Factors Influencing Knowledge Sharing in Professional Services

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Abstract:

The benefits of knowledge sharing to organizations are quite well known but while human knowledge can be the most valuable asset of an organization, often a lot of that knowledge is never shared. The importance of efficient knowledge sharing and the technology supporting the activity is especially vital in organizations where knowledge brings all the value to the organization and employees are in different locations. Such is often the situation in professional services firms where the companies 'product' is the knowledge their employees have and how the knowledge is utilized in various projects.

The objective of this study was to find the factors that positively influence management consultants to share the knowledge they possess. Theory of Planned Behavior (TPB) was the primary basis for the empirical study where nine possible factors were studied. The survey sample consisted of 43 management consulting professionals and the survey was published online. A causal modeling technique called Partial Least Squares (PLS) was chosen as the analysis method for the survey results.

The factors that were found to influence knowledge sharing behavior were the perceived level of control and ownership the person has to knowledge sharing (perceived behavioral control), which influences intention directly, and the perception of the person's ability to valuable contributions and their criticality (self-efficacy), which influences the attitude toward knowledge sharing. The small sample size limits the validity and significance of the results.

Keywords: Knowledge sharing, Professional services, Theory of planned behaviour, TPB, Partial Least Squares, PLS

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1 INTRODUCTION

This chapter is the initial discussion about the thesis, including the background and objectives of the study.

1.1 Research Background

Knowledge management has been in research and companies’ attention already for a long time. There are currently over 15 peer-reviewed research journals that focus on aspects of Knowledge Management and depending on the definition of knowledge workers, the amount of them is increasing steadily and is now estimated to be up to fifty percent of the workforce in Europe and the United States (Davenport, 2005:5). While the amount is high, global competition is also increasing, importance of innovation is growing and working culture has changed so that employees do not stay at one organization for very long, making knowledge management extremely important in organizations with knowledge workers.

Knowledge management includes many aspects aiming to handle and create value from the intellectual assets of an organization. One of the most important of them to many organizations is the management of knowledge held by individual knowledge worker and teams of knowledge workers. While human knowledge can be the most valuable asset of an organization often a lot of that knowledge is never shared. Some organizations still think that knowledge sharing issues can be solved by purchasing a knowledge management solution. Companies often do well in building the technological environment for knowledge sharing and collaboration in general, but lack in the work of changing the organization culture to enable the use of the technologies. Hence, while the technology is necessary to create, organize and provide for use the knowledge of the organization and it is important to have the necessary technology implemented correctly, solely the technology will not help without employees’ willingness to share information. The key is to incorporate knowledge management in the day-to-day work activities (Harris, 2006).

One indicator of the importance of knowledge management and the ongoing discussion around the topic is that Gartner mentions knowledge management in three categories of its Hype Cycle of new technologies: high-performance workplace, content management and collaboration and communication. According to Gartner (2006a, 2006b, 2006c), in all these categories, knowledge management has followed a predictable path through the Hype Cycle since it has first been mentioned in 1997, has left the Trough of Disillusionment and has now started proceeding on the Scope of Enlightenment. This is due to organizations having successful knowledge management programs, even more starting the programs and the enabling technologies that support the processes of knowledge management becoming more effective and easier to use. Gartner (2006a, 2006b, 2006c) also estimates the market penetration of knowledge management technologies to be 20-50%. This means the technologies are in the early mainstream, and Gartner sees the mainstream adoption will happen within two years.

The benefits of knowledge sharing to organizations are quite well known. Companies can improve their performance by giving employees better access to available knowledge and helping them use it. This way the productivity of individuals and teams increase when knowledge is better reused, innovation level is increased (Riege 2005; Harris 2006; Gartner 2006a) and intellectual assets of the organization bring higher returns (Gartner 2006a).

> ‘Access to the right knowledge at the right time can sharpen both operational and strategic decisions, whether made by individuals or groups, as well as enhance the value-generating potential of our relationships with our colleagues and external partners’ (McKenzie and van Winkelen, 2004: 2).

Mckenzie and van Winkelen (2004: 33) also point out that exploiting existing knowledge can bring short term returns by improving efficiency and reducing cost, thus it is important to make sure that ‘the right knowledge is in the right place at the right time and the recipient is able to understand and apply it to add value to the decisions he or she is making’. Despite the knowledge of these benefits being fairly well understood, knowledge sharing goals are rarely mentioned in the business strategies since the success is difficult to measure and all the sharing barriers are not sufficiently identified (Riege, 2005).

As one can imagine, when knowledge is not shared, the issues can be severe. When employees leave a company, their knowledge leaves also (Riege, 2005). It can be very time consuming to try to find the information afterwards, or in worst case re-create it. Also, if employees do not know the knowledge already exists in the organization, the ‘wheel might get reinvented’ again and again, being costly to the organization (Rugullies, 2003). Enabling efficient knowledge sharing in organizations is not easy. The challenges are often related to motivating people to share knowledge, identifying the key people to share their knowledge, organizing the existing knowledge and making knowledge easily accessible (Logan, 2006a).

The importance of efficient knowledge sharing and the technology supporting the activity is especially vital in organizations where knowledge brings the value to the organization and workers are in different locations. Such is often the situation in professional services companies where the companies ‘product’ is the knowledge their employees have and how the knowledge is utilized in various projects. Knowledge sharing is especially vital in management consulting as people work with a large variety of topics often in short projects, and any time lost in ‘reinventing the wheel’ is very costly. Thus, as sharing of knowledge can rarely be forced, in this study the concentration is to find out what are the factors that influence management consultants to share the knowledge they possess for the benefit of the company. Hence, in this study professional services mean the management consulting practice.

1.2 Research Objective

The objective of this study is to find the factors that influence management consultants in sharing their knowledge and Theory of Planned Behavior (TPB) is adapted to survey management consultants regarding their behavioral intentions for knowledge sharing. The study concentrates on the perspective of individual and as TPB is the basis for the study, the aim is to find factors that positively influence the behavior.

1.3 Structure

The second chapter acts as basis for the study introducing the concepts of knowledge and intellectual capital. The chapter also explains the characteristics of knowledge sharing in organizations and technologies supporting that. Theoretical frameworks for researching behavior are examined in chapter 3. Chapter 4 examines the current state on literature and research on factors influencing knowledge sharing. Research model and hypothesis creation start the chapter 5, following with questionnaire creation and the analysis of survey data. Chapter 5 ends with conclusions and future recommendations.

2 KNOWLEDGE SHARING

In order to understand the topic of knowledge sharing in organizations properly, it is good to start by discussing the concepts of intellectual capital and knowledge. After that knowledge sharing is discussed from the organizational point of view and more specifically in professional services companies and finally the technologies related to knowledge sharing are explored.

2.1 Intellectual capital

In knowledge management literature the concept of intellectual capital is increasingly in topics. This can for instance be seen in the development of specialized publications such as the Journal of Intellectual Capital (established in 2000) and the International Journal of Learning and Intellectual Capital (established in 2004). Many executives have noticed that intellectual capital is an important driver of company performance (Marr, 2007) and companies try to manage organizational knowledge more intensely and effectively (Hsu and Mykytyn, 2006).

Marr (2007) explains that intellectual capital is not a new phenomenon as the economist Nassau William Senior mentions the term already in 1836 and the importance of knowledge-based assets has been long discussed by strategy economists and scholars. Ariely (2006) emphasizes that intellectual capital movement started from practical need to link accounting and actual market value. According to Marr (2007) arguments often state the concept of intellectual capital being developed by companies that started to measure and report their intellectual capital in the 1990s. This is supported by Berztiss (2006) who regards the year 1991 as the ‘start of institutionalized KM’ as then Skandia AFS insurance company appointed a director of intellectual capital. Academically the first to discuss intellectual capital were economists who highlighted its different behavior compared to traditional economic assets and also its importance as a production factor (Marr, 2007).

Different academic disciplines and departments in organizations have developed solutions to intellectual capital in isolation and often with little awareness of the development in other areas. This has led to different terminology and definitions, and issues in organizations also in seeing the big picture and realizing how multidisciplinary the field is. As Marr (2007) points out, major accounting bodies around the world are amending and reviewing accounting guidelines and standards to reflect the growing importance of intangible components at the same time with ministries producing guidelines of how companies, universities and cities can produce reports for intellectual capital, software companies developing applications and consulting companies offering wide variety of services to support in the area from human capital audits to relationship guidance and solutions for valuing brands.

Everything mentioned above is in the area of intellectual capital but terminology and definition might differ depending on the person asked. Marr (2007) states that ‘the way we perceive the world and our role in it influences our view of intellectual capital’. Terms describing intellectual capital include accounting using intangible assets, economics knowledge assets, strategic management intellectual/intangible resources/capabilities and lawyers intellectual property. As an example of definitions, Accounting Standards Board defines intangibles as ‘non-financial fixed assets that do not have physical substance but are identifiable and controlled by the entity through custody and legal rights’ in their main standard for reporting intangibles and goodwill (FRS 10). In marketing, customer relationships and brands represent important intangible assets and are thus classified as intellectual capital. Human resources, as marketing also, often drives to demonstrate the importance of investments in their intangible assets, which in their view is knowledge and capabilities of individuals. From legal perspective it is important to find solutions to how to legally protect intellectual capital like patents, trademarks or copyrights, and they often refer them as intellectual property (Marr, 2007).

As shown, the scope of intellectual capital is very broad and can be illustrated by the components that intellectual capital is often in literature divided into: human capital, relational capital and organizational or structural capital (Ariely, 2006; Marr, 2007; Hsu and Mykytyn, 2006). The components can be grouped or named slightly differently, but in general human capital refers to the skills, knowledge and competencies of people in the organization (Hsu and Mykytyn, 2006; Marr, 2007), meaning the tacit knowledge of employees. The importance of human capital is well described by Sveiby:

> ‘People are the only true agents in business; all assets and structures, whether tangible physical products or intangible relations, are the result of human action and depend ultimately on people for their continued existence (Sveiby, 1998)’.

Organizational or structural capital means the intellectual property of the organization and organizational culture, routines and practices (Hsu and Mykytyn, 2006; Marr, 2007). Hsu and Mykytyn (2006) further define it into a technological component and architectural competencies, where technological component includes abilities and knowledge needed for day-to-day operations. The architectural competencies mean ability to integrate the component competencies together in an organization and develop new competencies, such as communication channels and strategies, when needed. Relational capital refers to relationships with customers, suppliers and other stakeholders. Sveiby (1998) points out that the value of a customer relationship is visible and it can be measured, but it seems to be invisible due to lack of generally accepted definition of it and lack of standard to measure it, making comparisons difficult.

The importance of measuring intellectual capital is well recognized, but according to Ariely (2006) the lack of standards makes it challenging and the measurement is still ‘being experimented with various models’. A proper acknowledgement and reporting of intellectual capital, similar to tangible assets, is one of the goals of measuring intellectual capital (Ariely, 2006). New reporting models have been developed and the most prominent are the Intangible assets monitor by Sveiby, the Balanced scorecard by Kaplan and Norton, and Skandia value scheme by Edvinsson and Malone (Ariely, 2006). Sveiby (1998) emphasizes that intellectual capital must be measured so that it complements the accounting system with a new language to understand intellectual capital. Thus the idea is not to implement new controls.

2.2 What is knowledge

An important part of intellectual capital is knowledge and this chapter is to briefly introduce what knowledge is. It is not taking account the philosophical aspects of the question but instead the multiple classifications that knowledge has in research on knowledge management and knowledge sharing to help understand the basis for the study.

