaps if a person leaves the company.

Webster (2012) researched how information workers waste significant amount of time dealing with information management related challenges, for example, working with documents. She noted in her study that wasted time costs for the organization are almost 20 000 dollars per information worker per year and amounted to an over 20% loss in the organization's productivity. The case company's internal knowledge management survey (QPR Software, 2014c) noted on average a 1-2 hours per week per person wasted time in searching for information from the case company's systems.

The case company has gone through a transformation from a software company to a consulting company. This has given many different and new demands for its business, people and their competencies, processes and information systems. The transformation started in 2009 and more emphasis was put to it in 2011 by heavily recruiting new consultants. There have been some organizational structure changes to better support the sales and delivery of consultancy and now after there is experience from those changes, the processes and practices are been developed.

This research is done alongside various ongoing development projects in the company. The target is to take advantage of the current projects for current state analysis and starting point for the research, while providing the to-be possibilities for future through this work.

In today's information intensive world, those that can capture and capitalize the information and turn it into knowledge are strong players in the market. From this point of view, how a consulting company can manage its knowledge processes is a very good topic for even further research.

1.2 Research problems and objectives

The objective of this research is to identify the knowledge conversion phases in the consultancy sales and delivery processes of the Finnish business unit, documenting knowledge appropriately to its kind and create a best practice for the company's knowledge management activities in consultancy sales and delivery processes.

The main research question is:

How does the development of company wide knowledge management practices improve productivity?

Other research questions are:

How are knowledge management practices usually organized in organizations?

Which practices support knowledge conversion?

Which factors affect individual productivity for a knowledge worker?

1.3 Research methodology

The used research methodology in this research is action research, which is one form of qualitative research (Hirsjärvi et al, 2009, 162). Quantitative research as a method was not chosen because this research cannot be done numerically, the material cannot be translated into statistical information and the material cannot be analyzed statistically (Hirsjärvi et al., 2009, 140). Heikkinen et al. (1999, 36) listed some key words for action research, from which reflectivity, research pragmatism and participation of people very well align with the research done in this case.

The current as-is state analysis of the sales process is done through interviews and with some iterations a target state process description is produced. After the sales process has been reviewed, the delivery process is taken under investigation. For this, a variety of consultants is selected to participate in workshops about the challenges in the current delivery process. Based on these workshops a target state process model is modeled, where knowledge management related activities are taken into account.

The above described method included some of what Hirsjärvi et al. (2009, 164) listed as typical features of qualitative research: comprehensive information and material is gathered in natural and real situations, the use of people as the instrument for information gathering is favored, inductive analysis is used, qualitative methods are used in gathering the material, the focus group is chosen intentionally, and cases are handled as unique and the material is interpreted accordingly.

Coghlan's (2001, 39-40) steps for keeping a journal of the research were adapted. Interviews and discussions are examined and workshops reflected on the matters discussed. After these the tentative conclusions are conceptualized and formulated, and suggested actions are to be tested. These suggested actions rely on researcher's own experiences and the research that has been done for this case.

As background information, there are also the results of QPR's internal knowledge management survey which was held in the fall of 2014. The questions of the survey can be seen in appendix

1. The survey was sent to 48 employees working in the business units of the case company. The answer rate was very good, 83,3%. Some of the findings of this survey are used in this research work. (QPR Software, 2014c.)

1.4 Delimitations

The research is done in the Finnish business unit's consulting sales and delivery processes. Other business units are excluded from the research (Finnish software sales, international sales, product development, finance and administration).

1.5 Structure of the thesis

The thesis is organized as follows. Chapters 2 and 3 are about the literature related to this research. Chapter 2 describes knowledge, knowledge management processes and activities in organizations and what are the enabling factors for knowledge sharing. Chapter 3 describes knowledge workers and their productivity. Chapter 4 is about the case of this research and it consists of the target state, current state and the gap analysis between them. Chapter 5 includes the discussion and conclusions. The structure of the thesis is illustrated in figure 1.

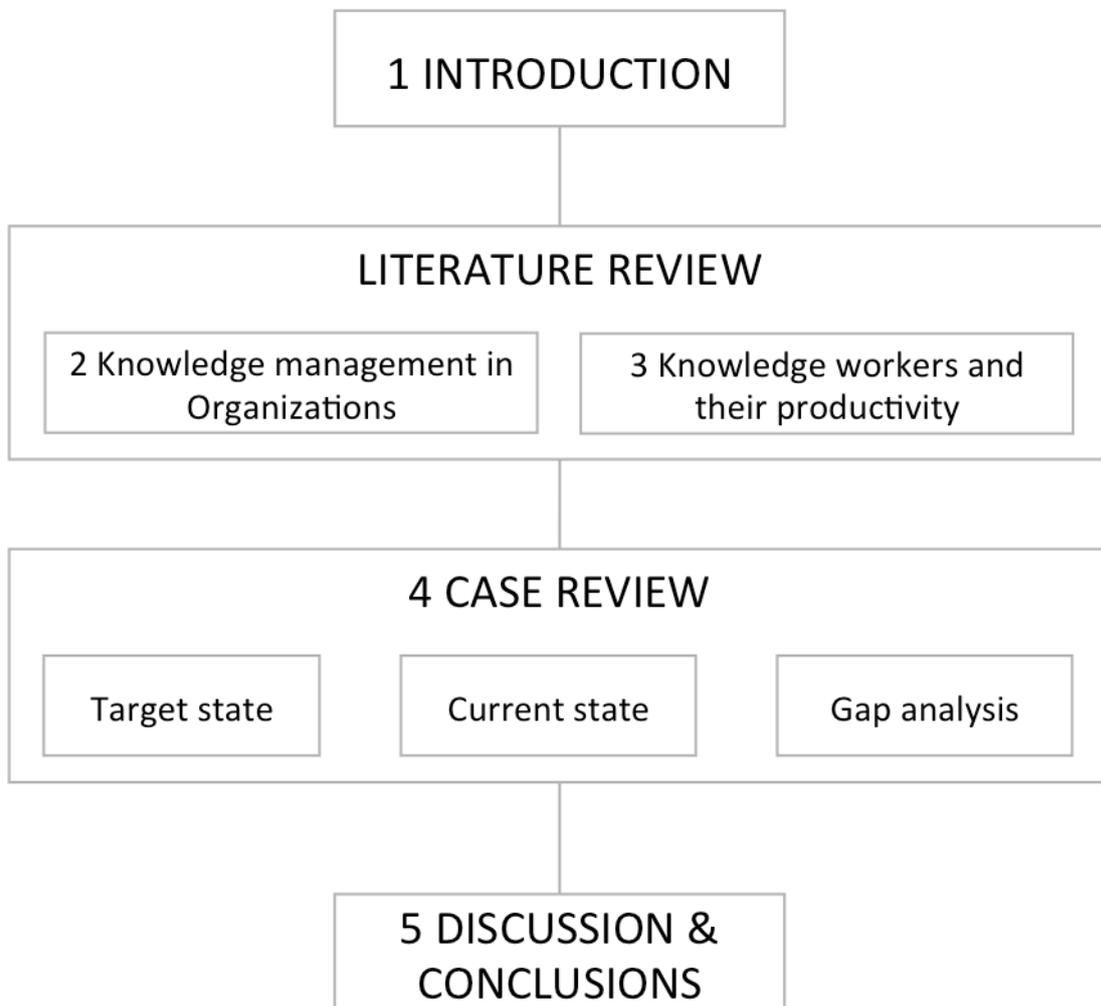


Figure 1: The structure of the research

2 KNOWLEDGE MANAGEMENT IN ORGANIZATIONS

Nonaka said in his 1991 article that “in an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge”. This is true for a consulting company that relies on the knowledge of its workers to help customers and also to create and develop new services further. Han and Anantamula (2007) also agreed to this. However, Li et al. (2009) argued that knowledge is a competitive advantage only if it “can be accessed and learned to enhance individual and/or organizational performance”.

Knowledge management is becoming an increasingly important part of an organization strategy (Newell et al., 2002). Jordan and Jones (1997) argued that the knowledge of the individuals is not of critically important from strategic point of view, but it is the organization’s “productivity in building, integrating and utilizing its intellectual capital which is vital”. Taminiau et al. (2009) stated the lack of knowledge sharing to be a large financial risk.

Often organizations think of knowledge management initiatives only in the information technology level (Han & Anantamula, 2007). Newell et al. (2002) stated that “ICT per se cannot actually manage knowledge”, but that “it can provide access to data and information, which will be interpreted by someone based on their existing knowledge”. The emphasis on technology often takes place over organization culture and attitudes (Davenport, 1998). Chinying Lang (2001) said it well, since knowledge is not the same as information, information technology cannot deliver knowledge management, but it is more about practices. Bollinger and Smith (2001) emphasized the method used to implement a knowledge management system as the critical factor.

2.1 Definitions of knowledge

One’s knowledge is built upon layers of acquired explicit knowledge but also tacit knowledge through experience, insight and intuition. Those things that one observes, hears, learns, experiences and realizes over time, can be used to create new knowledge, though they cannot be just processed but tested and used by the company as a whole (Nonaka, 1991). Nonaka (1991) claims that inventing new knowledge relates to not just an activity, but more to the way of behaving and being and acknowledging that everyone is a knowledge worker in the company.

There are no special individuals that create or invent new knowledge, everybody can contribute, he stated. (Nonaka, 1991.)

Polanyi (1966) defines tacit knowledge as knowledge, which is not actually documented, but the individual “knows” it from a combination of sources. Tacit knowledge is something not easily visible and expressible, and is highly personal and hard to formalize. Tacit knowledge is rooted in one’s self, created and gathered through experience, insight and intuition. (Nonaka & Konno, 1998.)

Explicit knowledge can easily be expressed in words and numbers since it is explicit. Explicit knowledge can be transferred formally and systematically, for example, through documentation. (Nonaka & Konno, 1998; Skyrme & Amidon, 1997.) Skyrme and Amidon (1997) also described explicit knowledge as objective. Explicit knowledge is basically documented tacit knowledge (Junnarkar and Brown, 1997).

2.2 Knowledge processes and activities

Knowledge management as a process can be defined in different ways, but most of the definitions in literature seem to be quite similar with one another. Allweyer (1999) described knowledge management processing with five processes: knowledge procurement, knowledge presentation, knowledge transfer, knowledge utilization and knowledge removal. Bhatt et al. (2001) described their five processes as knowledge creation, knowledge validation, knowledge presentation, knowledge distribution and knowledge application activities. Alavi and Leidner (2001) defined the knowledge processes as knowledge creation, knowledge storage/retrieval, knowledge transfer and knowledge application. Jordan and Jones (1997) divide knowledge management to five different modes: knowledge acquisition, problem-solving, dissemination, ownership and memory. Supyuenyong and Islam (2006) view knowledge management with four processes: knowledge creation and acquisition, knowledge organization and retention, knowledge dissemination and knowledge utilization. Chang Lee et al. (2005) define a knowledge circulation process with five parts: knowledge creation, knowledge accumulation, knowledge sharing, knowledge utilization, and knowledge internalization. Filius et al. (2000) define the knowledge management processes as knowledge acquisition, knowledge documen-

tation, knowledge transfer, knowledge creation and knowledge application. Rollett (2003) distinguishes the following processes: planning, creating, integrating, organizing, transferring, maintaining and assessing. Davenport and Prusak (1998) identify four knowledge processes: knowledge generation (creation and knowledge acquisition), knowledge codification (storing), knowledge transfer (sharing), and knowledge application.

Holsapple and Whinston (1987) identify knowledge management processes composed of the following activities: procure, organize, store, maintain, analyze, create, present, distribute and apply. Nonaka and Takeuchi (1995) divide knowledge management activities into three categories: knowledge creation, knowledge incorporation and knowledge dissemination. Demarest (1997) proposes different knowledge management activities: knowledge construction, knowledge embodiment, knowledge dissemination and knowledge use. Alavi and Marwick (1997) define six knowledge management activities: acquisition, indexing, filtering, classification, cataloguing, and integrating, distributing and application or knowledge usage.

To summarize the abovementioned processes and activities, these different processes were grouped by similarity and then matched with the processes most relevant to this study. The summary can be seen in table 1. There were processes and activities mentioned outside of this summary table, but those were left out of the summary because they appeared such a few times in the literature review.

Table 1: Summary of the different knowledge management processes by different authors

Process Author	Knowledge creation	Knowledge transfer and sharing	Knowledge utilization	Knowledge validation	Knowledge acquisition
Allweyer (1999)	X	X	X		
Alavi & Leidner (2001)	X	X	X		
Alavi & Marwick (1997)		X	X		X
Bhatt et al. (2001)	X	X	X	X	
Chang Lee et al. (2005)	X	X	X		
Davenport & Prusak (1998)	X	X	X		X
Demarest (1997)	X	X	X		
Filius et al. (2000)	X	X	X		X
Holsapple & Whinston (1987)	X	X	X	X	
Jordan & Jones (1997)		X	X		
Nonaka & Takeuchi (1995)	X	X			
Rollet (2003)	X	X			
Supyuenyong & Islam (2006)	X	X	X		X

For an organization, it is vital that the knowledge management processes are in place and are being utilized all the time. It is not enough just to capture and store information, but it requires interpretation from different perspectives of an organization (Bhatt, 2001). Researchers say that there is a straight commonality on knowledge management practices' success and the dedication and emphasis that management puts on knowledge management (Nonaka, 1991; Nonaka & Konno, 1998; Bhatt, 2001). Bhatt (2001) argued that an organizational culture change is needed and can be used as the starting point for knowledge management practices.

Davenport (2008, 224) states that focusing purely on process development is not enough, but changing knowledge work requires combining process and practice. Remus and Schub (2003)

distinct the difference between knowledge processes and knowledge intensive business processes, where the responsibility or ownership of the knowledge process usually belongs to a knowledge manager or, for example, a subject matter specialist, but with business processes the ownership belongs to the process owner, a business management role. They argue that established business processes could be enhanced with knowledge management roles. The knowledge management related roles they list as author, knowledge broker, community manager, knowledge partner and stakeholder, boundary spanner, coordinator for knowledge management, subject matter specialist, owner or manager of knowledge processes. (Remus & Schub, 2003.)

Remus and Schub (2003) emphasize the importance of transparency of corresponding processes when implementing process-oriented knowledge management. They feel that “process modeling supports transparency and facilitates the analysis and implementation of knowledge-related processes”.

Nonaka introduced the SECI model in his 1991 article. The SECI model describes knowledge conversion states between tacit and explicit knowledge. These conversion states can also be thought as knowledge processes. Through the SECI model the knowledge transformation from an individual level to an organizational level can be described. Transforming personal knowledge to others is a vital part of a knowledge-creating company’s success. (Nonaka, 1991.)

Nonaka & Konno (1998) describe knowledge creation as “a spiraling process of interactions between explicit and tacit knowledge”. In their article they described the four conversion processes of knowledge. These processes are shown in figure 2.

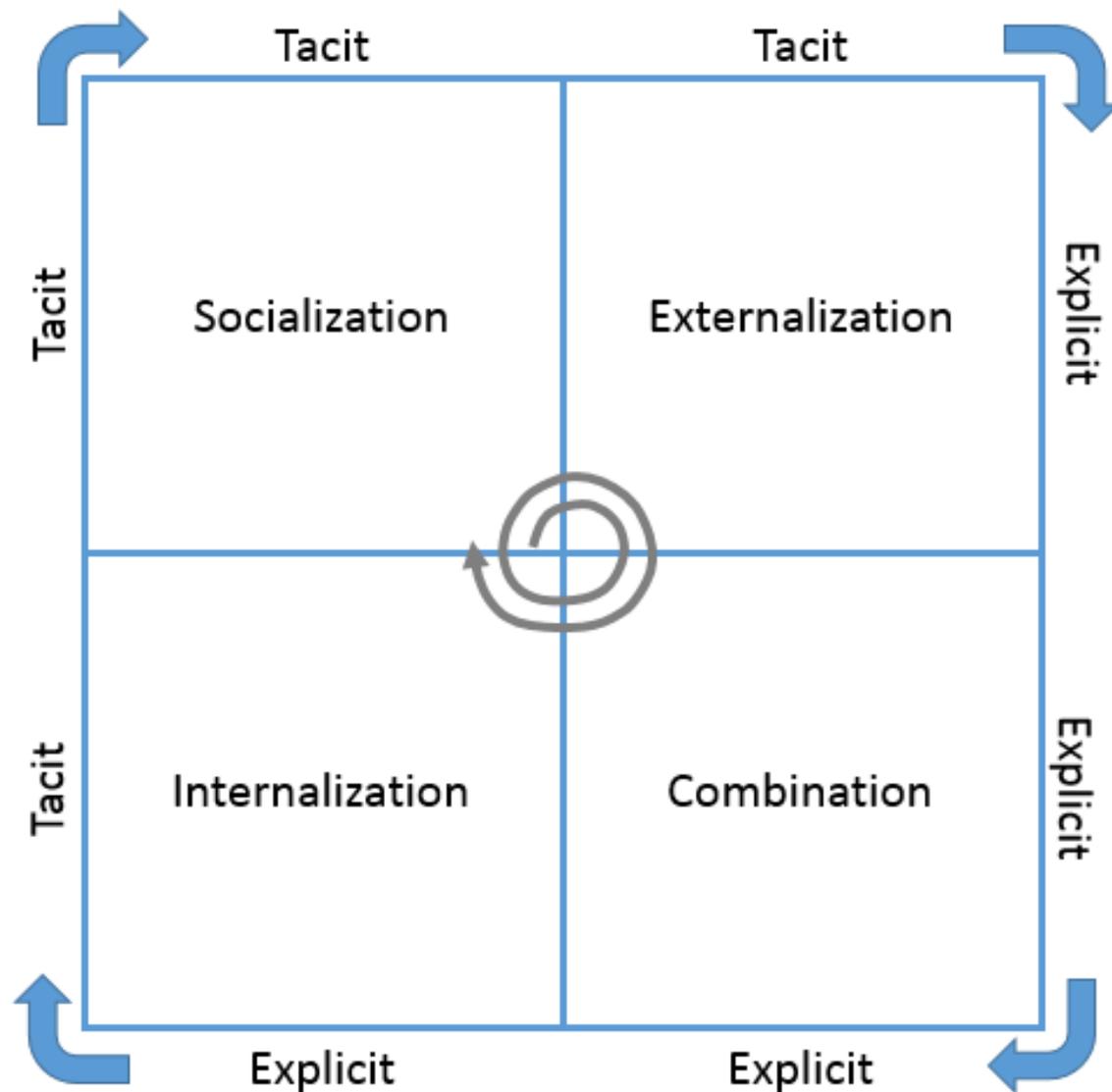


Figure 2: SECI model by Nonaka (1991)

Nonaka (1991) and Nonaka & Konno (1998) describe the four processes of creating knowledge in an organization as (figure 2):

1. Socialization - From tacit to tacit knowledge. Socialization involves the sharing of tacit knowledge between individuals. There is no systematic way of formalizing this kind of knowledge conversion. The tacit knowledge is something one learns by doing, observing and capturing through physical proximity. Socialization is very hard to convey to a practice in an organization as it happens on an individual level.
2. Externalization - From tacit to explicit knowledge. Externalization happens when a person is able to articulate their tacit knowledge by converting it into explicit knowledge,

thus allowing it to be understood by others. This can be achieved by, for example, documenting one's knowledge on a specific topic.

3. **Combination** - From explicit to explicit knowledge. Combination involves the conversion of explicit knowledge into more complex sets of explicit knowledge. An individual needs to be able to capture and integrate new knowledge to what he already knows, to use new knowledge directly in his activities and to combine discrete pieces of explicit knowledge into a new whole.
4. **Internalization** - From explicit to tacit knowledge. Internalization means converting explicit knowledge into the organization's tacit knowledge. As new explicit knowledge is shared throughout an organization, employees begin to internalize it – that is, they use it to broaden, extend, and reframe their own tacit knowledge.

These four processes create a spiral of knowledge. (Nonaka, 1991; Nonaka & Konno, 1998.)

Nonaka & Konno (1998) say that the SECI model serves only as an outline for knowledge creation. Finley and Sathe (2013) say that the SECI model can be generalized even to complex organizations where it also has potential to reveal the knowledge transfer gaps. Alavi and Leidner (2001) state that the model “is not pure but highly interdependent and intertwined”. They explain this through having each process rely on, contribute to and benefit from the other processes. Based on the SECI model Alavi & Leidner (2001) explained the knowledge creation processes between individuals (figure 3).

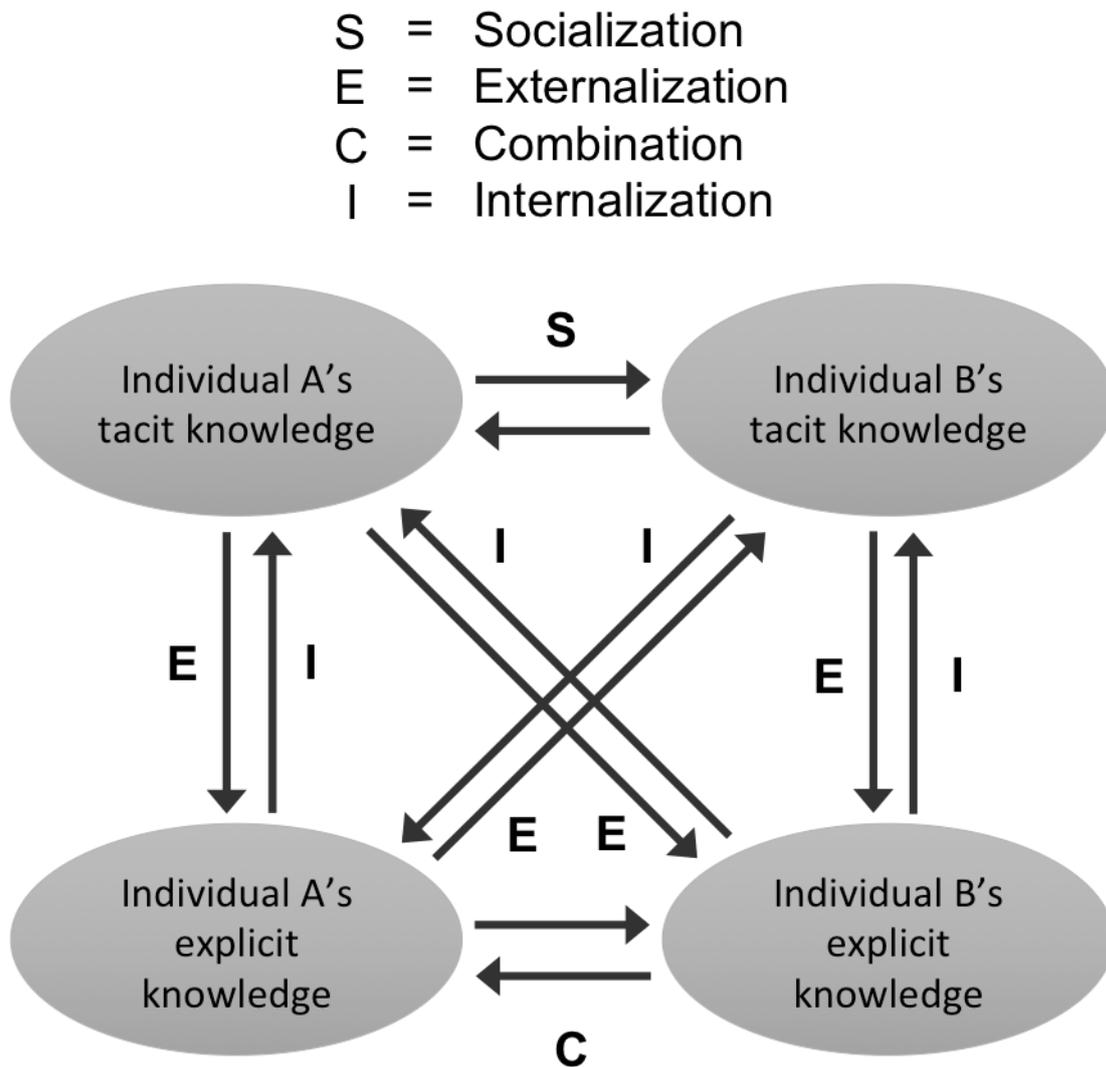


Figure 3: Alavi and Leidner's (2001) knowledge creation processes, where each arrow represents a form of knowledge creation

Organizational knowledge is not just the sum of the individuals' knowledge (Bhatt, 2000). Nonaka states in his 1991 article that if a company emphasizes knowledge creation and sharing, it organizes itself so that the organization structure and especially the managerial roles and responsibilities are designed to support knowledge creation. Knowledge creation needs to be taken into account in all structures and practices of the company. Unless top management and the managers are willing to do this, the climate and way of operating easily hinders knowledge creation and conversion between individuals and inside the company. (Nonaka, 1991.) Organizational knowledge creation involves developing new content or replacing existing content within the organization's tacit and explicit knowledge (Pentland, 1995).

Alavi and Leidner (2001) argue that knowledge transfer is an important process in knowledge management. Knowledge transfer occurs at various levels, of which they listed the following:

- transfer of knowledge between individuals,
- from individuals to explicit sources,
- from individuals to groups,
- between groups,
- across groups,
- from the group to the organization.

For highly context specific knowledge transfer Alavi and Leidner (2001) argued that personal channels may be more effective for knowledge transfer whereas impersonal channels may be most effective for readily generalized knowledge transfer. Robertson et al. (1996) argue that individuals are unlikely to encounter new knowledge in their normal interactions in their network since one tends to surround themselves with similar people who know similar things. This is why the role of information technology and the way it can support knowledge transfer is important. Bhatt (2001) said that accumulated prior knowledge makes it easier for an individual to accrue more knowledge.

There should be a systematic routine for acquiring knowledge outside the organization (Alavi & Leidner, 2001). Filius et al. (2000) list these kinds of knowledge acquisition activities as, for example, using experiences of the clients to improve products and services, and active participation in external professional network.

Knowledge sharing is about exchanging ideas, information and knowledge. It can be formal or informal and both can occur between individuals or groups. Knowledge gets reshaped and improved when it is shared (Collins and Hitt 2006; Ensign and Hébert 2009). Alavi and Leidner (2001) argue that the application of knowledge is more important than knowledge itself. They base this on the knowledge-based theory of the firm.

Kim et al. (2003) propose a method for analyzing knowledge flow. They present a knowledge management framework that consists of five steps: knowledge absorption, knowledge extraction, knowledge representation, knowledge implementation and knowledge deployment. Their

framework has been adapted to a more general and it is shown in figure 4. The framework shows how knowledge flows inside the organization. Knowledge is absorbed from operations in two different forms. People either interpret knowledge so that they can make it representable for implementation or then codified knowledge is extracted and presented for implementation. Implementation is done through systems, in this research through three different systems for the selected processes. From these systems knowledge is then deployed.