One of the most common ways to define knowledge is by differentiating it from what it is not by using the components of data, information and knowledge. Data is considered to include numbers, images, words and sounds that are derived from observation or measurement and is still 'raw', not analyzed. Information then is perceived as data that has been analyzed and arranged in a meaningful pattern, meaning that some intellectual input has been added to the raw data. This in mind, knowledge is considered to be information that has interpretation and meaning attached to it, adding a further layer of intellectual analysis. This means that knowledge 'provides the means to analyze and understand data/information, provides beliefs about the causality of events/actions and provides the basis to guide meaningful thought/action' (Hislop 2005:13).

The above definition seems to have data, information and knowledge as a hierarchical structure that has one direction where data is needed to produce information, which is used to generate knowledge. While often that is the process, knowledge can also be used to generate information and data. To make it more complicated, people with different knowledge base can interpret the information differently since the knowledge one possesses can shape the type of data one collects and the way the information is analyzed (Hislop, 2005:13). Due to these complexities, the following sections seek to define knowledge even further, not limiting to how to identify knowledge but also explore how knowledge is created or used.

2.2.1 Types of knowledge

While the start of this chapter forms the basis of answering the question what is knowledge, it is by no means that easy to define what knowledge actually is. There are numerous classifications of knowledge, for example:

- Explicit and tacit (McKenzie and van Winkelen, 2004:4; Ein-Dor, 2006; Hislop, 2005:19; Alavi and Leidner, 2001)
- Procedural and declarative (Ein-Dor, 2006; Alavi and Leidner, 2001)
- Commonsense and expert (Ein-Dor, 2006)
- Task and context (Ein-Dor, 2006)
- Individual and Social (Ein-Dor, 2006; Alavi and Leidner, 2001)
- Know how, know what, know why, know when, know who (McKenzie and van Winkelen, 2004:4; Alavi and Leidner, 2001)
- Embedded, embodied, encultured, embrained and encoded (McKenzie and van Winkelen, 2004:4)

This chapter will not discuss all the classifications above but instead briefly introduce the most common ones in high level.

One classification deals with expertise. Commonsense knowledge means knowledge that everyone in a society is expected to know, like socially approved behavior, and in another extreme of the dimension is expert knowledge which is something that only a limited amount of people have. Expert knowledge can become commonsense knowledge when it's diffused to the population in a larger scale, like what happened with writing when first only a few people knew how to do that and over time majority of people now know how to write (Ein-Dor, 2006).

Task - context classification is related to organizations and has organizational knowledge or task knowledge on one dimension and contextual knowledge on other. Organizational knowledge means that performing a task requires internal knowledge of the organization, like where to store something, whereas contextual knowledge means that it requires external knowledge of the organization (Ein-Dor, 2006).

However, by far the most commonly used classification in the knowledge management literature is the one between explicit and tacit knowledge (Ein-Dor, 2006; Hislop, 2005:19). Explicit knowledge is regarded objective, composed of facts that can be codified into a tangible form like words and graphs, and is separate from individual and social values (Hislop, 2005:19). Explicit knowledge can be easily transferred to be available for any enquirer (Ein-Dor, 2006) and thus can produce greater value (McKenzie and van Winkelen, 2004:4). In contrast, tacit knowledge is personal knowledge, sometimes even subconscious knowledge that includes both physical and cognitive frameworks causing it to be difficult or even impossible to express verbally (Ein-Dor, 2006; Hislop, 2005:19). Development of tacit knowledge through experience takes time and considerable investment (McKenzie and van Winkelen, 2004:4). The specific characteristics are summarized in the Table 1.

Table 1, Characteristics of tacit and explicit knowledge

Tacit knowledge	**Explicit knowledge**
Inexpressible in a codifiable form	Codifiable
Subjective	Objective
Personal	Impersonal
Context specific	Context independent
Difficult to share	Easy to share

Source: Hislop (2005:19)

2.2.2 Perspectives of knowledge

According to Hislop (2005: 13) in order to define knowledge, one needs to add some more characteristics to what knowledge is like and what properties it has. One example of definition of knowledge is by Davenport and Prusak (1998:5):

> ‘Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers.’

There are competing views to what knowledge actually is like in the knowledge management research and literature, and Hislop (2005: 13-14) categorizes those into two perspectives of knowledge: ‘objectivist perspective’ and ‘practice-based perspective’. They differ in the basic assumptions of knowledge, causing the characterization of knowledge sharing to also be very different. According to Hislop (2005:13-14), both of these perspectives are valid and widely used in the knowledge management practice, despite the fact that the practice-based perspective is founded on the critique of the objectivist perspective. To illustrate the complexity of defining knowledge, both of these perspectives are explained separately in the following sections. In the sections I refer to the work of Hislop (2005), since his categorization serves as a good background for the study in general and a good basis for the knowledge flow strategy models described in chapter 2.3.2.

The objectivist perspective of knowledge is somewhat simplistic and is based on the assumption that knowledge is an entity that people or groups possess, and it can be codified to exist independently of people. This means that the knowledge can exist in multiple forms as facts that are not affected by language. Thus the nature of knowledge is seen objective, assuming that knowledge and understanding can be developed to be free from individual subjectivity, stated as facts and laws that are consistent across cultures and time. The objectivist perspective privileges explicit knowledge over tacit knowledge and it sees knowledge either explicit or tacit, as their distinctive and separate forms, instead of opposite ends of a spectrum.

The practice-based perspective of knowledge challenges many assumptions used in the objective perspective. The practice-based perspective emphasizes knowledge being embedded and inseparable from practice - human activity - and challenges the conception of knowledge being an object or entity that can be codified and separable from people. Hence, this perspective sees all knowledge work involving an element of activity and all activity involving the use and/or development of knowledge. The practice-based perspective also has a very different viewpoint on the difference of tacit and explicit knowledge, seeing them as inseparable, mutually constituted aspects of knowledge. This leads to the conclusion that all knowledge has tacit components, for instance by requiring understanding of the language the text is written or the syntax used to structure the form of knowledge, or requiring action in form of making a decision. Furthermore, this perspective assumes that all knowledge is personal and impossible to separate from people into an entirely explicit form. The practice-based perspective also assumes knowledge being socially constructed and culturally embedded, meaning that knowledge is always open to interpretation based on the values and assumptions of the social and cultural context and the language used, thus being open to dispute. Contradictory and incompatible analysis of the same information can be developed by different individuals or groups, causing the issues of power, politics and conflict to become important in this perspective.

Following table summarizes the main characteristics of the different perspectives.

Table 2, Objectivist and practice-based characters of knowledge

Objectivist epistemology	**Practice-based epistemology**
Knowledge is derived from an intellectual process	Knowledge is embedded in practice Knowing/doing inseparable
Knowledge is a disembodied entity/object	Knowledge is embodied in people
Knowledge is objective 'facts'	Knowledge is culturally embedded Knowledge is contestable Knowledge is socially constructed
Explicit knowledge (objective) privileged over tacit knowledge (subjective)	Tacit and explicit knowledge are inseparable and mutually constituted
Distinctive knowledge categories	Knowledge is multidimensional

Source: Hislop (2005: 27)

The objectivist perspective views the management and sharing of knowledge through the assumptions stated above. As explicit and tacit knowledge are regarded as separate types of knowledge, sharing them is also seen different. Sharing explicit knowledge is seen straightforward and easy, while sharing tacit knowledge is regarded to be time-consuming, difficult and complex. As the objectivist perspective privileges explicit knowledge over tacit, the knowledge-sharing model, often referred as the conduit model, focuses on explicit knowledge and the assumption that it can be codified into a textual form. The conduit model of knowledge sharing suggests that an isolated sender transfers the explicit, codified knowledge to a separate receiver. Hence, the model assumes that the sender can generate truly explicit knowledge and transfer it to the receiver who in turn, with no interaction with the sender, can understand it and derive the same meaning without losing any important aspects of the knowledge during the transfer process. The objectivist perspective focuses on converting tacit knowledge into explicit knowledge and then sharing it, instead of having a model for sharing tacit knowledge. Thus, the difficulties in sharing tacit knowledge can be ignored as it is assumed that much of tacit knowledge can be converted into an explicit form and shared as explicit knowledge.

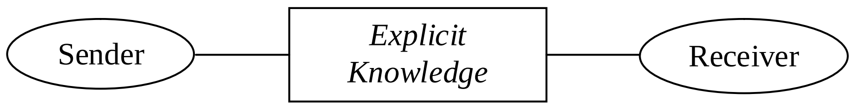

Figure 1, The conduit model of knowledge sharing
Source: Hislop 2005: 22

In the objectivist perspective, technology plays a key role in knowledge sharing as technology can provide repositories for the knowledge in the form of databases, systems to organize the knowledge effectively and means to transfer and extract the knowledge. Thus, this perspective focuses on encouraging employees to codify their knowledge, collecting the knowledge and creating efficient ways to search and access it.

The practice-based perspective has a very different view on knowledge sharing, suggesting that it is impossible for managers to fully understand the knowledge of people working for them and for organizations to collect knowledge into a central repository. It argues that knowledge transfer is not about transferring unchangeable knowledge between two people but instead requires the sender and receiver to have understanding of the values and assumptions the others have in order to transfer and receive knowledge. This requires extensive amount of social interaction and communication, causing dialogue and language to be emphasized in the knowledge sharing process.

This leads to knowledge sharing process in the practice-based perspective being concentrated on two processes that are distinct but closely interrelated. First one is called the immersion in practice that means the process of learning which can occur by doing or watching. Second is called ‘rich’ social interaction, meaning the interaction during which people develop insights to the tacit knowledge, values and assumptions of each other, as also a level of trust that is seen important in the transfer of knowledge. This learning and interaction is difficult and that is the reason why managerial role is emphasized in this perspective. The role of manager is to encourage and facilitate diverse forms of communication and interaction between the employees that allow the knowledge transfer to occur. The ways to do so, not being limited to, are by developing a culture fostering knowledge sharing, rewarding knowledge sharing, providing forums that encourage and support knowledge sharing and for instance implementing a mentoring system where inexperienced employees can learn from the experienced ones. The following table summarizes both views, as stated by Hislop.

Table 3, Perspectives on knowledge sharing

Objectivist perspective on managing and sharing knowledge	**Practice-based perspective on managing and sharing knowledge**
Convert tacit to explicit knowledge Codification/capture of relevant knowledge Collect knowledge in central repository Structure/systematize knowledge (into discrete categories) Technology plays a key role	Knowledge sharing/acquisition requires ‘perspective making’ and ‘perspective taking’ – developing an understanding of tacit assumptions Knowledge sharing/acquisition through - ‘Rich’ social interaction - Immersion in practice - watching and/or doing Management role to facilitate social interaction

Source: Hislop 2005: 23 and 37

2.3 Knowledge sharing in organizations

Sharing knowledge requires effort from the person who shares the knowledge and the form of knowledge shared influences the ways sharing can be done. In this chapter, organizational aspect on knowledge is introduced and knowledge sharing process and challenges are examined in general and specifically in consulting organizations.