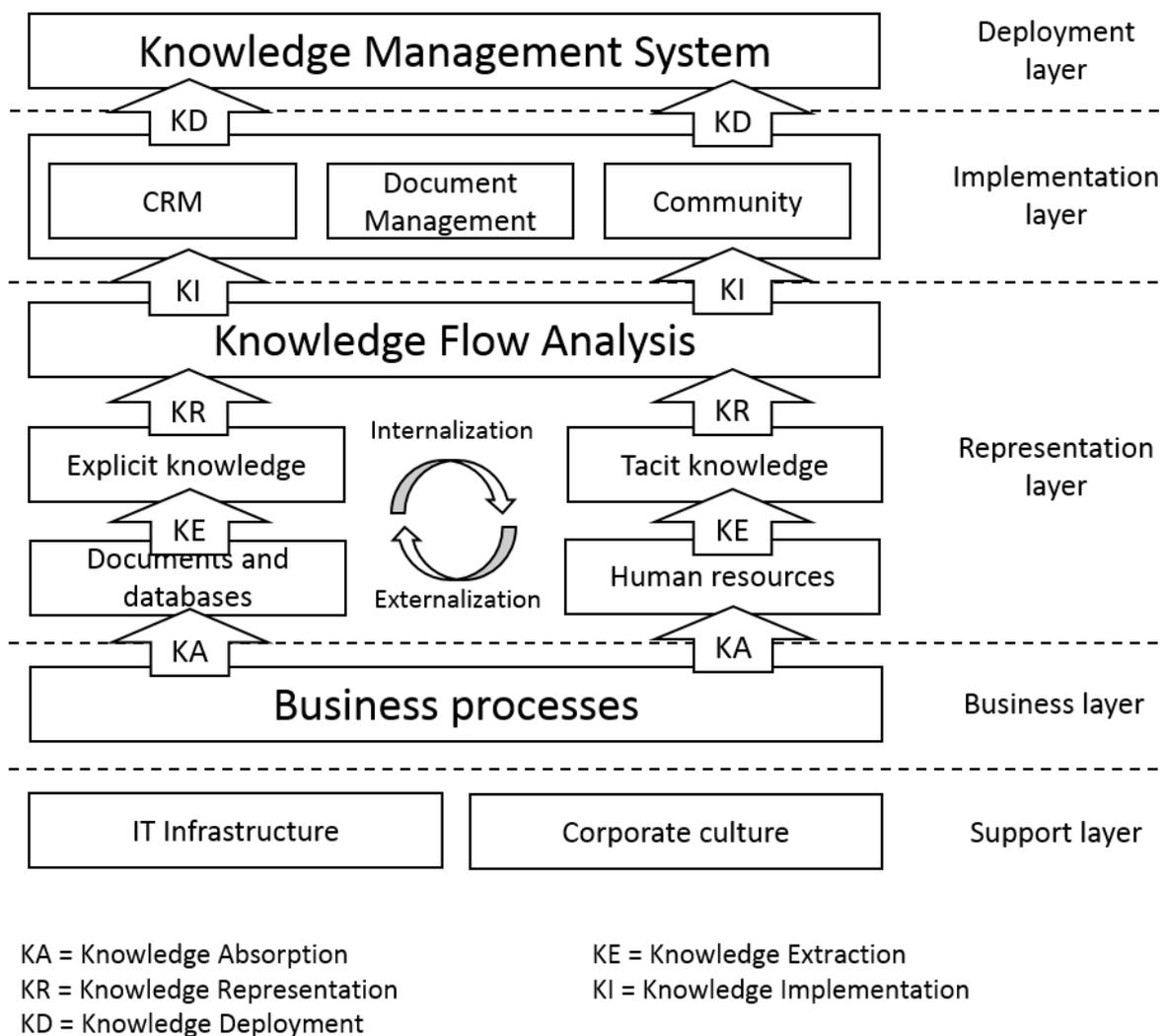


Figure 4: An overall knowledge management framework, adapted from Kim et al. (2003)

Knowledge management is not a straightforward process or an activity between individuals or groups, but it consists of many dynamic and continuous sets of processes and practices. The

processes are not linear, since an individual can create new knowledge (have a new insight) and apply it right after in his or her work (for example, use it as the basis for a decision). (Alavi & Leidner, 2001.) Jordan and Jones (1997) argue that the organization must first understand how knowledge is currently acquired and harnessed within the organization before the processes of knowledge management can be improved.

Birkinshaw and Sheehan (2002) approached knowledge management from the knowledge life cycle perspective. They differentiate four stages in the knowledge management life cycle: creation, mobilization, diffusion and commoditization. Birkinshaw and Sheehan (2002) stress that no company can master equally all four stages of the knowledge life cycle, since every stage requires its own expertise. They emphasize that the characteristics and ownership of knowledge changes throughout its lifecycle. Figure 5 illustrates how knowledge processes through the four stages as it develops over time. When knowledge is created it is accessible only to a small amount of people. As it evolves and gets distributed, more people and organizations come to know it. Organizations need to have different strategies on how to maximize the value of knowledge of the different stages, and this is why Birkinshaw and Sheehan (2002) say that it is really difficult for any one company to master all four stages of the knowledge life cycle.

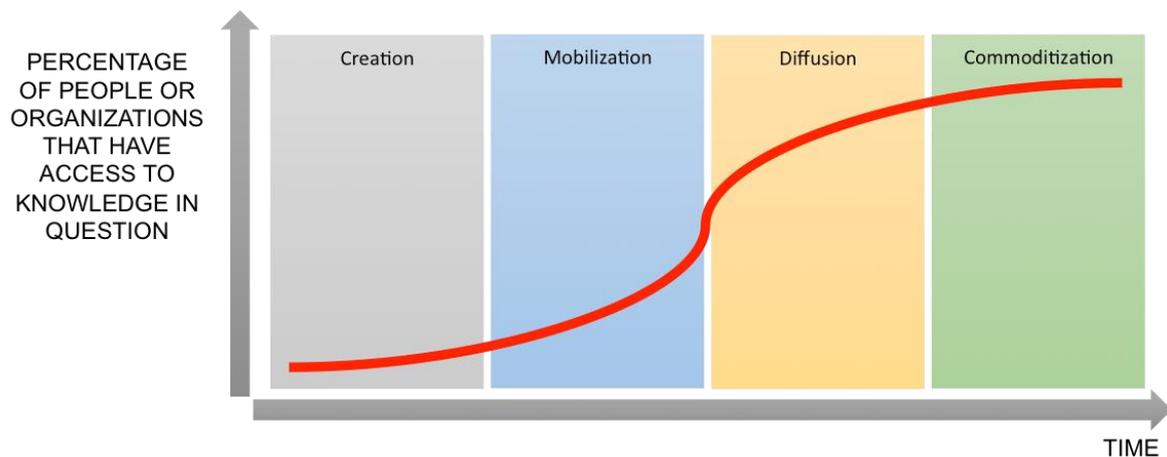


Figure 5: The knowledge life cycle by Birkinshaw and Sheehan (2002)

2.3 Enabling factors for knowledge sharing

The support of technology is important when storing knowledge, but equally important are the culture and social environment which supports knowledge transfer. Both technology and social interaction support the long-term competitive advantage of a knowledge company. (Nonaka & Konno, 1998; Bhatt, 2001.) For the social aspect Newell et al. (2002, 119) introduced the community approach to knowledge management, where communities of practice were seen as a vital role for knowledge acquisition and sharing. Communities of practice are not organized like teams, but gather people together voluntarily because they have something to learn and contribute. Wenger (2000) said that communities of practice should be cultivated rather than controlled. She also listed various ways in which to do it.

Related to the SECI model, Nonaka and Konno in their 1998 article, talked about the concept of *ba*, the place for knowledge creation. Basically, *ba* is a place and state for knowledge creation. The space can be any or a combination of a physical, virtual or mental space. According to Nonaka & Konno (1998) “what differentiates *ba* from ordinary human interaction is the concept of knowledge creation”.

Basically, enabling *ba* means that a company makes sure there are places, situations, practices and moments created to support *ba*. The physical place is not enough but knowledge has to be present as well. It is embedded in *ba*. By combining the place or situation and knowledge, one can acquire new knowledge through their own experience and by reflecting on other’s experiences. However, if knowledge is separated from *ba*, it is just information and it can be acquired no matter what the place or situation is. (Nonaka & Konno, 1998.) Nonaka & Konno (1998) state that the value creation emerges from the interactions within shared *ba*. Alavi and Leidner (2001) emphasize that for an organization to enhance its knowledge creation, it is important to understand the characteristics of various *ba* and the relationship with the processes of knowledge creation.

In their 1998 article, Nonaka & Konno introduced four types of *ba* that correspond to the four stages of the SECI model. This is shown in figure 6 where the conversions are shown between individuals (i), groups (g) and the organization (o). And like Nonaka and Konno (1998) said it

in the article “each ba supports a particular conversion process and thereby each ba speeds up the process of knowledge creation”. The four types of ba are:

1. Originating ba – the socialization phase. One shares their feelings, experiences and mental models in the originating ba. Face-to-face sharing of experiences is the form of knowledge conversion and transfer with tacit knowledge.
2. Interacting ba – the externalization phase. Interacting ba is more consciously constructed, as compared to originating ba. Here people learn from others, but also present/voice/reflect their own knowledge to others. Interacting ba is the place where tacit knowledge is made explicit.
3. Cyber ba – the combination phase. Cyber ba is a place of interaction in a virtual world instead of real space and time. Here explicit knowledge is combined with other existing knowledge to create even more complex explicit knowledge. This is the memory for the organization since the knowledge is documented for the organization in cyber ba.
4. Exercising ba – the internalization phase. Exercising ba facilitates individual’s conversion of explicit knowledge to tacit knowledge. (Nonaka & Konno, 1998.)

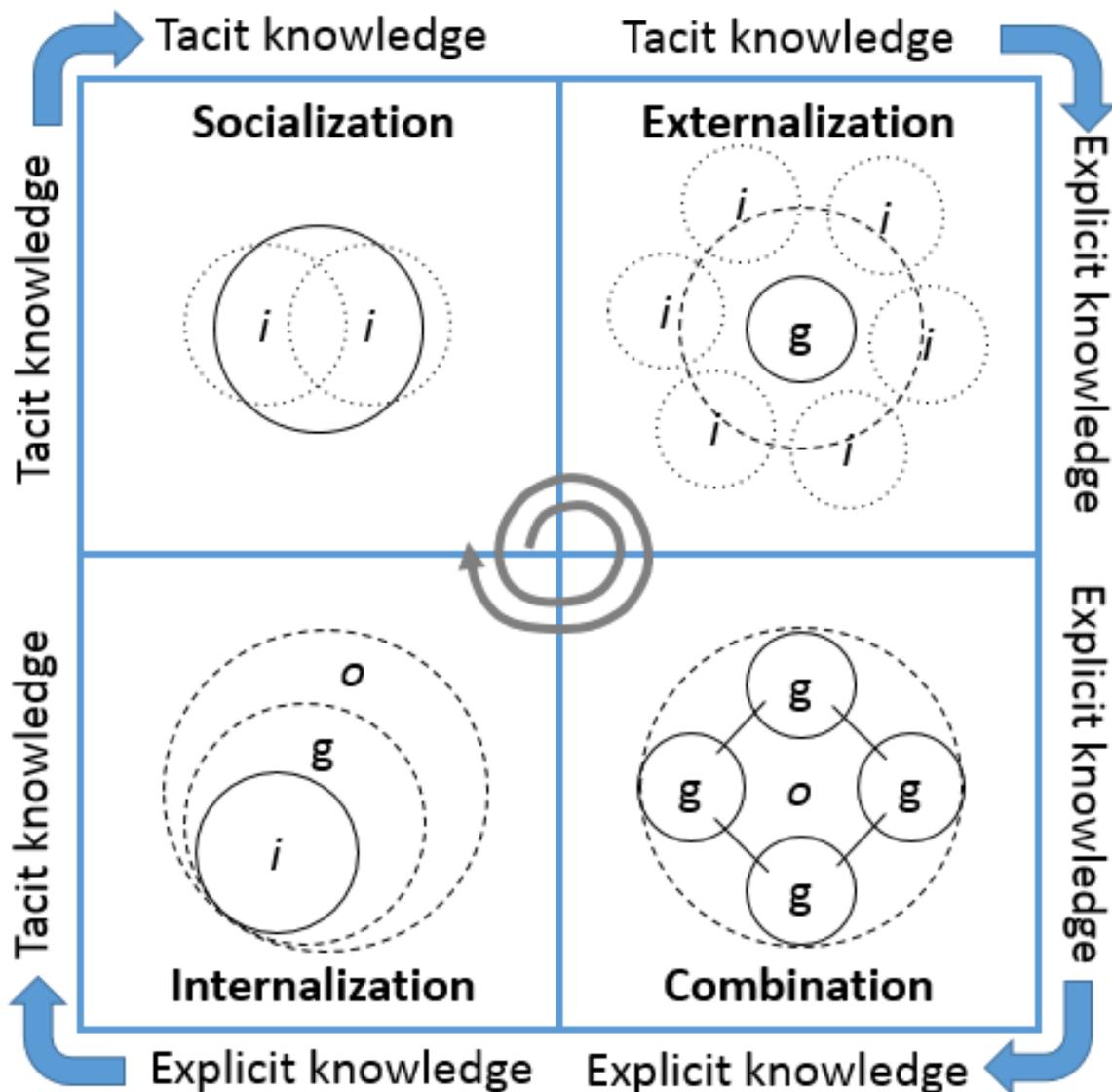


Figure 6: Four types of ba, which correlate to the SECI model phases (Nonaka & Konno, 1998)

Making sure that the organization is aware of the different characteristics of ba can support successful knowledge creation. Nonaka & Konno (1998) stated that with the help of ba, the continuous knowledge creation cycle in an organization is dynamic.

Since knowledge is the most valuable commodity for a knowledge worker, sharing one's knowledge can be a challenge. To share one's knowledge, one needs to have the motive to share. Ireson and Burel (2010) listed two broad types of motivation: intrinsic and extrinsic. Intrinsic motives come from one's within; they are more about self-expression, personal development and knowledge efficacy, whereas extrinsic motives are affected externally, for example

to enhance reputation, competition and expected economic or organizational rewards. Han & Anantatmula (2007) examined common organizational factors that influence a person's willingness to share knowledge. They categorized the factors in four: organization, technology, learning and leadership. Organization factors included trust among colleagues. If one had received shared knowledge from a colleague, they were more likely to share knowledge themselves. This, on the other hand, worked the other way around as well, if one had not received help, they were more reluctant to give help themselves. Ease of use was the top technology factors. Also sufficient training and learning how to make use of the technology provided for knowledge sharing was a vital part of the learning factors. Leadership factor includes managers' willingness to share their knowledge as well as foster the knowledge sharing culture of the organization. Han and Anantatmula (2007) pointed out that an organization should reconsider rewards and motivation factors that encourage employees to share knowledge. (Han & Anantatmula, 2007.)

Davenport (2008, 218) claimed that without rewards knowledge workers might be reluctant to share their knowledge. This has to be taken into account when designing the organization and its practices and processes related to knowledge management. Rewarding those that share and document their knowledge is important (Cabrera and Cabrera 2002; Kollock 1998; Van Lange et al. 1992). Cabrera and Cabrera (2002) say that cooperation increases if benefits connected with sharing knowledge grow. Similar points were also brought up by Wiig (1997). He stated that "leadership's primary focus should be on establishing a culture that respects knowledge, reinforces its sharing, retains its people, and builds loyalty to the organization". He also said that training, empowerment and support for supervisors were in a key role ensuring the promotion of the culture for knowledge management. (Wiig, 1997.)

Bollinger and Smith (2001) acknowledged a danger in making the knowledge management process too complicated, and recommended of a more natural and an easy process without too many rules. They recommended knowledge management to be directed toward two goals: effectively managing explicit knowledge with easily accessible systems, and ensuring a supportive culture that will encourage and facilitate the sharing of tacit knowledge.

3 KNOWLEDGE WORKERS AND THEIR PRODUCTIVITY

What characterizes the information age we are currently living in is the fact that many organizations employ knowledge workers instead of production workers. The significance about knowledge workers is that the organization is usually highly dependent on an individual's knowledge. Jordan and Jones (1997) say that companies need to have and manage resources that are difficult to copy, indicating that the organization cannot be too dependent on any individual's knowledge. As Newell et al. (2002) said, knowledge workers "'own' the organization's primary means of production – that is, knowledge". Drucker (1999b) and Wong and Neck (2012) point out that knowledge worker productivity is a key competitive factor for organizations.

3.1 Knowledge workers

A knowledge worker is a person who often has an academic degree and works with information. A traditional production worker works to produce an output of some sorts, for example, assemble a machine or move a box on a production line. Knowledge workers work with knowledge and there might not be any need to produce anything physical as the output of the day's work. There are also areas where these two are combined. One can think of a surgeon as a knowledge worker, but to do a surgery, they must do manual work to perform the surgery.

Davenport (2008, 219-220) introduced four different categories of knowledge workers based on the complexity of work and the level of interdependence it involves. He claimed that workers in these different categories respond differently to attempts to increase productivity.

Davenport (2008, 221) also segmented knowledge workers by five different approaches: knowledge activity, types of ideas which they deal with, cost and scale, how critical the knowledge workers are to the business, and mobility. For this research the most important segment of knowledge workers is distinguished by knowledge activity, whether a group of knowledge workers find knowledge, create it, package it, distribute it, or apply it.

Managing knowledge workers' outputs is different from production workers. Where one can easily see the effort of a production worker after a day's of work, for example, how many assembled products there are, for a knowledge worker there might not be anything physical or digital to prove of the day's labor. Knowledge workers require time to reflect and think creatively after which they can start producing tangible outputs (Davenport, 2008, 222). Similarly Drucker (1999b) pointed out that knowledge workers need to be thought as a capital asset to the organization, not as a cost.

3.2 Productivity of knowledge work

Productivity can be defined as a measure of efficiency of a person, what is one's output per unit of input. Basically, productivity is a determinant of cost efficiency. When thinking of a knowledge worker's productivity, productivity can be defined as how much information and knowledge one is able to create and utilize for an end goal.

Knowledge worker's productivity is differently measured than a production worker's. Where one can count the amount of material produced by a factory worker, there is no good measure for the productivity of a knowledge worker. With high degrees of expertise, the knowledge workers' main purpose is to create, distribute or apply knowledge (Davenport, 2008, 217). Eschenbach et al. (2006) say that "higher knowledge work productivity just means higher levels of results". Drucker (1999a) generalized that knowledge work productivity is the decisive factor for economic growth and competitiveness.

Eschenbach et al. (2006) analyzed knowledge work productivity and came to the conclusion that quality also needs to be taken into account with productivity. Drucker (1999b) pointed this out as well. Eschenbach et al. (2006) focused more on how effectively knowledge workers handle knowledge, their main resource. Quality standards on how to handle knowledge effectively are needed, since otherwise there is too much room for chance rather than systematic management. (Eschenbach et al., 2006.)

Drucker (1999b) defined six major factors that determine knowledge worker productivity. These six factors are:

1. What is the task and what is expected,
2. Autonomy,
3. Continuous innovation,
4. Continuous learning and continuous teaching,
5. Quality over quantity,
6. Knowledge workers seen as assets, not costs to an organization.

Webster's (2012) research showed that people use on average 2,3 hours per week on searching for, but not finding, documents. This equals to 3,7% of organization productivity loss. Her research also showed that on average 2 hours per week are spent on recreating documents that can't be found, which relates to 3,2% of organizational productivity loss. In the case company 45% of employees who replied to the survey said to spend 1-2 hours per week on searching for information from the case company's systems. In addition, 37,5% said to waste 1-2 hours per week on asking people who might know something about something. These equal to 2-4 hours per week (5,3-10,7% of working time) on time spent on searching for information. Clearly there are great productivity improvements possible if the company is able to reduce this time even with a few percentages.

Information work is document intensive. Knowledge workers spend a lot of time creating, reviewing and approving documents. (Webster, 2012.) Drucker (1999b) pointed well that for a knowledge worker to be productive, it requires changes in attitude not just for the individual knowledge worker but for the whole organization as well.

3.3 Knowledge management systems

Knowledge management systems are information technology based systems that enable storing, searching, creating and transferring information and knowledge. Alavi and Leidner (2001) suggest that information technology systems used for knowledge management shouldn't be constrained too much, but make use of all the different applications there are available for various uses. Information technology can increase and ease the access to different knowledge that would otherwise be out of reach for an individual (Alavi & Leidner, 2001).

In today's global economy, organizations need to find effective ways to engage key stakeholders to collaborate. Since different stakeholders can be at different parts of the world, providing a platform for communication and knowledge sharing is critical for an organizations success. (Guinan et al., 2014.)

Guinan et al. (2014) researched how an organization can start utilizing social technology to become more innovative and productive. They introduced three different approaches: a bottom-up approach, middle-out approach and a top-down approach. The bottom-up approach started from the grass root levels of employees, of young and tech savvy employees exploiting social technology to share knowledge and be more productive, the middle-out approach involved a selection of middle managers to drive the use of technology, and the top-down approach was led by top management to take initiative. From these the middle-out approach as the most similar to the case company would seem to be the most suiting approach.

Taminiau et al. (2009) researched consulting firms and how knowledge sharing impacted innovation. Being away from the office at customer premises and not having proper knowledge management system hindered consultants' knowledge sharing.

Sometimes tacit knowledge is hard to document. It depends on its kind. Newell et al. (2002, 105-106) listed reasons and gave examples of how just some knowledge is difficult to codify or document due to the fact that it's difficult or too costly to document, it's uncertain, dynamic or highly context-dependent. Sometimes due to these kinds of reasons, it is not feasible to document or codify tacit knowledge.

Advanced computer storage technology and sophisticated retrieval techniques can be effective tools in enhancing organizational memory (Alavi & Leidner, 2001). However, it should be noted that systems alone do not create knowledge management practices or culture, they are there only to support them. Without changing how people share and create new knowledge, systems do not support changes in knowledge management.

4 CASE QPR: IMPROVING KNOWLEDGE MANAGEMENT PRACTICES FOR BETTER PRODUCTIVITY

Knowledge management is coming an increasingly important topic for QPR Software due to its change from a software company focus to a consulting company focus. Knowledge is the most important asset it has together with its software products. Recruiting experts with different backgrounds has brought up the issue of knowledge sharing among the experts and also sharing their knowledge and experience with more junior consultants, now entering the business.

Developing knowledge management practices in QPR Software is led by QPR's virtual team for operational development. This team has been organized so that there is one representative from each unit in the operational development team, which leads all internal development projects. Depending on the project size, the projects are either approved on the executive management team level or then by the unit head. If the development project involves a big budget or major work time effort internally, then usually the go ahead decision about the project is done by the executive management team. The operational development team monitors the progress of all developments and has regular monthly meetings.

This research is one of the internal development projects that are followed by the QPR operational development virtual team. It focuses on the consulting sales and delivery processes of QPR's Finnish business unit. The target is to create knowledge management practices for this unit to test them out, and then, when and if found successful, rolled out to the whole company.

Current knowledge management practices and culture at the case company were not reviewed high in the internal knowledge management survey. There is clearly room for development. Also time is wasted searching for information and knowledge, which hinders productivity. (QPR Software, 2014c.)

4.1 The target state for knowledge management practices at QPR

The target for knowledge management practices at QPR is to have a vital organizational memory and knowledge base, enhanced with employees sharing their expertise to others on a

daily basis. Knowledge management has been incorporated to the business processes of QPR's operations. People understand the importance of knowledge sharing and are motivated to share their own experiences and knowledge. New employees joining the company are enabled with easy to use systems and activities that support their start and growing in the company.

Consulting sales is different than software sales due to the complexity of the consulting projects offered. Offers are tailored for the customer, so understanding the customer need is very important. Understanding of the customer need can be gathered by getting familiar with the customer while discussing their needs and wants with them over several meetings if necessary. Usually there is a sales person and a consultant involved in preparing the offer. This way the best knowledge of the case is with these two people. It is vital that when the project starts, the knowledge about the customer and the project is transferred to the consultants who will be delivering the project. Most of the time the consultant who was involved in the offer preparation is also involved in the delivery, but sometimes it is not so. For these cases especially, it is important that all the knowledge gathered in the offer phase is transferred to those delivering the project.

Consulting delivery projects vary from 5 to 100 days. They can be short, workshop intensive, or then longer with a specific target. An example of a longer project with a customer is creating a requirements specification for an enterprise resource planning solution. The knowledge that is needed in these projects varies from software knowledge to knowing and understanding industry specific business processes. It depends on the project what type of knowledge is required to deliver the end result. A project usually employs more than one consultant and this is why it is important that the consultants share their knowledge about the customer and the project between them. Especially if one consultant has previously already worked with the same customer, they have a lot of customer specific knowledge which they can share with other consultants. This enables them all to deliver services better. Knowledge transfer during and after the project is vital. The project team should share the new knowledge they've gathered during the project first between each other and then after the project has ended, also with other consultants in the company. Knowledge sharing after the project can be done, for example, through updating documentation and having a lessons learned session with others.

There is no need to have separate knowledge management processes in QPR since the target of the company is to integrate knowledge management practices into the existing business processes. Figure 7 illustrates the different phases of the consultancy sales and delivery processes. It was recognized that all except for one phase (highlighted in grey in figure 7) should have knowledge management practices integrated into them.



Figure 7: The phases of the sales and delivery processes, where only one phase does not include knowledge management practices (agreement phase)

The knowledge management activities integrated to the processes enable better knowledge conversion and transfer, but also improved knowledge creation is taken into account. What these activities actually are, is covered in more detail in chapter 4.3. The target states of the sales and delivery processes are shown in appendices 2-6.

From an individual's productivity point of view the target is to have information systems that support knowledge creation, searching for knowledge, knowledge transfer and standard material production. These systems enable people to find things easily so that they can reuse existing materials if they want, and also enable them to create new knowledge or enhance and update current knowledge in knowledge bases. This will make individuals more productive in their work since time is not wasted for searching information and materials.

The main knowledge management systems are to be a customer relationship management (CRM) system, a document management (DM) system and a knowledge base (KB) that has different features for storing information and knowledge and also to transfer knowledge by enabling discussion in an online discussion board. The information and knowledge stored in these systems is shown in figures 8 and 9.

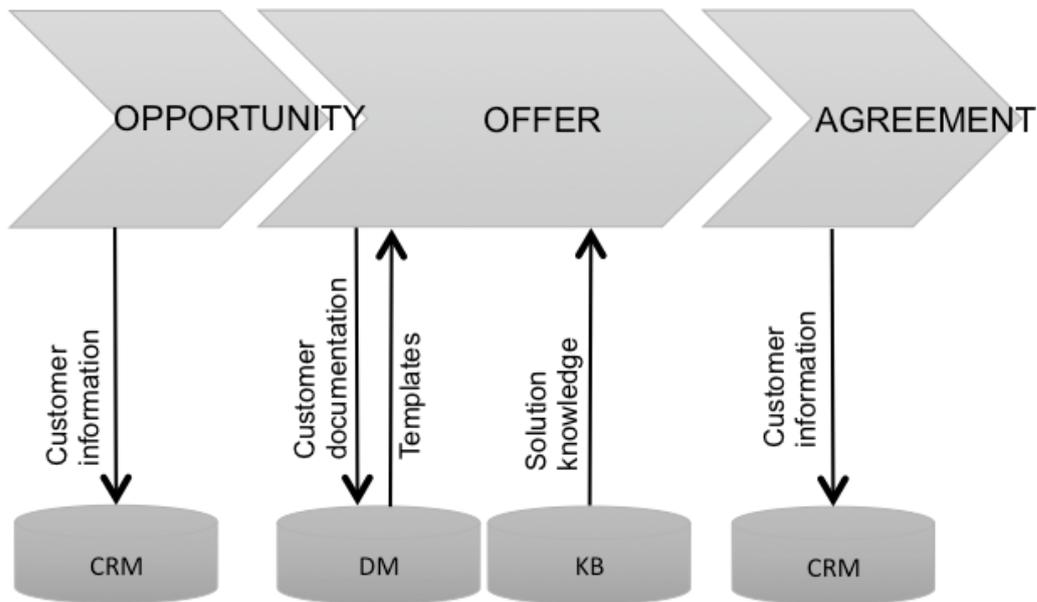


Figure 8: How knowledge management systems are related to consultancy sales process by which information and knowledge they hold

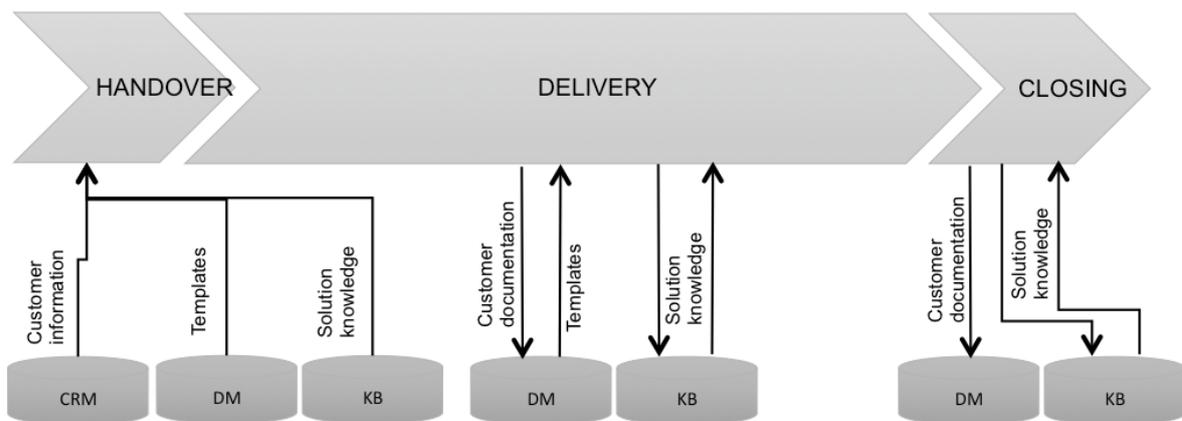


Figure 9: How knowledge management systems are related to consultancy delivery process by which information and knowledge they store

The enabling factors for knowledge management have been taken into account in the social setting in QPR. The company and its practices try to create opportunities for ba, to support knowledge transfer and sharing. People are motivated to share their knowledge due to a rewarding style of leadership. The rewarding leadership style takes into account individual knowledge that people have and leads by example to share what ever knowledge one possess. Extra appraisal is given to those who share.