2.3.1 Knowledge organizations and knowledge workers

The basis of majority of knowledge management literature is on analysis that knowledge-intensive industry replaced the manufacturing industry as the key wealth generator in the 1970s, causing fundamental changes in the nature of social and economic life (Hislop 2005: 3-6). After that the role and importance of information and knowledge has increased and especially the importance of theoretical knowledge. According to Hislop (2005: 3-6) 'theoretical knowledge represents abstract knowledge and principles, which can be codified, or at least embedded in systems of rules and frameworks for action'. The professional services work involves development, use and application of this type of knowledge more than the work in traditional manufacturing industry. Therefore, professional services companies are variously referred as knowledge-intensive organizations, knowledge-based organizations, knowledge-oriented organizations etc. In these organizations, knowledge is seen as the basis of their competitive advantage (Bock et al, 2005).

Knowledge management literature often refers to knowledge workers. The term knowledge worker was first introduced by Peter Drucker in 1959. Davenport (2005:10) defines knowledge workers as people who have 'high degrees of expertise, education or experience, and the primary purpose of their jobs involve creation, distribution or application of knowledge'. Hislop (2005:217) adds to this definition that the nature of knowledge work is primarily intellectual, creative and non-routine in nature. Typical occupations that can be classified as knowledge work include lawyers, consultants, IT and software designers, advertising executives, accountants, scientists, physicists, engineers and architects (Hislop, 2005:218; Davenport 2005: 6). Peter Drucker predicted that improving the performance of knowledge workers will become the most important economical issue, as the knowledge workers are the most expensive and the group is large (Davenport, 2005:8).

What makes the group interesting and the knowledge sharing dilemma within knowledge workers even larger than otherwise is the characteristics of the group. According to Davenport (2005:17-22) the workflows of knowledge workers cannot always be structured and easily documented, knowledge workers like autonomy and thus not like to be told what to do, observation is an important way to learn the work, performance is very low without strong commitment to the work and last but not least, knowledge workers value their knowledge greatly and do not share it easily.

2.3.2 Knowledge management and sharing in organizations

Davenport and Prusak (1998) continue their definition of knowledge quoted in chapter 2.2.2 to include organizations by stating that 'In organizations, it often becomes embedded not only in the documents or repositories but also in organizational routines, processes, practices, and norms'.

Knowledge management is often defined as a process of capturing, sharing, storing and using knowledge (Bock et al, 2005). It is not one practice or unit in organizations, but instead it spans throughout the organization in different forms. As examples, McKenzie and van Winkelen (2004:5) mention that encouraging knowledge flows directly between people is seen as human resource management practice, facilitation of explicit knowledge flows is often through IT projects including designing portals and intranets, and building relationships to encourage knowledge flows is often through marketing activities. There are various models and frameworks to represent knowledge flows in an organization and one is through the knowledge life cycle represented in Figure 2.

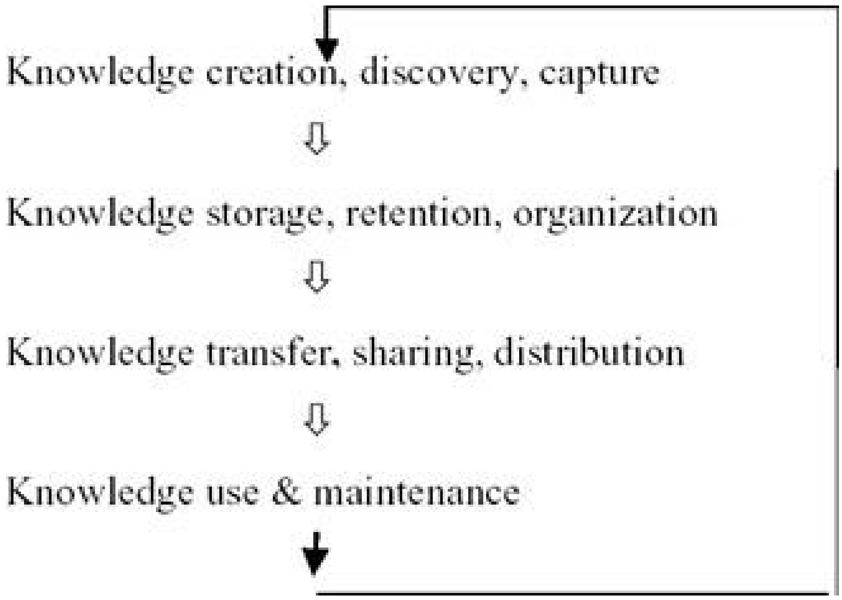

Figure 2, Knowledge flow
Source: Ribière and Román (2006)

Knowledge sharing means the methods and willingness of individuals in an organization to share the knowledge they have with others in the organization. Knowledge can be shared between and among individuals, within and among teams and organizational units and among organizations (King, 2006). According to King (2006) sharing behavior can be different whether explicit or tacit knowledge is shared. Some individuals may consider reports and memos being organizational property even when produced by them whereas knowledge in their own heads belongs to them. Knowledge sharing cannot be forced or mandated, but instead the behavior should be facilitated and encouraged (Bock et al, 2005). The terms knowledge sharing and knowledge transfer are sometimes used interchangeably, but King (2006) points out that there is a difference between them, as 'transfer implies focus, a clear objective, and unidirectionality, while knowledge may be shared in unintended ways multiple directionally without a specific objective'.

Before knowledge can be shared, it needs to be created and stored. McKenzie and van Winkelen (2004:38-39) identified five general forms of knowledge repositories in organizations: individual memory, personal relationships, databases, work processes and support systems, and products and services. Individual memory has both tacit and explicit knowledge that is transferred through social interactions. Personal relationships are important as many people turn to colleagues for trustworthy information. Databases are good in storing explicit knowledge as they can be designed to reflect the structure and content of the knowledge and help in acquiring, refining, storing, retrieving, distributing and presenting the knowledge. Work processes and support systems have a lot of knowledge embedded in them over time about the organization, hence the organizational knowledge is well illustrated in the products and services it offers (McKenzie and van Winkelen, 2004:38-39). Cepeda-Carrión (2006) extends the definition by listing knowledge assets to include 'systems, documents, policies, and procedures, as well as unarticulated expertise and experience across the individuals, groups, organizational, and inter-organizational domains'.

Once the knowledge is created and stored, it is important to make sure the flow is to where it is needed. Knowledge sharing can be done multiple ways, communicating directly or through some archive. According to McKenzie and van Winkelen (2004:39-40), there needs to be standardization mechanisms - such as rules, procedures, taxonomies, operating policies or technological standards - in place that can coordinate the flow of knowledge and ensure effective transfer. McKenzie and van Winkelen (2004:39-40) add that four conditions need to be in place for effective knowledge flows:

> 'standardization of interfaces and practices, technologies to support the management and co-ordination of knowledge resources, a culture of trust and openness that encourages knowledge sharing behavior and an integrated and coherent set of people management practices'.

There are two strategies for knowledge flows in an organization: the codification strategy and the personalization strategy (King, 2006; Ribière and Román, 2006). The codification strategy follows largely the knowledge sharing of objectivist perspective that was introduced in chapter 2 whereas the personalization strategy is more similar to the practice-based perspective view on knowledge sharing. The purpose of codification strategy is to put knowledge into a form that anyone can access, understand and use by anyone in the company. The personalization strategy, on the other hand, is focused on linking people and forming networks so that tacit knowledge can be efficiently shared (Ribière and Román, 2006). Fink and Disterer (2006) add that personalization strategy is closely tied to organizational learning theory aiming to increase organizational memory by facilitating the learning process.

The strategy to use depends on the organization and its needs, but both strategies need to be combined appropriately (Fink and Disterer, 2006) and implemented to ensure good knowledge flow. However, one strategy should be emphasized and other used in a supporting role as trying to excel at both brings the risk of failing at both (Ribière and Román, 2006). Ribière and Román (2006) summarize that when selecting the primary knowledge flow strategy the company's competitive strategy, the level of product maturity, the level of product standardization, employees dependency on explicit or tacit information and the company's organizational culture should be examined. The strategies are illustrated in Figures 3 and 4.

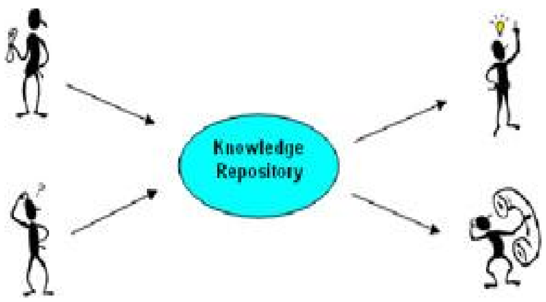

Figure 3, The codification strategy
Source: Ribière and Román (2006)

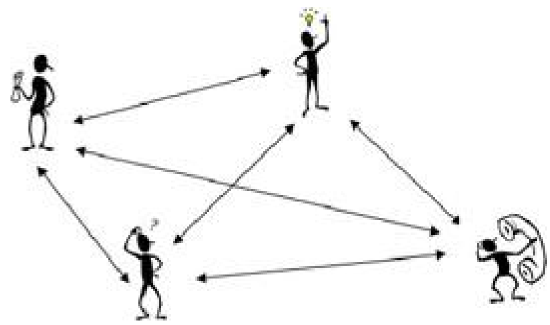

Figure 4, The personalization strategy
Source: Ribière and Román (2006)

Continuous improvement is needed to keep the knowledge resources up-to-date. This requires employees to feel that their ideas are welcome, organization cares about them and they will be taken seriously (McKenzie and van Winkelen, 2004:37; King, 2006). Thus, culture is seen a vital point in the knowledge flow as it influences the behavior of knowledge creating, sharing and application. It can shape assumptions of knowledge, define where knowledge resides in the individual and organizational context, determine how knowledge should be used in different situations and shape the entire knowledge process by influencing the commitment and participation of employees. The way people are managed creates the basis for knowledge sharing culture (McKenzie and van Winkelen, 2004:42 and 52). Culture can create reasons why employees do not want to share or use knowledge if they believe sharing their ideas will delay their career progression or using others ideas make them look less competent. McKenzie and van Winkelen (2004:37) also mention other ways to encourage employees to contribute and reward them for it, including effective suggestion schemes, databases and communities of practice.

McKenzie and van Winkelen (2004:42) reference a benchmark done by American Productivity and Quality Center APQC in 1999 that summarize the cultural factors of best-practice organizations that enhance sharing and using knowledge:

- Employees saw the outcome of sharing activity and connection between knowledge sharing and business goals as knowledge was shared to solve practical business problems or achieve specific objectives and was closely linked to core values of the organization
- The style of each knowledge sharing process or activity was consistent with the style of other organizational processes or activities
- Strong management and peer pressure encouraged people to help each other and to collaborate and management support was appropriate
- Knowledge sharing was integrated into normal work by embedding it into routine processes or by holding visible knowledge-sharing events
- Informal networks were supported without needing to be formalized but both formal and informal networks of people were facilitated to ensure that people affectively participated
- Reward and recognition were aligned with knowledge sharing practices

More detailed discussion on the factors influencing knowledge sharing is in chapter 4.

2.3.3 Knowledge sharing in professional services companies

Knowledge sharing is vital in professional services companies, like the management consulting practice, which is the target of this study. The main assets of the companies are intellectual instead of physical as their product is the expertise of their employees, and companies need ways to leverage their professional intellect (Fink and Disterer, 2006). Fink and Disterer (2006) continue that as knowledge is the product, it is important to systematically manage it and therefore it is understandable that knowledge management technologies have attracted much attention from professional services companies and consultants are seen as the earliest and most successful adopters of knowledge management.