4.2 Current state analysis

The current as-is state analysis of the sales process was done through interviews, where each sales manager was interviewed individually and notes were written to the current process model. The sales managers did not see each other's notes when they were interviewed to minimize influence. After the interviews had been done, the internal consultant made a suggestion of the current sales process model based on the interviews and it was then reviewed again with each sales manager. The process owner of the sales process and the head of development were also involved at this stage to agree on the finalization of the process model and omitting ownership of executing the new process into action.

From the interviews one clear fact came out: each person saw the process differently and there were no two common ways of actually operating during the process. People were aware that there was a process model of the sales process, but it didn't affect the way they operated on a daily basis. The main sales process deviations from these sales persons could be categorized into two different topics: roles and responsibilities and information technology system usage. Roles within the sales process were found unclear at times, since the sales process wasn't defined according to the current ways of working (or people didn't follow the process). Not all sales managers knew the different activities related to, for example, the handover from sales to delivery in the process. This was largely due to the fact that this part of the process wasn't clearly defined in the current process model. It was also unclear who is responsible for updating delivery project information to systems. Information technology system usage varied greatly depending on the person. There was no uniform way of using and filling the information within the systems. Some people filled information in great detail, others just those fields which were mandatory. (QPR Software, 2014d.)

In the knowledge management survey people who identified themselves with a consultant role weren't clear of their role in the sales process. Also sales people and consultants weren't too aware where to record customer specific materials. (QPR Software, 2014c.)

The delivery process was also taken under investigation. The current state was not fully modeled, and since several different operating models have been recognized for the process in reality, there was a decision not to model the current state, but to investigate how the process could

be done better. For this, selected consultants were invited to participate in two workshops about the challenges in the current delivery process and brainstorming possible ways to improve it. Based on these workshops a target state process model was modeled. Knowledge management related activities were taken into account in this target state process model.

The following deviations were listed from the delivery process:

- roles and responsibilities,
- no consistent way of delivery, and
- different ways of working by different individuals.

Roles within QPR, and sometimes even between QPR and the customer, were sometimes unclear to consultants. From the internal roles point of view, the pain point was in relation with the consultants taking part in the sales process and the consultants who were assigned to the delivery project. The knowledge sharing of the customer's situation from the consultant involved in the sales to the project delivery consultants didn't always work since there was no consistent way of doing the handover. The delivery process was not defined clearly enough and there was no systematic way of delivering projects, or at least it was not documented. This meant that sometimes the internal kick-off meetings or project closing meetings were not held. Consultants participating the workshops felt that QPR as a company was too flexible to meet the customer's needs and this was one of the reasons why each project was delivered a bit differently and depended heavily upon who was the project manager. (QPR Software, 2014a.)

The knowledge management survey (QPR Software, 2014c) also supported the finding that roles during the delivery process weren't clear enough to people, giving only a 6,8 average on a scale of 10. Best practices and delivery support materials were not known well enough by consultants. Also severe inconsistency was found in, for example, the project end meetings, both with customers and internally. However, consultants did know where to store the customer specific delivery materials.

4.3 The gap analysis between current and target state

There is a clear gap between the current and the target state of the consultancy sales and delivery processes at QPR. The gaps are analyzed through three different perspectives:

- clarity of processes,

- productivity, and
- enabling factors for knowledge management.

The clarity of processes means that both processes are modeled and through the process models roles and responsibilities are clarified. Clarification is done by going through the process descriptions with all people involved in those processes in a knowledge sharing session and making sure everyone understands each activity within the processes. Productivity means that the processes are lean and that people are aware of different support materials available. Enabling factors for knowledge management means the information technology systems support knowledge management practices and that the culture and leadership in the company emphasize and reward knowledge sharing and enable situations where knowledge sharing can happen.

Each of these three perspectives on the consultancy sales and delivery process are analyzed next. The current state is analyzed against the target state and based on the analysis improvement ideas are introduced. The gap analysis for knowledge management activities is done by looking at each of the process phases separately. Possible new activities related to knowledge management are introduced and current activities are enhanced with the knowledge management perspective.

4.3.1 Knowledge management activities in the consulting sales process at QPR

The first phase of the sales process is called opportunity. An opportunity is a recognized customer need to which the company has a solution for. An opportunity is often recognized either by a consultant working on a customer project or by a sales person. A consultant can discuss of customer's challenges with the customer and introduce an opportunity internally within QPR for this customer. A sales person can see a public bidding request in the public sector's public bidding system. No matter how the opportunity came to exist, in the opportunity phase of the sales process the opportunity is evaluated and it is decided if the company will start preparing and offer. At this stage preliminary information about the opportunity is put into the CRM system and an opportunity owner is decided. Opportunity owner is a new role in the target state process. This role is introduced to clarify who is responsible for the offer creation phase in the process. The opportunity owner can either be the sales manager responsible for the specific

customer account or it can be a consultant who either knows the customer from previous engagements and projects or is the expert of the solution area to which the opportunity is recognized for.

The knowledge conversion process in this process phase is internalization of the SECI model since it requires understanding of the customer need from given explicit knowledge. The knowledge transfers between different roles are described by figure 10. The figure shows how the opportunity owner is the main contact between QPR and the customer when trying to understand the customer need. At the end of the opportunity phase of the process it is decided whether or not an offer will be prepared for the customer. If the decision is not to create an offer, the opportunity is closed. If the decision is to start preparing the offer to the customer, the process moves to its next phase.

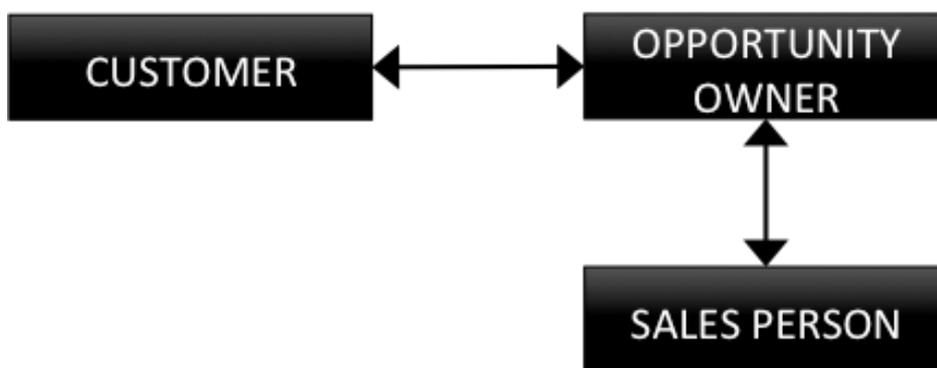


Figure 10: Knowledge transfers between different roles in the opportunity phase of the sales process

In the offer phase of the sales process an offer is prepared to the customer. The responsibility of the phase is with the opportunity owner who puts together the offer. During the phase the opportunity owner discusses further with the customer of their needs. However, in the public sector's public bidding process this does not happen since the public bidding is regulated by law. The sales person is also involved in this phase to finalize pricing and any other commercial part for the offer. The opportunity owner may, at his own will, consult another consultant or other consultants on the solution that is going to be offered to the customer.

Since the opportunity owner is a new role, clarity on the role's responsibilities is very important. The opportunity owner has the overall responsibility of the offer. The offer should include a clear description of the solution offered and that the customer expectations and delivery promise align with one another. The knowledge conversion processes in this process phase are externalization, combination, socialization and internalization, so all four processes of the SECI model. All these knowledge conversion processes are used at different stages of the offer phase of the sales process by different roles involved. The transfer of knowledge between the different roles in this process phase is illustrated in figure 11. Again, the opportunity owner has the main role of getting enough information for the offer creation.

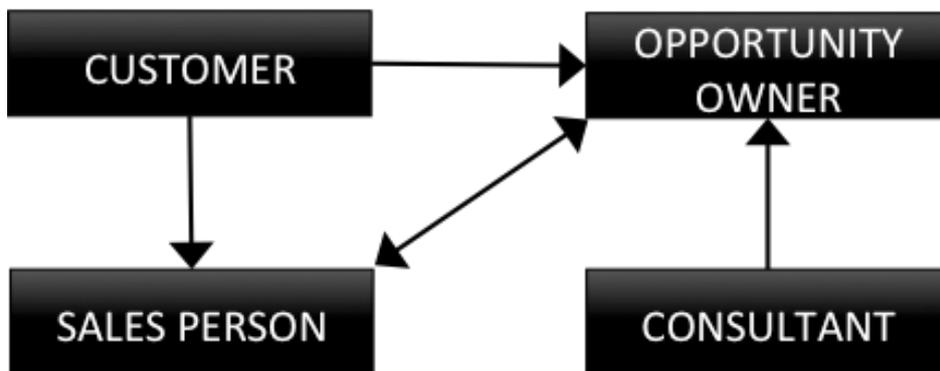


Figure 11: Knowledge transfers between different roles in the offer phase of the sales process

The workshops with the consultants brought up a fact that if the project is well planned in this offer phase, the project delivery has better chance to be executed well. This is because the project is already planned well, with clear targets and deliverables, which makes the handover phase easier and enables a smooth transition from sales to delivery. Challenges and confusion appear when targets and deliverables haven't been taken into enough consideration during the sales process and the offer doesn't include a clear enough description of them. Three aspects were recognized during the workshop for the opportunity phase:

1. A need for an internal "police" to check that people follow the defined process and practices of the sales process
2. Minimum requirements for each customer project need to be set already in the sales process
3. The upcoming delivery project's project manager should always be involved in the sales process.

(QPR Software, 2014b.)

Of the abovementioned aspects number one deals with discipline to follow the process. Number two is handled by providing checklists and templates for the opportunity owner to make sure the offer includes all relevant information. Number three is handled with the new role of an opportunity owner who should most often be a consultant who will then move to the project manager role once an agreement has been made with the customer.

When the customer has made a purchase decision of the service or solution the sales process moves to its last phase. In the agreement phase of the sales process the sales person who is responsible for the customer account, stores the agreement to the CRM. This phase of the process is short and ends the sales process. There is no knowledge conversion in this process phase, only information is stored to information technology systems. After the agreement has been received from the customer and stored in the CRM, the delivery process starts with the handover phase, which is part of the delivery process that is gone through in the next chapter.

4.3.2 Knowledge management activities in the consulting delivery process at QPR

This process phase is very short, but crucial for the successful delivery of the project agreed with the customer. In this phase the opportunity owner goes through the sales process for the project. All people who will be involved in the delivery project must attend this handover meeting. This is the phase where everybody's role in the project is clarified and the agreement, customer need and solution are gone through by the opportunity owner. If possible, the opportunity owner will take over the project manager role in the delivery project.

The knowledge conversion processes in this phase are combination, socialization and internalization, and the transfer of knowledge between the different roles in this process phase is illustrated in figure 12. As it can be seen from figure 12, this is a completely internal phase from QPR's point of view and the customer is not involved in it.

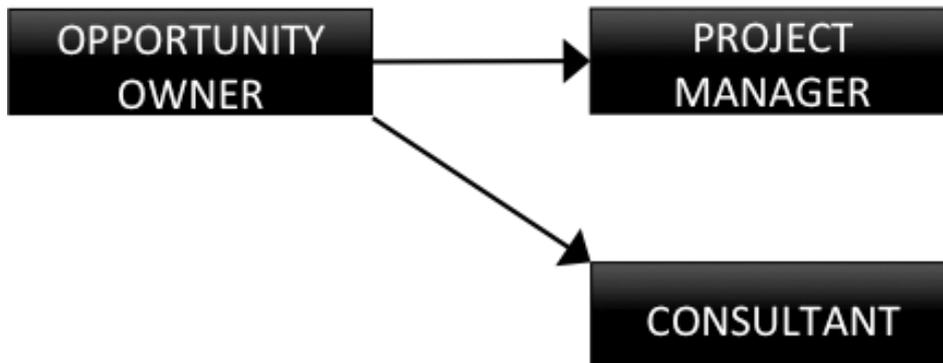


Figure 12: Knowledge transfers between different roles in the handover phase of the sales process

There is a clear room for improvement in the handover phase by making sure that every project, first of all, has a handover meeting, where everyone in the project is involved in. From the interviews it became evident that, at least, the sales person doesn't very often take part in the internal handover meeting. This has hindered the handover since no tacit knowledge from the sales person has been transferred to the consultants involved in the project. Like previously already mentioned, the consultants felt that the project delivery is done better if the project manager is involved in the sales process (QPR Software, 2014b) and now the new role of opportunity owner who then takes the role of project manager is introduced.

As a new way of operating in the internal handover meeting, it is suggested that the following topics are covered:

- customer contract,
- project plan,
- commercial information,
- customer expectations and promises from the sales process,
- minimum requirements for the project.

(QPR Software, 2014b.)

The delivery phase of the delivery process is naturally the longest phase and can vary greatly depending on the length and size of the project. Also there can be different amount of people involved in the phase, again dependent on the project and its length and size. From the knowledge management point of view this phase is important for knowledge creation, knowledge transfer, knowledge utilization and knowledge validation processes. New

knowledge is created throughout the delivery process, people involved transfer knowledge between them and with other stakeholders, existing knowledge is utilized and a lot of knowledge is validated throughout the project. This is all done within the project team that consists of a project manager and one or many consultants. Also the customer has a vital role for knowledge acquisition from QPR's point of view.

The gaps between the current and target states are more to do with the project management model than the roles and activities in the process. A more detailed project management model is modeled parallel with the process to support the delivery. This process phase includes all the knowledge conversion processes (externalization, combination, socialization and internalization). The transfer of knowledge between the different roles in this process phase is illustrated in figure 13.

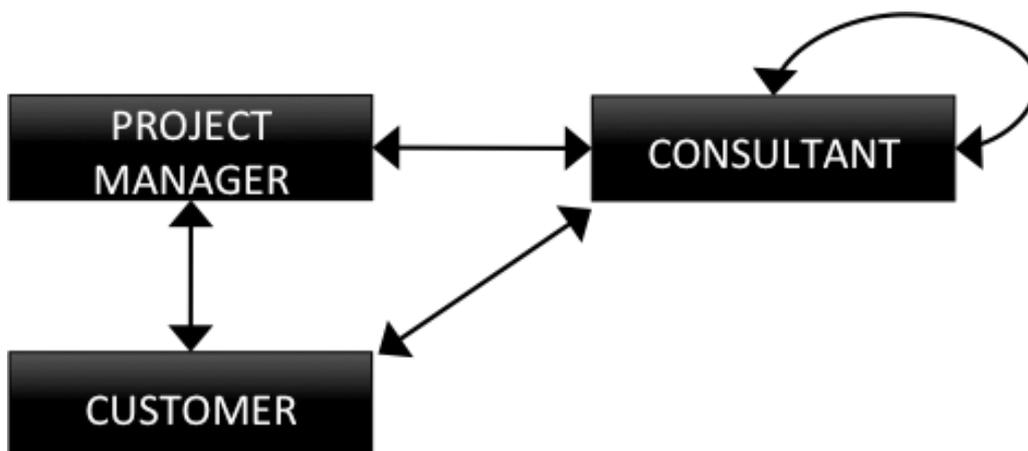


Figure 13: Knowledge transfers between different roles in the delivery phase of the sales process

From the knowledge management point of view, the closing phase of the delivery process is the most important phase of the sales and delivery processes. In this phase all new acquired knowledge needs to be transferred to the organization. This can be done in many ways, but these are the most important ones:

- customer specific knowledge is documented for future use,
- any new or validated knowledge related to the used solution is documented to the company knowledge base,
- a lessons learned meeting is held internally.

Socialization and externalization are the knowledge conversion processes in this phase. The transfer of knowledge between the different roles in this process phase is illustrated in figure 14.

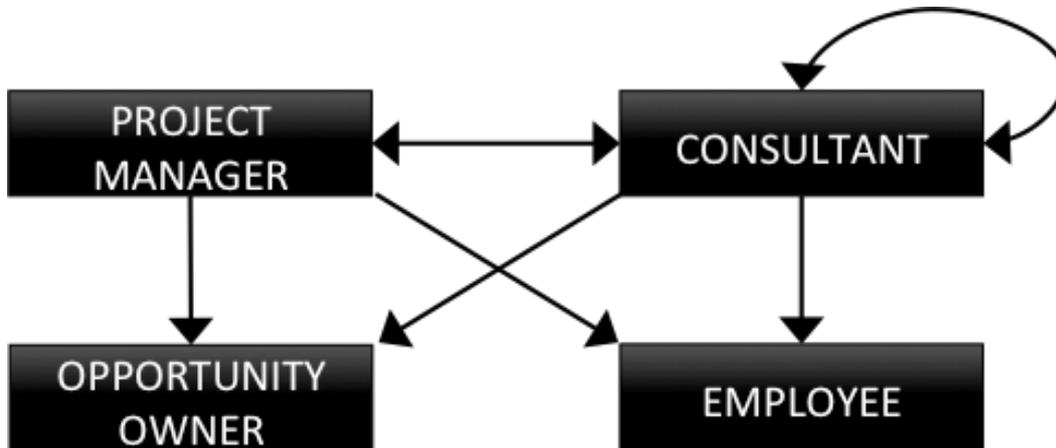


Figure 14: Knowledge transfers between different roles in the offer phase of the sales process

The internal closing meetings of the projects are not currently held systematically (QPR Software, 2014c). In the workshops the consultants all agreed that the project end meeting is a must in all projects, since it gives assurance that the project has ended and a lessons learned can be gathered and communicated outside the project group as well. The consultants stated that the project plan, of course, should include both closing meetings, the one with the customer and the internal one. (QPR Software, 2014b.)

Analyzing each phase of the sales and delivery processes, the most important knowledge management processes and activities that are integrated to the business processes are knowledge acquisition (especially from external sources, i.e. customers), knowledge utilization, knowledge creation, knowledge transfer and knowledge validation.

Knowledge acquisition happens throughout the processes, especially when interacting with customers. Knowledge creation happens during the processes when material is produced. Knowledge utilization and validation happens throughout the delivery process when consultants work with each other and with customers. From an internal perspective knowledge transfer

happens when consultants discuss and present case documentation to one another in project end meetings.

How the SECI model can fit into QPR is described next and illustrated in figure 15. Socialization is best done in junior-senior consultant co-delivery of a project, where the senior consultant has a lead role and the junior consultant is there to support and learn at the same time. This is exactly how the socialization best works, when one can monitor and retrieve knowledge from a more experienced colleague in a specific customer setting.

Externalization could be best done through case presentations during internal knowledge sharing sessions. The case presentation would cover the following topics:

- what was the customer challenge and what solution was offered,
- how the delivery was executed,
- lessons learned and any best practices that could be applied in other cases.

After the presentation an in-depth Q&A session would best answer more detailed questions one might have.

For combination using the online community is suggested as it can be used to store knowledge through the following items:

- best practices,
- presentations,
- offering development (service product material), and
- discussion.

Internalization is the responsibility of the employee as well as his supervisor. The supervisor needs to make sure that people have enough time to learn from others and also they need to have support for experiencing new things. This is the most time consuming phase from an organization's point of view.

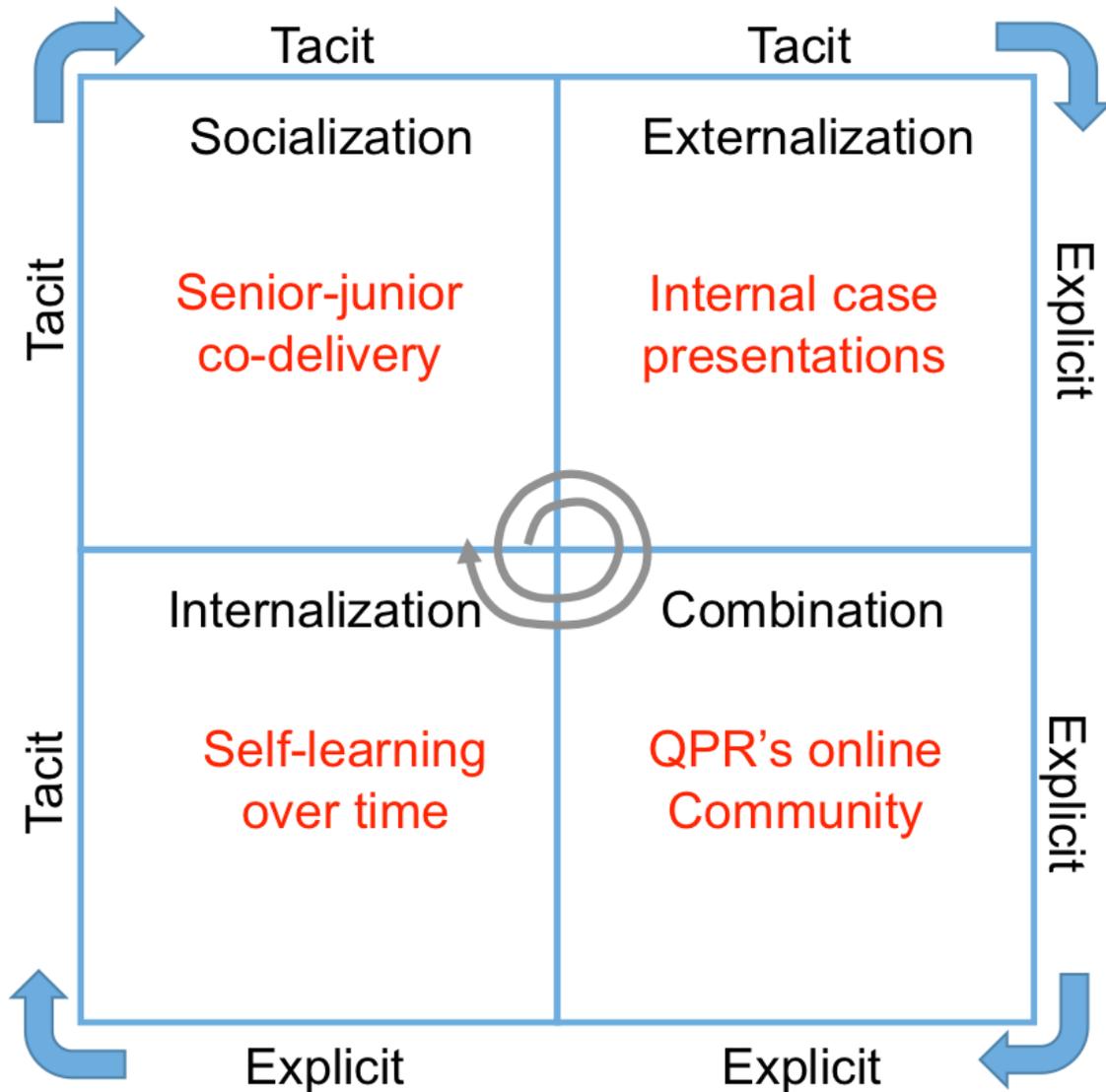


Figure 15: How to put the SECI model's phases into practice at QPR

4.3.3 Enabling factors for improved knowledge sharing in QPR

From the literary review it was found out that there are several enabling factors to knowledge sharing within organizations. They all have certain kinds of effect on how successful knowledge management practices are in an organization.

Technology is usually the first thing that is thought of when discussing knowledge management. Systems that enable knowledge storing are vital. Systems need to be easy to use, accessible, searchable, and support different forms of knowledge. Discussion forums can be used for short

specific knowledge descriptions or discussions on, for example, how something is or can be done. White papers and best practice articles are another way of documenting knowledge and storing it to a system. In QPR an already existing online community can be used for this purpose. The QPR Community supports both internal and external knowledge sharing in different forms: discussion, articles, and document upload and download. Besides the online community a proper document management system is needed to manage the creation and management processes of documents. What is meant by this is the versioning, commenting, archiving and overall management of documents. There is no such a system in place that would support these activities well. The current CRM is sufficient to store customer specific information, although the information stored should be defined and structured more clearly.

The social aspect was also mentioned as important. Either communication through common information technology channels or then through face-to-face discussion, the social aspect has the ability to discuss and have people participate and contribute to discussion. In QPR the online community offers a chance to discuss or post a question that is not specific to time or place. Internal lessons learned meetings and knowledge sharing sessions best suite situations where something is presented and then there can be discussion about it. This would work well for the knowledge validation process. Not everything can be written down as documentation, for example, discussion on topics, debate even, or weighting different options. Sometimes it is enough just to know what is possible without knowing how to do it. It would be important that ba is enabled and all different forms of ba (originating, interacting, cyber and exercise) are supported. More about this in detail in chapter 5.

Motivation for knowledge sharing was discussed as an enabling factor. There should be such practices in place that support knowledge sharing and reward those who do it. Knowledge sharing could be rewarded better in QPR. At the moment time spent on knowledge sharing doesn't, for example, hinder consultants' targets but it is not encouraged either on an organization level. Monetary reward doesn't always work as effectively if one doesn't see it as a motivational factor, but perhaps a combination of status reward and game-like prizes could boost the culture toward knowledge sharing. Or then just as simple as an appraisal in front of others might work for certain types of people.

Leadership can help with the motivation. If the top management puts a priority to knowledge sharing and makes sure it is part of the practices in the organization, a knowledge sharing culture can be born more easily. The support and time allocation that management and supervisors can give is a major enabler. In QPR top management needs to make knowledge management a priority and support it through organizational practices, technology, and culture and leadership improvements. Supervisors have a main role in reminding, training, supporting and rewarding their team members for knowledge sharing. One major factor is leading by example. If a supervisor doesn't openly share their own knowledge, or doesn't encourage people to do so, a knowledge sharing culture cannot exist.

In the workshops the consultants brought up courage to ask as a factor, but also discussion and sparring. Somehow the time for these activities should be found on a daily basis. The consultants acknowledged that hearing about other projects gives more insight to one's own work. (QPR Software, 2014c.) This is why the sharing of the lessons learned meeting findings is important.

4.3.4 How could productivity be improved in QPR?

As the research stated in chapter 3.2 a lot of time is wasted searching for information and documenting things. This was shown also in QPR's internal survey (QPR Software, 2014c). Better document management systems to support managing the different statuses of documents and better search functions into the organization's knowledge are key points for improving the productivity related to these matters.

Too much time is wasted creating something that already exists but one is not aware of. Knowing what kind of information and knowledge should be documented, in what format and in which system is vital. The guidelines for these topics need to be clear, so that people know where to document what knowledge. The consultants brought up the fact that it is a real problem when one doesn't know what material is available and what the latest version is (QPR Software, 2014b). The CRM and knowledge base in the form of QPR Community serve the knowledge management needs quite well already, although the use of QPR Community could be increased, especially for knowledge creation and knowledge transfer. A document management system is needed with excellent search capabilities. This is one major obstacle for the effective reuse of

existing materials and making material available and visible to others. Without a document management system, big improvements in individual productivity cannot be expected.

Productivity also relates to clear role and responsibilities definition in the sales and delivery processes. If one is aware of what is expected of them and one knows what material to use or produce, then time is not wasted as much as it would if one wasn't aware of these.