Empson (2001) points out that there are two main types of knowledge that employees of professional services firms, like consulting companies, need to utilize: technical knowledge and client knowledge. By technical knowledge Empson (2001) means the knowledge of the organization, personal knowledge acquired through education or work experience and sectoral knowledge of the professional services area. Client knowledge is seen equally important, comprising knowledge of the clients industry, client's organization and individuals working at the client organization. Fink and Disterer (2006) specify the nature of professional knowledge by summarizing the four levels that professional knowledge operates in: cognitive knowledge (know-what), advanced skills (know-how), system understanding (know-why) and self-motivated creativity (care-why). Cognitive knowledge means the specific knowledge individual has gained through education and training and know-how is the ability to apply the cognitive knowledge in a complex real world. Know-why refers to deep knowledge, 'highly trained intuition' of the specific discipline and care-why the motivation and will to succeed that enables creation of new knowledge. In order to be successful, all this needs to be in place.

Chapter 2.3.2 introduced the codification strategy and the personalization strategy for knowledge sharing. Fink and Disterer (2006) point out that both strategies are in use also in professional services companies. Some concentrate on the codifiable knowledge that can be handled as knowledge products because the knowledge is transferred into documents and/or files, and can be reused for example in other consulting projects, for other industries or in other countries. This strategy could be prevailing in consulting organizations that focus more on implementation projects rather than on purely innovative projects (Ribière and Román, 2006). Other professional services companies see that the most valuable knowledge is closely tied to the person who developed it (Fink and Disterer, 2006). This strategy could be most likely adopted in consulting organizations that focus on customized and innovative projects (Ribière and Román, 2006).

Hislop (2005: 225) highlights that in professional services companies employees do not only need to know how to share knowledge within the organization, but also between the organization and client's organization. Consulting practitioners work in projects that usually have a unique purpose, requiring existing knowledge to be applied in a new way. Projects often have time pressures, increasing the need for existing knowledge to be easily accessible while at the same time reducing time to share the knowledge gained. In addition, project teams often are formed from a unique set of practitioners that have not necessarily ever worked together before and practitioners may work in different locations. Kautz and Mahnke (2003) studied information sources used by consultants in one large global consulting company, and found that the most common source is conversation with a colleague, followed by searching knowledge management databases and searching the Internet.

One view is that consultants are very cautious to share their knowledge due to fear of losing advantage. This view is based on the classification that consultants are high-performing employees who compete directly with each other for the best positions as they like to compete and to excel (Fink and Disterer, 2006). This is often also boosted by the performance review system of consulting organizations where consultants are evaluated based on their unique expertise that is provided to clients in an exceptional way, and rewards are based on comparisons of that performance between colleagues. Furthermore, often consulting organizations base their billing on chargeable hours, causing all other activities, like sharing information with colleagues, to be highly devaluated and thus hindering the motivation to share knowledge.

However, if sharing occurs, Fink and Disterer (2006) summarize motivational factors that influence consultants by stating that reward systems motivate management consultants to share knowledge with each other whereas lack of time, lack of sharing culture, lack of general understanding of knowledge management and lack of participation in development of the knowledge management systems are seen to hinder it. Factors influencing knowledge sharing are elaborated in chapter 4.

All these factors impose a lot challenges in sharing the knowledge in professional services firms, and often ‘reinventing the wheel’ occurs.

2.4 Knowledge sharing technologies

Organizing the knowledge of the organization and enabling access to it are critical to employees’ ability to effectively use knowledge that is scattered across the company (Logan, 2006a). Without technology most knowledge sharing practices would be less effective (Riege, 2005) and technology can help to create, capture, organize, access and use the intellectual assets of the organization (Coakes, 2006). It is important to remember that it is a vital enabler but should never alone be the primary driver of a knowledge management or sharing initiative (Tsui 2005; Coakes 2006). Traditionally the benefits of technology have been seen in transferring explicit knowledge but advances in technology are enabling more and more sharing of tacit knowledge also (McKenzie and van Winkelen, 2004:39-40).

According to Rasmus (2003), currently more or less any technology that can be used to support knowledge creation, transfer or codification defines itself as knowledge management technology, which has led to confusion over the technology market for knowledge management. Multiple technologies can be used to support knowledge management, but technology is rarely unique for the purpose of knowledge management only (Gartner 2006a; Logan 2006a, 2006b; Rasmus 2003; Riege 2005). It is important for the organization to integrate an infrastructure that supports various types of knowledge transfer (Riege 2005).

Technologies for knowledge sharing vary from desktop tools to enterprise applications (Rasmus, 2003). However, commonly referred technologies used for the purpose, but not being limited to, are database management technologies (Coakes 2006; Park et al. 2004; Kim & Lee 2006), intranets (Kim & Lee 2006; Riege 2005), content management systems (Coakes 2006; Park et al. 2004; Tsui 2005; Gartner 2006a; Logan 2006a), decision support systems (Park et al. 2004), groupware software (Riege 2005; Park et al. 2004), business intelligence technologies (Riege 2005; Tsui 2005), collaboration tools (Coakes 2006; Rasmus 2003; Kim & Lee 2006; Gartner 2006a; Tsui 2005) and discussion groups (Kim & Lee 2006; Logan 2006b), just to mention a few. According to Tsui (2005), during the last five years the technologies have become less platform independent due to advancements in open standards and can be integrated to other enterprise applications. This has led to easier implementations on technologies to support knowledge management processes.

Despite the multiple technologies available to support knowledge sharing, according to Cuel et al. (2006), often organizations end up creating 'large and homogeneous knowledge repositories, in which corporate knowledge is made explicit and is collected, represented, and organized according to a single, supposedly shared, vision'. Knowledge management systems should be implemented around the processes, practices and organizational models of the organization in order to succeed and in organizations where units are quite autonomous the systems should take in consideration the local needs in addition to general needs to support the creation and transfer of distributed knowledge (Cuel et al, 2006).

2.5 Summary of the chapter

This chapter introduced the concepts of knowledge and intellectual capital. It showed the difficulty to define these concepts clearly and the complexities involved in them. Although some overlap is apparent between knowledge and intellectual capital, they are two different concepts where the distinction comes from the notion that intellectual capital 'uses' knowledge for creating wealth. Ariely (2006) points out that 'some intellectual capital such as brand is not knowledge, and some knowledge that cannot be transformed into value is not intellectual capital'. He adds that knowledge and managing the elements of knowledge becomes a part of the organization's intellectual capital and through its value the intellectual capital is transformed into an intellectual property that is owned by the organization. In organizational perspective, organizational knowledge is seen to be captured in the processes and culture of the organization whereas intellectual capital seeks to find value in the knowledge the organization has.

The importance and challenges to knowledge sharing in organizations and in professional services organizations in detail were also explored in the chapter. Sharing knowledge requires effort and thus also motivation from the person who shares the knowledge and the type of knowledge shared influences the ways sharing can be done. Technology can make knowledge sharing much more effective by helping with all steps in the knowledge flow process. Available technologies for knowledge sharing were also discussed in the chapter.

This study aims to find what influences consultants to share their knowledge and so far we know the basics of knowledge, intellectual capital and knowledge sharing. Next the theoretical frameworks describing behavior are explored to understand the behavioral aspect of the study.

3 THEORIES OF BEHAVIOR

In order to study the factors that influence knowledge sharing behavior, a theoretical model describing the behavior of a person is needed for the research. TRA (Theory of Reasoned Action, Fisbein and Ajzen, 1980), TAM (Technology Acceptance Model, Davis, 1986) and TPB (Theory of Planned Behavior, Ajzen, 1991) are widely accepted models and used in finding factors influencing behavior. These three theories were examined when choosing the theory to use in this study.

All these theories have a common assumption that intention leads to behavior and hence the research conducted based on any of the theories is to find the factors that lead to the intention. The theories are quite general and so require those factors to be specifically described. Out of these three theories, TRA was developed first, being the foundation to TAM and TPB. TRA explains intention as an outcome of beliefs and motivation. TAM is a simplified version of TRA in that the intention is only predicted by the ease of use and the perceived usefulness of the system. TPB, on the other hand, extends TRA by adding beliefs of control over the behavior.

The next chapters summarize the theories in more detail.

3.1 TRA, Theory of Reasoned Action

Theory of Reasoned Action (TRA) was first introduced by Fishbein and Ajzen in 1975 (Davis et al, 1989) and has been widely used in multiple areas of research ever since. According to TRA, person's attitude (A) and subjective norm (SN) concerning a specified behavior determines the behavioral intention (BI) to perform the behavior, which in turn determines the person's performance of the behavior in question (see Figure 5). In the model the person's positive or negative feelings about performing the behavior defines the attitude (A) whereas subjective norm (SN) means the perception the person has on whether the people he sees important to him think he should or shouldn't perform the particular behavior. This leads to BI being the measure of the strength of the intention that the person will perform the specified behavior (Davis et al, 1989).

Davis et al (1989) explain in more detail that the attitude (A) is determined by the salient beliefs (b_i) of the person regarding consequences (i) of performing the behavior multiplied by evaluation (e_i) of the consequences in question. The equation itself suggests that attitude is influenced externally only indirectly through changes in the belief structure of the person. Subjective norm (SN) on the other hand consists of normative beliefs (nb_i), meaning perceived expectations of specified groups or individuals, and the motivation to comply (mc_i) with the expectations. SN is then determined by multiplying these factors.

According to the model, any other factor that could have influence on the behavior can do it only indirectly, by influencing A, SN or their relative weight (Davis et al, 1989).

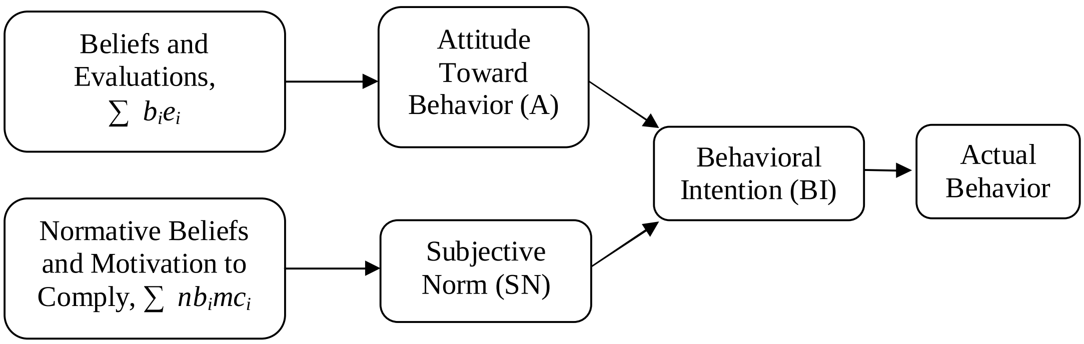

Figure 5, Theory of Reasoned Action (TRA)
Source: Davis et al, 1989

3.2 TAM, Technology Acceptance Model

Technology Acceptance Model (TAM) was introduced in 1986 by Fred Davis. The model is specifically made to explain behavior related to information system usage. TAM is based on TRA in using the linkage between perceived usefulness and perceived ease of use, as well as users' attitudes, intentions and actual behavior on information system adoption.

Perceived usefulness (U) means the probability the person sees that using a specified system will increase his/her work performance within an organizational context. Perceived ease of use (E) refers to the amount of effort the person expects to need for using the system. As in TRA, TAM state that behavioral intention (BI) determines the usage of the system, but the difference comes in that BI is seen being determined by the attitude (A) and perceived usefulness (U) (Davis et al, 1989).