As a summary, the things that remain the same from the current state to the target state are:

- the opportunity phase of the sales process,
- the agreement phase of the sales process,
- the information technology systems in use.

Things that change between the current and target states:

- the offer phase of the sales process,
- the handover phase of the delivery process,
- leadership style rewards knowledge sharing.

Things that are totally new in the target state when comparing to the current state:

- the delivery process with project management activities integrated into it,
- making sure people follow the processes accordingly,
- opportunity owner role in the sales process,
- the emphasis on knowledge creation and transfer in the delivery process.

5 DISCUSSION AND CONCLUSIONS

The objective of this research was to identify the knowledge conversion phases in the consultancy sales and delivery processes of the Finnish business unit, to document knowledge appropriately and to create a best practice for the company's knowledge management activities in sales and delivery processes. Chapter 2 was about knowledge management in organizations, the processes and activities related to it and the enabling factors for knowledge sharing. In chapter 3 the focus was on knowledge workers and their productivity, one aspect of productivity being knowledge management systems. Chapter 4 covered the research of the case company and how it could manage its knowledge by improving knowledge management practices and at the same time improve individual productivity.

5.1 Evaluation of the research process

The objectives of the research were met by identifying the knowledge conversion phases in the selected business processes and suggesting best practices as enabling factors for knowledge sharing within the company. The chosen research type, action research, worked well in this case. The processes in question in the case company are under continuous improvement and development, and the changes are mostly done through observations and experiences.

The scope of the research was narrowed down to one business unit and the sales and delivery processes of the unit's consulting business. This helped focusing the research. The current statuses were analyzed for both processes. The sales process had previously been documented as a process diagram, but during the sales person interviews it became evident that the diagram didn't depict the actual ways of working. The process varied according to the different people even in the same role. Feedback was collected from the sales persons and the target state was designed. The delivery process was a bit different since the current state was not documented. It was recognized that there were too many different ways of operating for making a current state description of the process. Two workshops were held with a few selected consultants to discuss the pain points and development needs for the delivery process. With the feedback in mind the target state of the process was designed. The target states of the processes were designed to make sure that knowledge management activities could be integrated into the business processes, since the company didn't want to separate the knowledge management

processes from the business processes. In addition to the process activities, other enabling factors were recognized for knowledge management. The overall target with the knowledge management activities is, in the long term, to increase the productivity of individual employees in the company.

5.2 Literature summary

From the literature, it was obvious that in today's world more and more work is done related to information and knowledge, rather than manual labor. Those organizations that can develop their knowledge management practices to a high level, are able to be competitive in the market. Knowledge management processes were discussed and it seemed that there were common thoughts on them. Out of the many different kinds of knowledge management processes listed in chapter 2.2, the five that were linked to the case company's processes, were knowledge creation, knowledge utilization, knowledge validation, knowledge transfer and sharing, and knowledge acquisition. Knowledge conversion states were integrated to the business processes. Socialization, externalization, combination and internalization states were recognized in the processes and enabling factors for them were introduced. Technology in the form of knowledge management systems was discussed. Systems alone do not enable knowledge management, but they are a major enabler for the knowledge management practices for organizations. With the support of the systems, knowledge creation, utilization and sharing can be made easier. Creating spaces like ba supports knowledge conversion between individuals and groups. Motivation to share knowledge plays a role also on an individual level. An organization should find its ways to motivate people to share their tacit knowledge. From productivity's point of view it was clear that finding information and knowledge is a key factor. One needs to know what can be found from where. Good knowledge management systems can also help to increase productivity by reducing the time spent on searching for things.

The findings of the empirical research support the knowledge management theories from several points. First of all the current systems and the way they were used did not help knowledge sharing. Also the current document management system, or the lack of such system, decreases productivity of the individuals. Roles within the processes were unclear and people did things differently. By defining the processes and making sure they include knowledge management activities, roles and responsibilities should be clearer to people.

5.3 Summary of the results

The main empirical findings of the research were the challenges in the processes. In the sales process roles were unclear and systems were used inconsistently. In the delivery process there was no common way of working since individuals did same things differently. Also roles were often unclear in the process. On the basis of the findings it was clear that the processes needed to be modeled to bring clarity to roles and to create a common way of working. For productivity's sake, knowledge management activities were integrated to the processes as well as enabling factors for knowledge sharing were suggested.

As a summary the research questions in this research are answered next. One of the questions was about how knowledge management practices are usually organized in organizations. Knowledge management's link to strategy was brought up by Jordan and Jones (1997) and Newell et al. (2002). Many also discussed how knowledge management is often thought as information technology systems or as an information technology initiative (Han & Anantatmula, 2007; Newell et al., 2002; Davenport, 1998; Chinying Lang, 2001; Bollinger & Smith, 2001). Although important, knowledge management systems alone do not enable or guarantee good knowledge management practices. As the main factor knowledge management processes were heavily discussed. There has been a lot of research related to knowledge management processes and different people saw the knowledge management processes differently. However, three processes were most common with all. These three were knowledge transfer and sharing, knowledge creation and knowledge utilization. In QPR the knowledge management processes and activities were integrated to business processes. Information technology system support was also highlighted and there was a clear lack of a document management system to support the practices well enough.

The second research question was about knowledge conversion and which practices support it. Nonaka and Takeuchi's (1991) SECI model was introduced as it has four knowledge management processes that convert tacit and explicit knowledge in different interactions. Socialization (S) is the interaction between individuals. It is nothing systematic but more about interacting face-to-face and learning from one another. Nonaka and Konno (1998) described this state as originating ba. In QPR this can be achieved when two consultants work in projects

together. Externalization (E) converts tacit knowledge to explicit knowledge by articulation. This is where the explicit knowledge is consciously constructed and the state to support it is interacting ba. In QPR knowledge sharing sessions about cases enable this. Combination (C) happens when already existing knowledge is constructed to even more complex knowledge. Combining pieces of knowledge to a new whole create the cyber ba state. In QPR the online QPR Community supports this knowledge conversion state. Internalization (I) happens to an individual over time by internalizing the explicit knowledge available and converting that to tacit knowledge. The state supporting this conversion is the exercising ba and in QPR this happens to consultants over time by self-learning.

The third research question was about which factors affect individual productivity for a knowledge worker. Knowledge workers work mainly with information and knowledge and the access to these is the one of the key issues related to productivity. Of course, information technology systems have a big impact on the productivity. If systems are available, they are easy to use and can be accessed easily from anywhere, productivity can be improved. Also the quality aspect of knowledge and the knowledge workers' output was brought up. In QPR one of the challenges related to productivity was that people were wasting time searching for information and knowledge. If this wasted time can be reduced, productivity increases.

The main research question was how the development of company wide knowledge management practices improve productivity. Figure 16 answers this question. There are two kinds of knowledge, tacit and explicit. There are different states that support the conversion between tacit and explicit knowledge and between individuals, groups and the organization. Knowledge conversion happens throughout different knowledge management processes. The continuum of these processes, knowledge acquisition, knowledge creation, knowledge utilization, knowledge validation and knowledge transfer, enable knowledge management in an organization. These processes and practices are enabled by different factors. Culture of the organization needs to be supportive of knowledge sharing. The culture shows through leadership. An individual's motivation to share knowledge, of course, is an issue. If one is not motivated to share knowledge, it is difficult to make that person do the activities related to knowledge management. Systems make knowledge sharing either easy or difficult, but do not enable it alone. There should always be different opportunities for ba, that enables better

knowledge conversion. Through these factors, the knowledge management and productivity can be enabled in an organization.

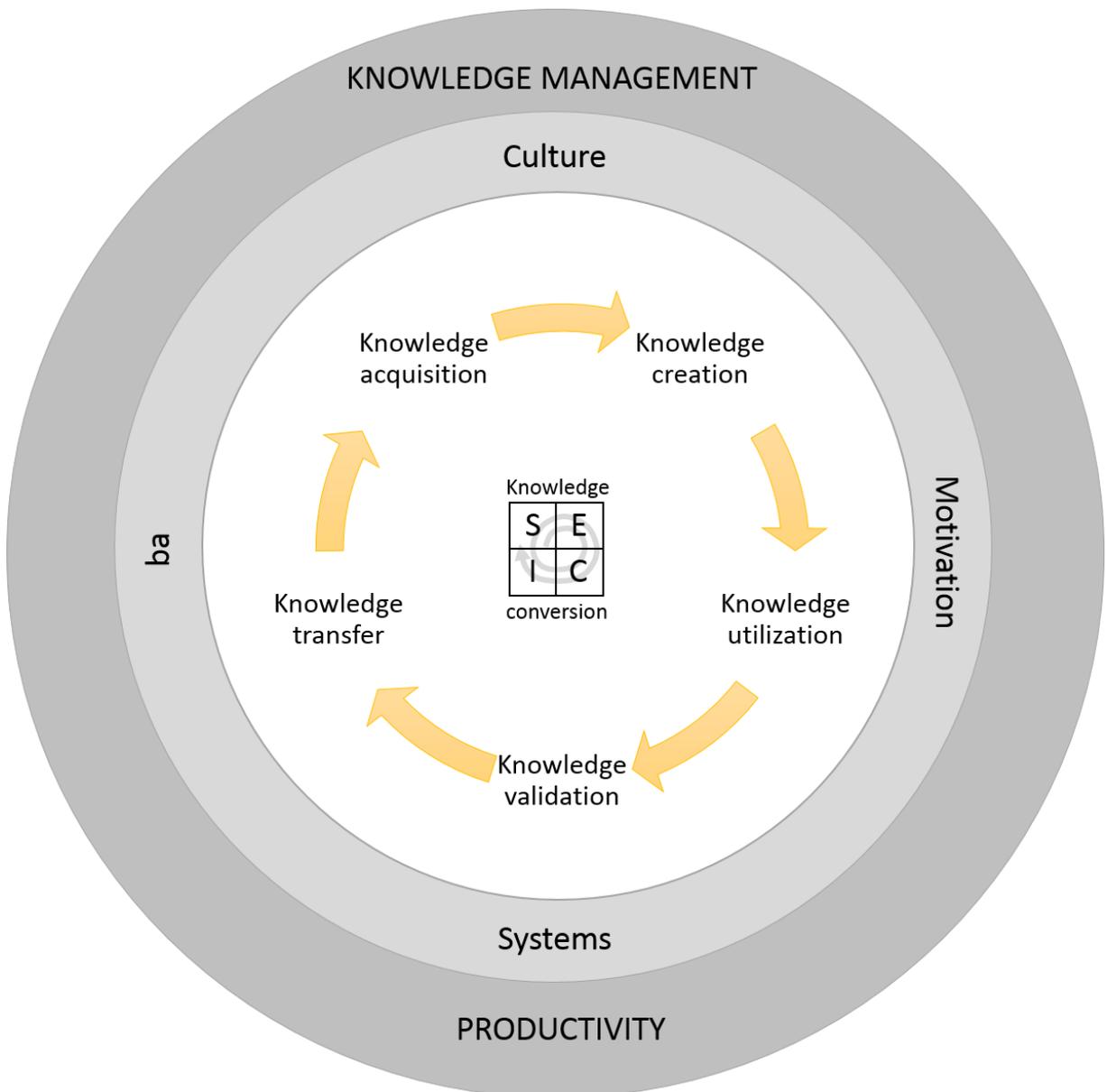


Figure 16: The linkage between knowledge management and productivity and what factors enable them

The limitations of this research were the time scale of where things were researched and also that the research only included one business unit. If the research would have extended to other business units with the same processes, even wider research could have probably been done.

This would have enabled also benchmarking. For future research it would be recommended to analyze several consulting companies and the way they have integrated knowledge management to their business processes, and how they improve individual productivity. Also an interesting factor for research would be that is the recruitment of knowledge workers easier if there is clear proof that the new employee gets to be part of an organization that emphasizes the knowledge development of an individual by having clear practices for it. And then also looking the same from the point of view that would these kind of practices hinder the recruitment of the “stars” since they do not want to give up their main competitive advantage as an employee.

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7 APPENDICES

7.1 APPENDIX 1: Internal knowledge management survey for business

1. How long have you worked at QPR?

- Less than a year
- 1-2 years
- 3 years or longer

2. To which role do you identify yourself with the most?

- Sales
- Consultancy
- Business development

Sales process related questions

Answer all questions as your opinion and how you see the topic. Question 10 is the only one where you don't need to answer unless you are involved in the sales process.

3. How well do you know the software we sell?

1 - Not at all ... 10 - Couldn't know them better

- 1 2 3 4 5 6 7 8 9 10

4. How well do you know the services we sell?

1 - Not at all ... 10 - Couldn't know them better

- 1 2 3 4 5 6 7 8 9 10

5. How well do you know where to find information about our software?

1 - Not at all ... 10 - Couldn't know better

- 1 2 3 4 5 6 7 8 9 10

6. How well do you know where to find information about our services?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

7. How much are you involved in the sales process?

1 - Not at all ... 10 - Always involved

1 2 3 4 5 6 7 8 9 10

8. How involved would you like to be in the sales process?

1 - Much less than at the moment ... 10 - Much more than at the moment

1 2 3 4 5 6 7 8 9 10

9. Would you like the consultants to be involved in the sales process?

1 - Much less than at the moment ... 10 - Much more than at the moment

1 2 3 4 5 6 7 8 9 10

10. If you are involved in the sales process, how clear is your role to you in it?

1 - Not at all ... 10 - Crystal clear

1 2 3 4 5 6 7 8 9 10

11. How clear are the roles and responsibilities during the proposal process?

1 - Not at all ... 10 - Crystal clear

1 2 3 4 5 6 7 8 9 10

12. How well do you know where to find the best practices and materials to support the sales process?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

13. How well do you know where to save customer specific sales materials?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

14. How systematically do you see sales materials being productized?

1 - Not at all ... 10 - Couldn't be better

1 2 3 4 5 6 7 8 9 10

15. How clear is the ownership for sales material productization?

1 - Not at all ... 10 - Crystal clear

1 2 3 4 5 6 7 8 9 10

16. How well does the process of knowledge sharing from sales to consultants work when a project starts?

1 - Not at all ... 10 - Couldn't be better

1 2 3 4 5 6 7 8 9 10

17. How often do you share information/material with a sales person?

1 - Never ... 10 - Daily

1 2 3 4 5 6 7 8 9 10

Delivery process related questions

Answer all questions as your opinion and how you see the topic. Question 24 is the only one where you don't need to answer unless you are involved in the delivery process.