To show the key differences between TRA and TAM in more detail, Davis et al (1989) point out the way the models determine attitude (A). In TRA, one needs to determine the beliefs each time to the specific context whereas in TAM U and E are meant to be general determinants. Also, where TRA sums the beliefs and evaluation weights into a single construct A, TAM regards U and E as distinct constructs thus enabling comparison of the influences of each belief in determining A.

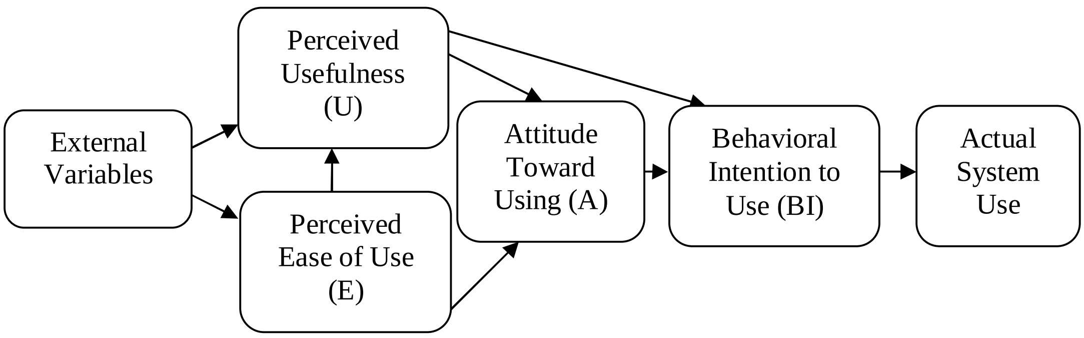

Figure 6, Technology Acceptance Model (TAM)
Source: Davis et al, 1989

3.3 TPB, Theory of Planned Behavior

Theory of Planned Behavior (TPB) is developed by Icek Ajzen and is based on TRA, extending the theory. TPB suggests a model about how human action is guided and indicates that it is influenced by three main factors. As in TRA, in order to predict whether a person intends to do something, we need to know is the person in favor of the behavior (attitude) and does the person feel social pressure to perform the action (subjective norm). As an addition to TRA, TPB also suggests that we need to know whether the person feels he or she is able to perform the behavior in question (perceived behavioral control) (Francis et al, 2004).

As illustrated in Figure 7, the combination of attitude toward the behavior, subjective norm and perception of behavioral control result in the formation of a behavioral intention. Intentions are assumed to be the immediate antecedent of behavior, hence when the opportunity arises, given some degree of actual control over the behavior, the intentions of people are expected to be carried out (Ajzen, 2002). Sometime behavior cannot be executed as easily as wanted as the control is limited, thus making it useful to consider perceived behavioral control also in addition to intention when describing behavior. When perceived behavioral control is somewhat accurate, it can serve as a proxy for actual control and thus contribute to the prediction of the behavior in question (Ajzen, 2002).

Attitude toward behavior is a creation from the person’s behavioral beliefs, positive or negative feelings about performing the behavior. It is determined by assessing the beliefs a person has regarding the outcomes of the behavior and evaluation of the values of these outcomes. Assessment is done by summing the product of the strength of each individual belief (b) that is weighted by evaluation (e) of the outcome (Ajzen, 2002).

Subjective norm is the perceived social pressure to engage a behavior that is formed from normative beliefs. Normative beliefs mean the person’s perception of whether the individuals or groups important to the person think the behavior should be performed, and the motivation to comply with those expectations. Assessment is done by summing the product of the strength of each normative belief (n) that is weighted by motivation to comply (m) with the referent in question (Ajzen, 2002).

Perceived behavioral control, the new addition compared to TRA, is generated from control beliefs of the person, meaning the perception of factors influencing the performance of the behavior and the power of those factors. Assessment is done by summing the product of the strength of each control belief (c) that is weighted by the perceived power (p) of the control factor (Ajzen, 2002).

> 'As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person's intention to perform the behavior in question (Ajzen, 2002).'

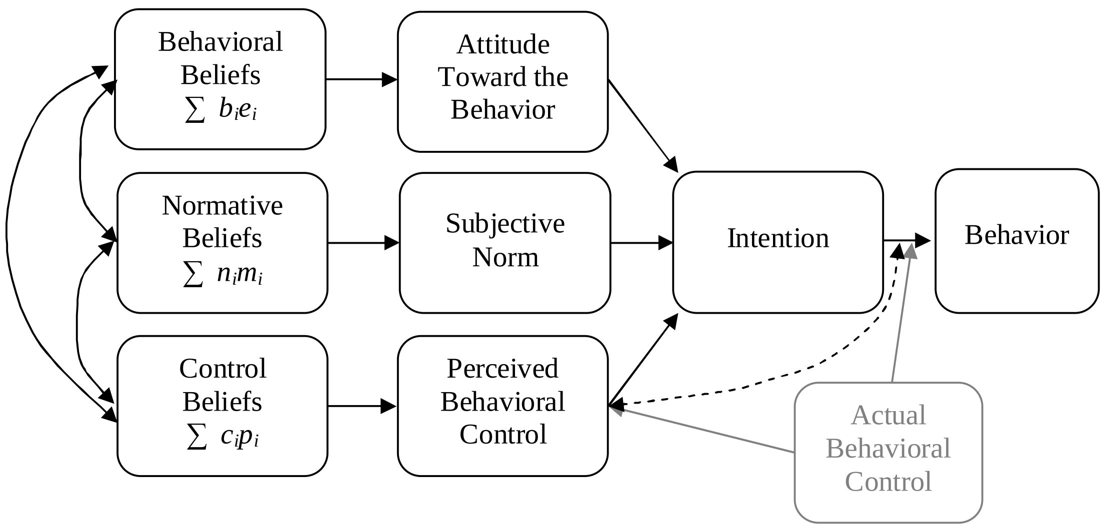

Figure 7, Theory of Planned Behavior (TPB)
Source: Ajzen, 2006

3.4 Summary

This chapter introduced different theoretical frameworks that can be used in studying factors influencing behavior of knowledge sharing. The theories examined are widely used and have also been used in previous research on knowledge sharing.

All these theories have a common assumption that intention leads to behavior and all theories also include assumption that attitude explains at least partially the behavioral intention. TAM is the most simplified version where essentially intention is only predicted by attitude which is influenced by the ease of use and the perceived usefulness of the system. TRA assumes attitude and subjective norm, as in beliefs and motivation, to lead to the behavioral intention. TPB extends TRA by adding beliefs of control to influence the behavior.

In order to study the factors that influence knowledge sharing behavior, a theoretical model describing the behavior of a person is needed for the research. Chapter 5 includes the empirical part of the study where one of these theories is used as the basis from which a research model is defined, combined with the specific information related to knowledge sharing. Before that, in the next chapter the latest research on factors influencing knowledge sharing is explored. The theories of this chapter have also been used in the latest research.

4 FACTORS INFLUENCING KNOWLEDGE SHARING

4.1 What factors influence knowledge sharing

Before looking at the latest research on multiple factors that influence knowledge-sharing behavior, knowledge sharing literature and one-factor studies regarding the topic is briefly examined.

> 'While workers may apply, develop and use their knowledge towards the achievement of organizationally directed goals and objectives, the knowledge is fundamentally the workers to use as, when, where, how and if they want' (Hislop, 2005:46).

This means that willingness from people is needed to share knowledge. Motivational factors are key factors in knowledge sharing, but where do these factors arise and what are they more specifically? Literature includes references to multiple factors, and next most commonly referred factors are elaborated.

Szulanski (1996) states that there are two bases where motivational forces arise: personal belief structures and institutional structures, meaning the organizational climate including norms and values.

In individual level, knowledge sharing can be impacted by concerns over the individual's status or 'competitive advantage' over others being lost by sharing the valuable knowledge one possess (Huber 2001; Riege 2005; Hislop 2005:47; Fink and Disterer 2006). Riege (2005), Rugullies (2003), Garfield (2006) and Fink & Disterer (2006) highlighted the importance of time in knowledge sharing, referring to lack of contact time and interaction between other knowledge workers in the organization and also to lack of time to share knowledge in general when priorities are elsewhere. One important factor in sharing knowledge is seen to be trust (Hislop 2005, 47; Huber 2001; Riege 2005; Lucas 2005), also highlighting the importance of interpersonal relations and social networks (Riege, 2005). When there is lack of trust, whether it is regarding the way others will use the knowledge shared or the reliability of the knowledge resource, there is uncertainty and risk, which can lead to unwillingness to share knowledge. Trust can also be a factor when it comes to organizations, often reflecting the commitment of employees to the organization, which is seen as an important factor of knowledge sharing also by Hislop (2005:47). In order to motivate employees to share their knowledge, making sure they know the benefits it can bring to them and the entire organization is also important (Rugullies 2003; Garfield 2006; Riege 2005), whereas the lack of 'lessons learned' to learn from past mistakes, indicating organizational culture that cannot tolerate mistakes can prevent knowledge sharing of individuals from happening (Riege 2005).

Bock et al (2005) summarize the factors of organizational climate that have an influence on individual's knowledge sharing behavior to be climate where individuals highly trust each other and the organization, climate that is open with free-flowing information, climate that is tolerant of failure and climate where pro-social norms and willingness to help are valued. The issue of perceived loss of competitive advantage that was mentioned earlier can happen due to certain organizational incentive structures, particularly in pay-for-performance schemes (Hislop 2005:47; Rugullies 2003; Huber 2001; Garfield 2006; Fink and Disterer 2006). Rewards have been seen to increase and impede knowledge sharing, depending on the research. Huber (2001) found extrinsic rewards influencing knowledge-sharing behavior negatively whereas Garfield (2006) and Riege (2005) saw rewards for knowledge-sharing actions increasing the behavior. Fink and Disterer (2006) argue consultants being more in favor of intrinsic rewards. Thus, the rewarding structure needs to be thoroughly examined case by case. In general, organizational climate that does not support knowledge sharing due to the organization structure or lack of infrastructure and places to share knowledge has been seen negatively impacting knowledge sharing (Hislop 2005:47; Huber 2001; Riege 2005).

Technology cannot be forgotten as an important factor of knowledge sharing as it can offer instant access to a large amount of information, effective ways to search information, and enable collaboration even with teams that have long distances between them (Riege, 2005). Kautz and Mahnke (2003) researched management consultants and found following factors as barriers for knowledge management technology adoption: the system is not used as the primary store of knowledge, the functions are not heavily used and that participation in the system development is low. Otherwise there is little amount of research on the factors of technology to an individual's knowledge sharing, but Riege (2005) lists potential barriers to be unwillingness to use applications as they do not match the requirements that the individual has, unrealistic expectations on the capabilities technology can offer, reluctance to use technology due to lack of familiarity and experience, and lack of knowledge on what advantages new systems can bring over existing ones. Garfield (2006) adds to this list the fact that the individual does not believe in the technology.

4.2 Previous research on knowledge sharing factors

In this chapter, previous research on the area of knowledge sharing is discussed. First the different research papers are introduced and summarized, after which the discussion is grouped by the different findings.

The amount of previous research on the factors influencing knowledge sharing is quite low, but a few researches have been conducted in the area with a holistic perspective to the topic, which have been chosen to be examined. Previous research has not examined factors influencing knowledge sharing specifically in consulting practice, nor professional services in general. Following chapters examine the state of current research more thoroughly.

4.2.1 So and Bolloju (2005)

<u>Research objective</u>

So and Bolloju (2005) researched the intentions of IT professionals to share and reuse knowledge. Concentration in the research was on IT service operations.