18. How much are you involved in the delivery process?

1 - Not at all ... 10 - Always involved

1 2 3 4 5 6 7 8 9 10

19. How involved would you like to be in the delivery process?

1 - Much less than at the moment ... 10 - Much more than at the moment

1 2 3 4 5 6 7 8 9 10

20. If you are involved in the delivery process, how clear is your role to you in it?

1 - Not at all ... 10 - Crystal clear

1 2 3 4 5 6 7 8 9 10

21. How clear are the roles and responsibilities (in general) during the delivery process?

1 - Not at all ... 10 - Crystal clear

1 2 3 4 5 6 7 8 9 10

22. How well do you know where to find the best practices and materials to support project delivery?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

23. How well do you know to whom to forward a lead?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

24. If you are involved in a customer project, how often do you have a project closing / lessons learned meeting?

1 - Never ... 10 - Every time

1 2 3 4 5 6 7 8 9 10

Internally

With the customer

25. How well do you know where to save customer specific project materials?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

26. How systematically do you see delivery materials being productized?

1 - Not at all ... 10 - Couldn't be better

1 2 3 4 5 6 7 8 9 10

27. How clear is the ownership for delivery material productization?

1 - Not at all ... 10 - Crystal clear

1 2 3 4 5 6 7 8 9 10

28. How systematically is customer feedback collected?

1 - Not at all ... 10 - Very systematically

1 2 3 4 5 6 7 8 9 10

29. How often do you discuss about software features with product development?

1 - never ... 10 - Daily

1 2 3 4 5 6 7 8 9 10

From your initiative

From product development's initiative

30. How often do you share information/material with a consultant?

1 - Never ... 10 - Daily

1 2 3 4 5 6 7 8 9 10

Knowledge management related questions

Answer all questions as your opinion and how you see the topic.

31. How well are you aware of sales or offers in which you are not involved in?

1 - Not at all ... 10 - Fully aware

1 2 3 4 5 6 7 8 9 10

32. How well are you aware of customer projects in which you are not involved in?

1 - Not at all ... 10 - Fully aware

1 2 3 4 5 6 7 8 9 10

33. How well do you know who owns and administrates documents?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

34. How well do you know who knows what?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

35. How well does the company culture support knowledge management?

1 - Not at all ... 10 - Couldn't support more

1 2 3 4 5 6 7 8 9 10

36. How well does leadership and incentives support knowledge management?

1 - Not at all ... 10 - Couldn't support more

1 2 3 4 5 6 7 8 9 10

37. How well does the company's information technology support knowledge management?

1 - Not at all ... 10 - Couldn't support more

1 2 3 4 5 6 7 8 9 10

38. How much can knowledge management / knowledge sharing be improved by clarifying processes and roles?

1 - Not at all ... 10 - A lot

1 2 3 4 5 6 7 8 9 10

39. How much can knowledge management / knowledge sharing be improved by renewing information technology?

1 - Not at all ... 10 - A lot

1 2 3 4 5 6 7 8 9 10

40. How well do you know to whom you can give an internal development idea?

1 - Not at all ... 10 - Couldn't know better

1 2 3 4 5 6 7 8 9 10

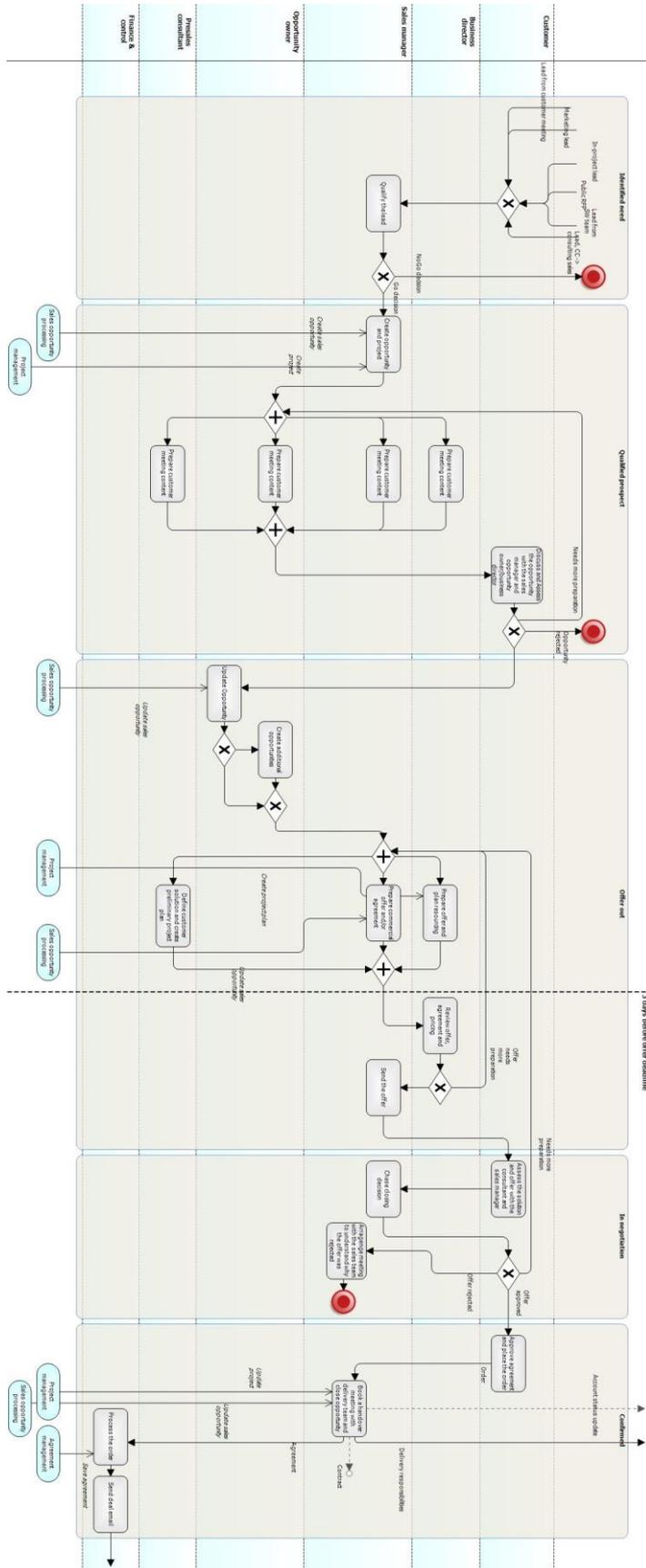
41. On average per week, how much time do you estimate you spend on...

Less than 30 minutes	0,5-1 hour	1-2 hours	3-4 hours	5-8 hours	More than 8 hours
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Searching for information from QPR systems

Asking people who knows something about something

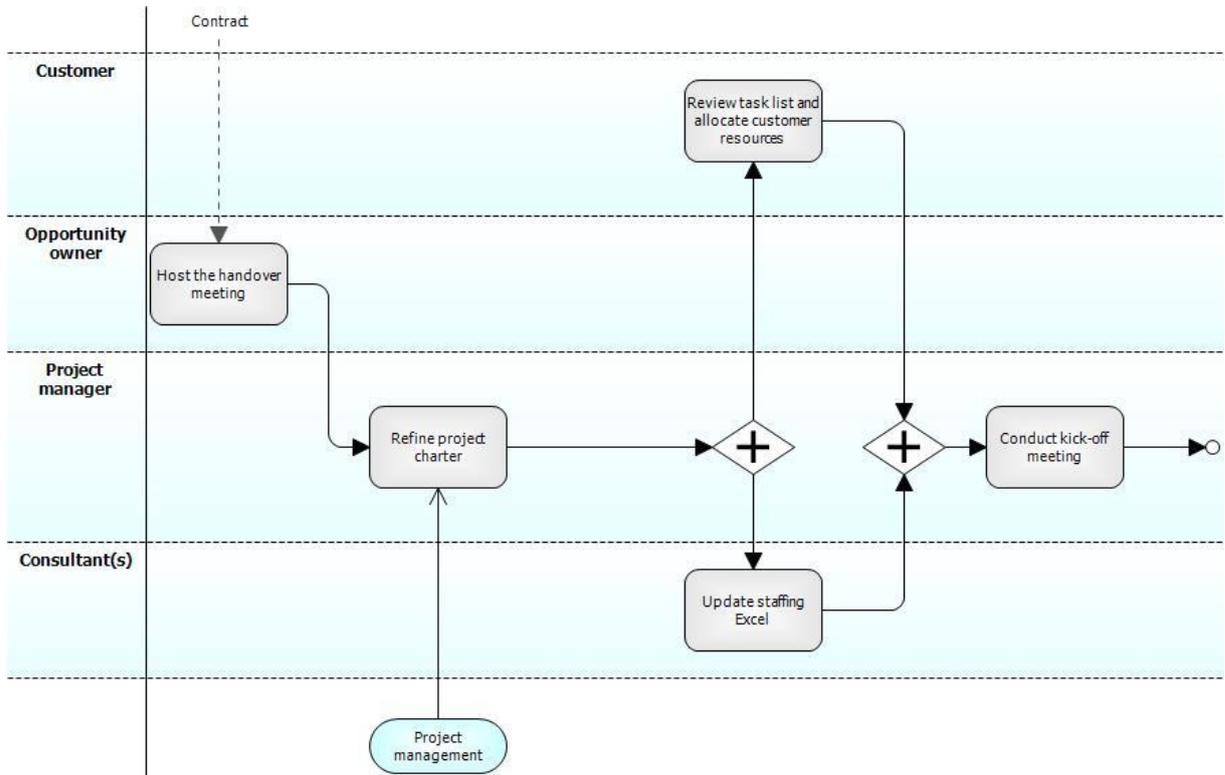
7.2 APPENDIX 2: Target state of the consulting sales process



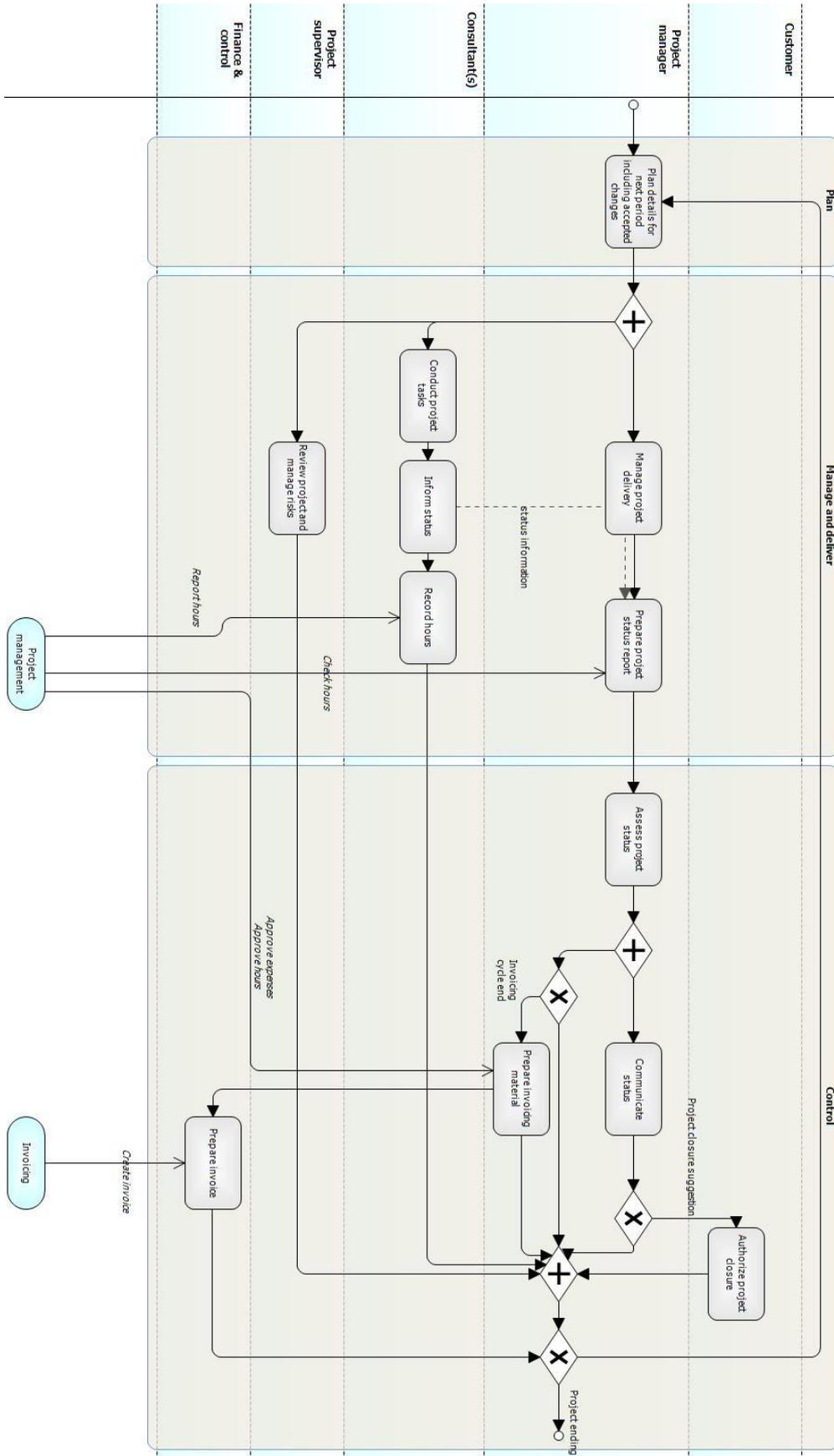
7.3 APPENDIX 3: Target state of the consulting delivery process



7.4 APPENDIX 4: Target state of the consulting delivery process's handover phase



7.5 APPENDIX 5: Target state of the consulting delivery process's delivery phase



7.6 APPENDIX 6: Target state of the consulting delivery process's closing phase