<u>Research method</u>

Theory of Planned Behavior (TPB) was applied in an online survey to 40 IT professionals and the data was analyzed by Partial Least Squares (PLS) method.

<u>Research result</u>

All direct determinants of intention to share knowledge, except for subjective norm, and intention to reuse knowledge were significant. The strongest significance was in the attitude towards intention to share knowledge, thus indicating that management should build positive attitude in their employees through improving relationships and recognition of their contributions. Knowledge sharing should be encouraged in the organization through positive knowledge sharing culture.

Conclusion

Results of the research indicate that Theory of Planned Behavior is a valid model in investigating behavioral intentions of knowledge sharing and reuse. The research showed that attitude and perceived behavioral control does influence the intention to share knowledge. However, specific factors were not examined and the small size of survey participants limits the power of reliability in the results.

4.2.2 Bock, Zmud, Kim and Lee (2005)

Research objective

Bock, Zmud, Kim and Lee (2005) studied factors influencing an individual's knowledge sharing behavior in respect to extrinsic motivators, social-psychological forces and organizational climate factors.

Research method

Theory of reasoned action (TRA) was used as a theoretical framework to survey 154 managers in 27 organizations. First, managers from five organizations were interviewed in an open-ended manner to validate the motivational drivers for knowledge sharing, then the survey was sent. Partial least squares method (PLS) was used to analyze the data.

Research result

The motivational drivers found were anticipated extrinsic rewards (monetary incentives or points towards promotion), anticipated reciprocal relationships (desire to maintain relationships with others), sense of self-worth (sense of value brought by knowledge sharing through competence or power), fairness (trusting organizational climate), innovativeness (organizational climate that is tolerant of well-reasoned failure and where information flows freely) and affiliation (organizational climate with pro-social norms and willingness to help others).

Seven hypotheses out of nine regarding intentions to knowledge sharing were found significant, one was not supported and one was significant but to opposite direction, meaning that is was not supported. Anticipated reciprocal relationships and social norm were seen to affect the attitude to share knowledge and organizational climate and sense of self worth affect subjective norms. Anticipated extrinsic rewards, on the other hand, were found to cause a negative effect on individual's knowledge sharing attitude.

Conclusion

The study showed TRA can be used to research intentions to share knowledge. The research model was well made and sample size was large. However, as limitations also discussed in the paper, some additional motivating factors like time, communication barriers and status hierarchies have been left out. Also, the sample data was cross-sectional and limited to one national culture.

4.2.3 Kim and Lee (2006)

Research objective

Kim and Lee (2006) studied the impact of organizational context and IT on employees' perception of knowledge sharing.

Research method

332 employees in five public sector and five private sector organizations in South Korea were surveyed.

Research result

Research showed that social networks, centralization of organizational structure, performance-based reward systems, employee usage of IT applications, and user-friendly IT systems significantly affect employee knowledge-sharing capabilities in both public and private sector. Social networks, performance-based reward systems, employee usage of IT applications and user-friendly IT systems influence positively on sharing knowledge, while centralization of organizational structure was seen to negatively influence the behavior.

Conclusion

In addition to showing the importance of organizational factors in knowledge sharing, the researched showed also differences in the organizational context between public and private organizations. In public sector, there are much more constraints to be considered while improving knowledge sharing. This indicates that knowledge sharing activities do need to be considered by industry and thus are difficult to generalize.

4.2.4 Lu, Leung and Koch (2006)

Research objective

Lu, Leung and Koch (2006) conducted two studies in the People's Republic of China to understand factors influencing knowledge-sharing behavior within an organization.

Research method

Two studies were conducted. The first study tested hypothesis derived from a behavioral model of knowledge sharing, by surveying 208 MBA students and middle-level employees. The second study extended the model by adding technology dimension to the model, exploring the utilization of technology in relation to organizational support, as well as the dimensions of tacit and explicit knowledge in regard of the technology. The survey was answered by 262 middle-level employees participating in an MBA program.

Research result

Research indicated that knowledge-sharing behavior is influenced by individual, interpersonal and organizational factors. From individual factors, greed (non-cooperative behavior, desire to use others' knowledge without reciprocation) was shown to reduce knowledge sharing and self-efficacy (perception of person's ability to valuable contributions and their criticality) to increase it. Co-worker collegiality (interpersonal trust and teamwork) was shown to indirectly influence knowledge sharing in interpersonal level by lowering greed and increasing self-efficacy. At organizational level, organizational support was proven to increase knowledge sharing by resulting in higher use of IT. The use of IT was more related to sharing explicit knowledge than tacit knowledge, proving that technology alone does not support efficient knowledge sharing. The first study also tested organizational support in regard to manager's attitude, training and sanctions, but found no significant effect on knowledge sharing.

Conclusion

In two studies, the research showed co-operative behavior and self-efficacy having direct positive impact to knowledge sharing. Also interpersonal trust and teamwork were shown to affect indirectly through co-operative behavior and self-efficacy. Organizational support was shown to result in higher use of IT in knowledge sharing.

4.2.5 Sun and Scott (2005)

Research objective

Sun and Scott (2005) investigated barriers in knowledge transfer in four different levels of organizational learning: individual, team, organizational and inter-organizational. They considered transfer paths of individual to team (and vice versa), team to the organization (and vice versa) as well as organization to inter-organization.

Research method

Research was conducted by using Delphi technique in two parts, first identifying the major barriers with 17 junior and senior managers in seven organizations. Those 39 barriers were given to five managers in three organizations who together in a brainstorming session agreed on 14 sources of barriers that were categorized into the learning levels. The participants rated these sources with the influence they saw the source had on scale 1-5 and the Delphi process calculated the impacts.

Research result

Total of 14 significant sources for barriers, grouped by the learning levels, were identified during the research and the table below summarizes the sources that had high impact after the Delphi analysis.

Table 4, Results of research by Sun and Scott (2005)

Sources of barriers	**Individual to team**	**Team to individual**	**Team to organization**	**Organization to team**	**Organization to inter-organization**
Individual imperatives	X		X		
Competencies	X	X		X	
Team climate	X	X	X		
Team relationships	X	X			
Team structuring					
Team norm	X	X			
Organizational climate	X	X	X	X	X
Organizational relationships				X	
Organizational systems and structures		X	X	X	
Organizational imperatives				X	X
Inter-organizational climate					X
Inter-organizational relationships					X
Inter-organizational systems and structures					X
Inter-organizational imperatives					X

Source: Sun and Scott (2005)

The following individual barriers were identified, and it was concluded that the most significant factors were the fear of loss of ownership, fear of loss of control of knowledge and individual values in respect to team values.

- Personality differences
- Skills of communication and persuasion
- Team acceptance of the individual
- Individual’s values vs. team values (trust, honesty, integrity)
- Divergent objectives
- Fear of loss of ownership
- Fear of loss of control of knowledge
- Fear of loss of individual’s competitive edge
- Openness to ideas, environment of learning
- Afraid that knowledge may be inadequate or unimpressive

<u>Conclusion</u>

The research showed barriers that exist in transferring knowledge to different levels in the organization. The barriers were clearly defined, but due to the grouping of them, it ended up somewhat unclear what specific individual factors were found significant.

4.2.6 Summary

The research summarized in this chapter listed multiple factors influencing knowledge sharing. The most important factors could be grouped into:

- Extrinsic rewards (Bock et al. 2005; Kim & Lee 2006)
- Attitude (So & Bolloju 2005; Bock et al. 2005)
- Anticipated reciprocal relationships and co-operative behavior (Bock et al. 2005; Lu et al. 2006)
- Self-efficacy (Bock et al. 2005; Lu et al. 2006)
- Employee usage of IT applications (Kim & Lee 2006; Lu et al. 2006)
- User-friendly IT systems (Kim & Lee 2006)
- Organizational climate with fairness and trust, innovativeness and affiliation (Bock et al. 2005; Sun & Scott 2005)
- Subjective norm (Bock et al. 2005)
- Perceived behavioral control (So & Bolloju 2005)
- Social networks (Kim & Lee 2006)
- Organizational structure (Kim & Lee 2006)
- Fear of loss of control and ownership of knowledge (Sun & Scott 2005)

Regarding the theoretical frameworks used to find these factors, So and Bolloju (2005) used TPB in finding the behavioral intentions to share knowledge. They proved the model is useful in the studying the area, but did not specify the specific beliefs that affect attitude, subjective norm or perceived behavioral control. TRA was used to find the factors for sharing knowledge by Bock et al (2005). They identified well the beliefs, but as they used TRA, the perceived behavioral control was not included in the research. Others did not utilize a theoretical framework.

This chapter introduced the factors influencing knowledge sharing from literature and previous research. Based on the main factors found, the research model and hypothesis will be created and tested in chapter 5.

5 EMPIRICAL STUDY OF KNOWLEDGE SHARING

Empirical study aims to find the factors that influence management consultants in sharing their knowledge by sending a survey to management consulting practitioners. In the study knowledge sharing refers to knowledge provided to other members in the organization that is accessible by wide audience, for instance providing documents to a common database or server, participating in communities of practice or discussions in electronic bulletin boards. This follows the codification strategy introduced in the chapter 2.3.2.

This chapter describes the research model, creation of the survey and description of answers.

5.1 Theory selection

Theories of behavior (TRA, TPB, and TAM) were introduced in chapter 3. As this study is not only about technology adoption, however big a role technology has in enabling knowledge sharing, TAM is not seen as the best theory background for this research. Technological factors are needed in the study, but they can be incorporated in a model constructed based on either of the other theories. TRA and TPB would both be good and already illustrated to be applicable in knowledge sharing research (Bock et al, 2005; So and Bolloju, 2005). However, the previous research has shown control beliefs being important in the knowledge sharing area, hence the chosen theory as the background of the study is Theory of Planned Behavior.

As TPB can be applied to basically any behavior, the beliefs have to be specified. As factors influencing knowledge sharing have been studied already, the beliefs can be derived from the previous studies. The chapter 4 identified the most salient factors for knowledge sharing which can be constructed as beliefs in the TPB model. The study concentrates on the perspective of individual and as TPB is the basis for the study, the aim is to find factors that positively influence the behavior.

5.2 Hypothesis and model creation

Research method chosen is a survey to consulting practitioners by utilizing the theory of planned behavior (TPB) as foundation for the study. The research model is based on TPB and extended with findings from the previous research reviewed in chapter 4. The following section introduces the model and variables chosen to be included, based on which the hypotheses for study will be formed.

Chapter 4.2.6 lists the mostly mentioned factors that were seen to be significant. When considering the consulting industry, all the factors were seen applicable and in informal discussions with consulting professionals, these factors were also seen to be the most influential for the behavior. Hence, all the factors were considered and grouped into variables described in Table 5. Next they will be discussed separately and hypothesis are formed. Figure 8 shows the model created for the study.

Table 5, Model factors

Factor	Description	Previous research
Intention to share knowledge	The degree to which one believes that one will engage in knowledge-sharing act	Fishbein and Ajzen (1981), So & Bolloju (2005), Bock et al. (2005)
Attitude toward behavior	The degree of person’s positive feelings about sharing knowledge	Fishbein and Ajzen (1981), So & Bolloju (2005), Bock et al. (2005)
Subjective norm	The degree to which a person perceives people important to the person expect knowledge sharing	Fishbein and Ajzen (1981), Bock et al. (2005)
Perceived behavioral control	The degree of perception of control and ownership of knowledge sharing	Sun & Scott (2005), So & Bolloju (2005)
Anticipated Relationships	The degree person believes mutual relationships will be improved through knowledge sharing	Bock et al. (2005), Lu et al. (2006)
Extrinsic Rewards	The degree person believes monetary incentives will be given for knowledge sharing activities	Bock et al. (2005), Kim & Lee (2006), Lu et al (2006)

Factor	Description	Previous research
Self-efficacy	Perception of person's ability to valuable contributions and their criticality	Bock et al. (2005), Lu et al. (2006)
Social networks	The amount of people person is in contact with	Kim & Lee (2006)
Perceived usefulness of the technology	The impact of perceived usefulness of knowledge management technologies	Davis (1989)
Organizational Support	The level of support received from organization, both from organizational climate and supporting processes of view	Bock et al. (2005), Sun & Scott (2005), Lu et al (2006)

Attitude toward behavior

As already pointed out, person's attitude toward the behavior determines the person's intention to engage in the behavior (Ajzen, 2002). Hence, attitude to share knowledge is the degree of positive feelings person has to share knowledge, leading to the first hypothesis:

Hypothesis 1: The more favorable the attitude towards knowledge sharing, the greater the intention to share knowledge

Subjective norm

Subjective norm was introduced by Fishbein and Ajzen in the Theory of Reasoned Action, meaning in this context the perceived social pressure to share knowledge. It has been widely researched and found to influence intentions directly. This leads to the second hypothesis.

Hypothesis 2: The more favorable the subjective norm to share knowledge, the greater the intention to share knowledge

Perceived behavioral control

Perceived behavioral control was also introduced by Ajzen in the Theory of Planned Behavior, and in this context means the perceived level of control and ownership the person has to knowledge sharing. Perceived behavioral control has been widely researched and found to influence intentions directly. This leads to the third hypothesis.

> *Hypothesis 3: The greater the perceived behavioral control regarding knowledge sharing, the greater the intention to share knowledge*

Anticipated relationships

Anticipated relationships mean the degree person believes mutual relationships and co-operative behavior will be improved through knowledge sharing. This has been researched by Bock et al (2005) and Lu et al (2006) but it is important to test whether this applies to consulting industry also, where project teams vary and same colleagues are rarely together in projects.

> *Hypothesis 4: The greater the anticipated relationships are, the more favorable the attitude towards knowledge sharing*

Extrinsic rewards

Extrinsic rewards in the knowledge worker area can have a negative affect on knowledge sharing, as the research done by Bock et al (2005) showed. However, according to Huber (2001), consulting industry has a culture that attracts people who are motivated by extrinsic rewards and thus according to Huber knowledge sharing should be motivated with extrinsic rewards.

> *Hypothesis 5: The greater the anticipated extrinsic rewards are, the more favorable the attitude towards knowledge sharing is*

Self-efficacy

Self-efficacy refers to the perception the person has of his or her ability to contribute valuable knowledge and the criticality of the knowledge to be contributed, in other words the level of confidence on one's knowledge. This hypothesis is based on the assumption that the more the person trusts on the knowledge one possess, the more likely the person is to share knowledge.

> *Hypothesis 6: The greater the self-efficacy, the more favorable the attitude towards knowledge sharing is*

Social networks

According to Davenport (2005:162) high-performing knowledge workers get most of the valuable information from other people in their social networks. The research of Kim and Lee (2006) showed the positive affect of social networks to knowledge sharing. They, however, noticed the difference in responses based on industry, thus this is valuable to be tested in the area of consulting.

> *Hypothesis 7: The larger the social network of the person, the more favorable the attitude towards knowledge sharing is*

Perceived usefulness of the technology

Technology Acceptance Model by Davis (1989) introduced the concept of perceived usefulness of the technology, which has been widely tested. It means the perception a person has of a technology increasing the work performance of the person. Former researches have shown that the more useful the technology is seen, the more likely the system is to be used.

> *Hypothesis 8: The stronger the perceived usefulness of the technology, the more favorable the attitude towards knowledge sharing with the technology is*

Organizational Support

The organizational climate is shown in previous chapters to have a strong influence on knowledge-sharing behavior. Thus, this hypothesis is based on the assumption that the more support an organization provides to knowledge sharing in the form of fair and trustworthy organizational climate and supporting processes for knowledge sharing, the higher probability there is for employees to share knowledge.

Hypothesis 9: The greater the organizational support, the greater the subjective norm to share knowledge is

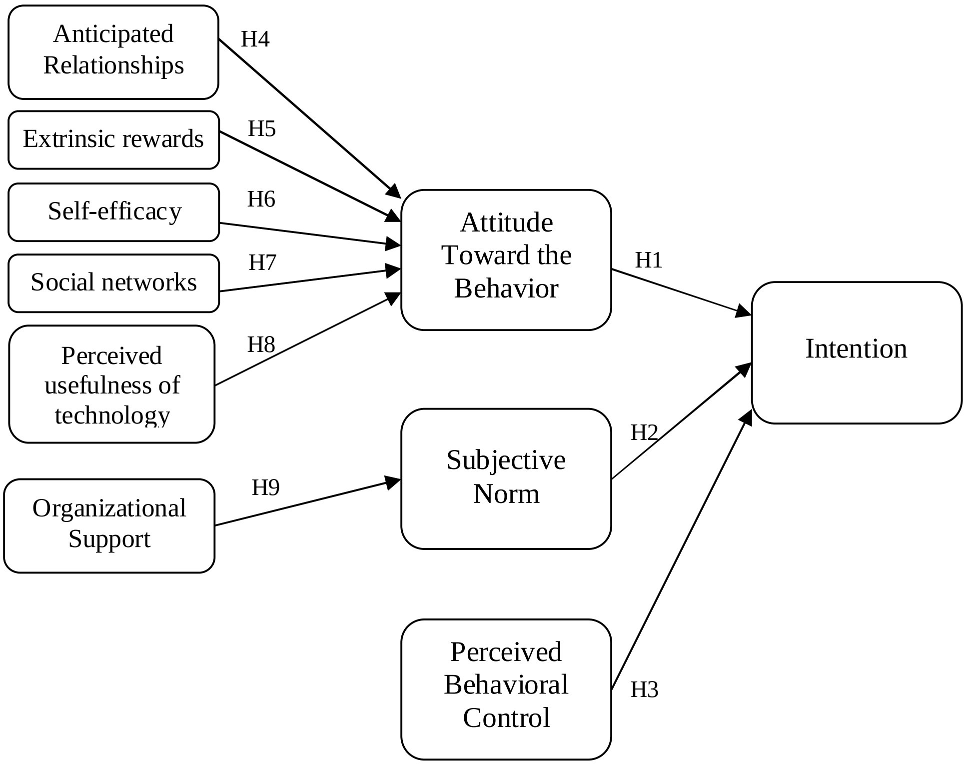

Figure 8, Research Model

5.3 Questionnaire creation

The questionnaire items to measure the hypotheses were created by either adapting measures that were already validated by other researchers or creating the questions based on discussion with management consulting practitioners and a guideline on questionnaire formulation for constructs based on Theory of Planned Behavior (TPB) (Ajzen, 2002). Measures for Intention, Attitude, Subjective norm and Perceived Behavioral Control were formed based on TPB guidelines and previous research. The measures that were adapted from previous research were seen to be needed to test in the context of management consulting that this study provides. Other measures regarding beliefs were formed based on discussions with management consulting practitioners where the advantages and disadvantages regarding a belief were identified and questions formed based on the beliefs and guidelines from Ajzen (2002).

The questions were formed to be answered on a five-point Likert scale as follows:

1 = Strongly Disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly Agree
0 = I do not know / No opinion

Altogether there were 46 questions. Table 6 summarizes the questions and their sources.

In addition to the questionnaire items stated in Table 6, some demographics were collected from the respondents. Questions were about the individual’s total work experience, work experience in management consulting, size of the consulting organization the individual works for and technologies regarding knowledge sharing that are in use at the organization. Questions about work experience were free numeric answers, size of the consulting organization was multiple choices with ready scales and technologies were multiple choices with the option of free text.

Table 6, Questionnaire items

Factor	Questions	Source
Intention to share knowledge	I1. I will share my knowledge with other members in the organization I2. I intend to share my knowledge with other members in the organization I3. I will try to share my knowledge with other members in the organization I4. I plan to share my knowledge with other members in the organization	Ajzen (2002)
Attitude toward behavior	A1. I think it is good to share my knowledge with other organizational members A2. I think it is important to share my knowledge with other organizational members A3. I think it is beneficial to share my knowledge with other organizational members A4. I like sharing my knowledge with other organizational members	A1 adapted from Bock et al (2005), A2 from Ajzen (2002),and A3 and A4 from So and Bolloju (2005).
Subjective norm	S1. My boss thinks I should share my knowledge with other members in the organization S2. My colleagues think I should share my knowledge with other members in the organization S3. My boss expects me to share my knowledge with other members in the organization S4. My colleagues expect me to share my knowledge with other members in the organization S5. My boss shares his/her knowledge with other members in the organization S6. My colleagues share their knowledge with other members in the organization	S1 and S2 taken from Bock et al (2005), S3 and S4 adapted from So and Bolloju (2005).
Perceived behavioral control	P1. It is possible for me to share my knowledge with other members in the organization P2. It is easy for me to share my knowledge with other members in the organization P3. If I wanted to, I could share my knowledge with other members in the organization P4. It is up to me whether I share my knowledge with other members in the organization or not	P1, P2 and P4 adapted from Ajzen (2002), P3 adapted from So and Bolloju (2005).
Anticipated Relationships	AR1. My knowledge sharing would strengthen the ties between existing members in the organization and myself. AR2. My knowledge sharing would get me well-acquainted with new members in the organization. AR3. My knowledge sharing would expand the scope of my association with other members in the organization. AR4. My knowledge sharing would create strong relationships with members who have common interests in the organization.	All from Bock et al (2005).

Factor	Questions	Source
Extrinsic Rewards	ER1. I will receive monetary rewards in return for my knowledge sharing. ER2. I will receive additional points for promotion in return for my knowledge sharing ER3. I will receive salary raise in return for my knowledge sharing ER4. I will be faced with penalty measures for hoarding my knowledge	ER1 from Bock et al (2005), ER2 and ER3 adapted from Bock et al (2005), ER4 adapted from Lu et al (2006)
Self-efficacy	SE1. Sharing my knowledge would help other members in the organization solve problems. SE2. Sharing my knowledge would create new business opportunities for the organization. SE3. Sharing my knowledge would improve work processes in the organization. SE4. Sharing my knowledge would increase productivity in the organization	All adapted from Bock et al (2005)
Social networks	SN1. I communicate frequently with most members of the organization. SN2. I communicate with other members of the organization through informal meetings. SN3. I interact and communicate with other people or groups outside the organization. SN4. I actively participate in communities of practice.	SN2 is adapted and SN3 and SN4 are taken from Kim and Lee (2006)
Perceived usefulness of the technology	PU1. Technology (databases, discussion groups etc.) enables / would enable me to share my knowledge more effectively with other members in the organization PU2. Technology enables / would enable me to share my knowledge faster with other members in the organization PU3. Technology makes / would make it easier for me to share my knowledge with other members in the organization PU4. I find technology useful in knowledge sharing	PU1, PU2 and PU3 adapted from Davis (1989) and PU4 adapted from Davis and Venkatesh (1996)
Organizational Support	OS1. Members in my organization cooperate well with each other OS2. Members in my organization help each other OS3. Members in my organization have a strong feeling of 'one team' OS4. Members in my organization value other members' opinions and knowledge OS5. Open communication is characteristic of the organization as a whole OS6. The organization has processes in place for knowledge sharing OS7. The organization has appropriate technology in place to support knowledge sharing OS8. The organization supports forming informal networks where knowledge can be shared	OS1, OS3 and OS4 adapted from Bock et al (2005), OS 2 adapted and OS5 adapted from Sveiby and Simons (2002)

5.4 Survey

The survey was created using an online survey tool of one of the survey software market leaders in Finland, and it was published in Internet. This was seen as the most effective channel to reach consulting professionals who rarely visit their office to read mail and who are very used to using online tools. Also, this ensured that everyone uses the same channel to reply. Invitations were sent via email that included a direct link to the survey. The survey monitored by cookies that an individual can answer only once to the survey.

The survey was sent on August 5th, 2007 and response time was given for 10 days, until the 15th of August. This was seen as the optimal time to send survey and optimal response time for a maximum response rate, as people had just returned from holiday and had time to answer the survey before client work picked up again. Due to the short answering time they were also assumed to answer immediately. Responses came fast, thus no reminders were sent. The online survey was closed on August 16th.

The sample for the survey was found by first selecting management consulting companies that represent a large scale of different sized management consulting companies, aiming to have small and medium-sized local companies as well as large multinational consulting companies represented. This was to ensure that the responses would be as reliable and valid as possible to represent consulting practitioners in a variety of organizations and thus allow the results to be generalized. After that I found representatives in the companies through personal and professional network. Eventually invitations were sent to representatives in 12 management consulting companies, representing all sizes of organizations. The representatives were asked to forward invitations to other consulting practitioners in the company that they saw willing to answer the survey. At the end altogether 60 invitations were sent.

5.5 User response analysis

The survey was sent to 60 management consultants and altogether 44 replied. One response with incomplete data was eliminated thus the response rate of 72 % was reached.

5.5.1 Respondent background

Respondents were asked about their work experience, size of the consulting organization they work for and technologies that the organization uses for knowledge sharing. Average total work experience was 7,1 years and average work experience in management consulting was 3,5 years. Majority of respondents worked for large consulting organizations (62,5% in over 200 employee organizations) but employees of small and mid-size organizations were well represented also. Use of technologies for knowledge sharing is extensive in the organizations the respondents work for and over 70% report knowledge management system and a database or server for documents to be in place in the organization. Other technologies mentioned were web meetings, instant messaging, virtual workspaces, intranet and websites. Table 7 summarizes the background of respondents and figure 9 their work experience.

Figure 9, Work experience of respondents

Table 7, Demographic information of respondents

Measure	Items	Frequency	Percentage
Work experience (years)	0-2	2	4,7 %
	3-5	14	32,6 %
	6-9	18	41,9 %
	Over 9	9	20,9 %
Work experience in management consulting (years)	0-2	18	41,9 %
	3-5	17	39,5 %
	6-9	6	14,0 %
	Over 9	2	4,7 %
Amount of employees in respondent's organization	Below 20	6	14,0 %
	21-50	1	2,3 %
	51-100	6	14,0 %
	101-200	3	7,0 %
	Over 200	27	62,8 %
Technology	Knowledge management system	32	74,4 %
	Document management system	16	37,2 %
	Database or server for documents	36	83,7 %
	Collaboration tool	24	55,8 %
	Discussion groups	11	25,6 %
	Other	9	20,9 %

5.5.2 Analysis method

A causal modeling technique called Partial Least Squares (PLS) was chosen as the analysis method for the survey results. PLS is widely used and due to its bootstrapping abilities, significant relationships can be well identified. It allows a small sample size and is proven to be good in areas that have low support in previous research (Hulland, 1999). In addition to that, in general causal modeling provides the ability to test complex theories, provides formal framework for constructing and testing both theories and measures, and requires clear definitions for constructs and relationship and thus helping the theory become even more accurate (Hulland, 1999).

Bock et al. (2005) and So and Bolloju (2005) also used PLS in their research. PLSGraph 3.0 was used to analyze the responses.

5.5.3 Measurement model

PLS examines relations among constructs that cannot be directly measured and the model is composed of two parts that will be tested separately: the measurement model and the structural model. The measurement model specifies the relations between measures and constructs they represent and enables evaluation on whether the constructs are accurately measured (Cool et al, 1989). An analysis on the measurement model needs to be made to ensure model's reliability and validity before any conclusions on the data can be made (Hulland, 1999). To analyze the measurement model individual item reliability, internal consistency and discriminant validity was tested.

5.5.3.1 Individual item reliability

Individual item reliability was tested by examining the individual loadings of the measures to see the links between measures and factors. Table 7 summarizes the loadings. Items with loadings of 0.7 or more imply that there is much more shared variance than error variance between the construct and its measure (Hulland, 1999) and 25 measures fill the criteria. A loading of less than 0.5 means that more variance is due to error and those items should be dropped (Hulland, 1999) thus 6 measures that were below 0.5 were dropped, namely A4, P2, P4, AR4, ER4 and SN3. According to Hulland (1999) it is common to find a few items below the acceptable level especially when new measures or scales are introduced, and it can be due to poor wording on the measures, the measures being inappropriate or the measures being improperly transferred from one research context to another.

After removing the measures mentioned above, tests were re-run and Appendix C summarizes the results. Still 25 measures are above the loadings of 0.7, but all 40 are above 0.5 meaning that 40 measures were proven to be appropriate indicators of the underlying constructs.

5.5.3.2 Internal consistency

Internal consistency, also called convergent validity, seeks to assure that there is correlation among the measures, meaning that measures for the same construct produce similar results. Internal consistency was assessed by examining composite reliability values. Acceptable composite reliability level is 0.7 (Hulland, 1999), and as shown in Table 8, all factors are above that as values range from 0.741 to 0.938.

Table 8, Composite reliability and AVE

	Composite Reliability	AVE	Root AVE
Intention (I)	0.889	0.671	0.819
Attitude (A)	0.885	0.720	0.849
Subjective norm (S)	0.875	0.543	0.737
Perceived behavioral control (P)	0.910	0.835	0.914
Anticipated Relationships (AR)	0.825	0.613	0.783
Extrinsic Rewards (ER)	0.847	0.654	0.809
Self-efficacy (SE)	0.870	0.626	0.791
Social networks (SN)	0.741	0.493	0.702
Perceived usefulness of the technology (PU)	0.938	0.794	0.891
Organizational Support (OS)	0.848	0.416	0.645

5.5.3.3 Discriminant validity

Discriminant validity examines how much measures of a construct differ from measures of other constructs in the same model (Hulland, 1999). This is measured by examining Average Variance Extracted (AVE). The square root of AVE of each construct needs to be greater than the correlations to show that the variance shared between any two constructs is less than the variance shared between a construct and its measures. Table 9 shows that this is the case on all the factors in the study, as the square roots of the average variance extracted in the diagonal row are greater than the levels of correlations involving the construct. Thus, it can be concluded that satisfactory discriminant validity among constructs is obtained and every construct is significantly different from other constructs.

Table 9, Correlations matrix of constructs

	I	A	S	P	AR	ER	SE	SN	PU	OS
I	**0.819**									
A	0.122	**0.849**								
S	0.051	0.064	**0.737**							
P	0.234	0.043	0.481	**0.914**						
AR	0.366	0.213	-0.053	0.093	**0.783**					
ER	0.059	0.150	0.171	0.205	0.215	**0.809**				
SE	0.049	0.347	0.083	0.092	0.468	0.145	**0.791**			
SN	-0.031	-0.165	0.051	0.196	0.154	0.206	-0.006	**0.702**		
PU	0.053	-0.113	0.279	0.309	0.198	-0.004	0.339	0.150	**0.891**	
OS	0.261	0.223	0.402	0.419	-0.078	0.247	0.034	0.225	0.071	**0.645**

All the tests above prove the measurement models' reliability, validity and adequacy, and it can be concluded that the constructs are measured with sufficient precision. Next, the hypotheses were tested by assessing the structural model.

5.5.4 Structural model

The structural model specifies the relations between constructs (Cool et al, 1989) allowing to test the hypotheses of the study. Analysis of relationships between constructs and their explained variance is done by assessing path coefficients and R^2 values, and support for hypothesis by one-tailed t-tests. Path coefficients show the direction of relationships and R^2 value shows how much variance is explained by the independent variables. One-tailed t-test is chosen as the direction of interest of the test is already known.

The results of the analysis are shown in Table 10, Table 11 and Figure 10. Next the results are discussed in the following sequence: standard TPB constructs (H1, H2, H3), constructs related to attitude (H4, H5, H6, H7, H8) and constructs related to subjective norm (H9).

Surprisingly the hypotheses on the standard TPB constructs are not all supported as the only hypothesis supported is Hypothesis 3 related to perceived behavioral control: The greater the perceived behavioral control regarding knowledge sharing, the greater the intention to share knowledge. This means that perception of control and ownership of the knowledge influences the intention to share knowledge. H1 and H2 are not supported and in addition the relationship between subjective norm and intention is negative indicating that the relationship is inverse to what was hypothesized.

Mixed results were also found for the constructs leading to attitude. The only hypothesis with significant relationship in the posited direction was H6 related to self-efficacy: the greater the self-efficacy, the more favorable the attitude towards knowledge sharing is. This suggest that favorable attitude to knowledge sharing is influenced by the perception the person has regarding the value and criticality of the knowledge. H8 (the stronger the perceived usefulness of the technology, the more favorable the attitude towards knowledge sharing with the technology is) was also supported but surprisingly the relationship was negative, suggesting that perceived usefulness actually is seen negative on the attitudes towards knowledge sharing. Other hypotheses were not supported.

Organizational support was also not seen significantly influencing subjective norm as Hypothesis 9 was not supported.

Table 10, Path coefficients and t-statistics

Hypothesis	Path coefficient	T-statistics
H1: A → I	0.1160	0.7141
H2: S → I	-0.086	0.2797
H3: P → I	**0.270**	**1.4392**
H4: AR → A	0.089	0.6508
H5: ER → A	0.111	0.6168
H6: SE → A	**0.366**	**2.2749**
H7: SN → A	-0.165	0.9463
H8: PU → A	**-0.229**	**1.3869**
H9: OS → S	0.402	0.7275

Table 11, Results on hypothesis testing

Hypothesis	Results
H1: The more favorable the attitude towards knowledge sharing, the greater the intention to share knowledge	**Not Supported**
H2: The more favorable the subjective norm to share knowledge, the greater the intention to share knowledge	**Not Supported**
H3: The greater the perceived behavioral control regarding knowledge sharing, the greater the intention to share knowledge	**Supported**
H4: The greater the anticipated relationships are, the more favorable the attitude towards knowledge sharing	**Not Supported**
H5: The greater the anticipated extrinsic rewards are, the more favorable the attitude towards knowledge sharing is	**Not Supported**
H6: The greater the self-efficacy, the more favorable the attitude towards knowledge sharing is	**Supported**
H7: The larger the social network of the person, the more favorable the attitude towards knowledge sharing is	**Not Supported**
H8: The stronger the perceived usefulness of the technology, the more favorable the attitude towards knowledge sharing with the technology is	**Not Supported** (supported but opposite direction)
H9: The greater the organizational support, the greater the subjective norm to share knowledge is	**Not Supported**

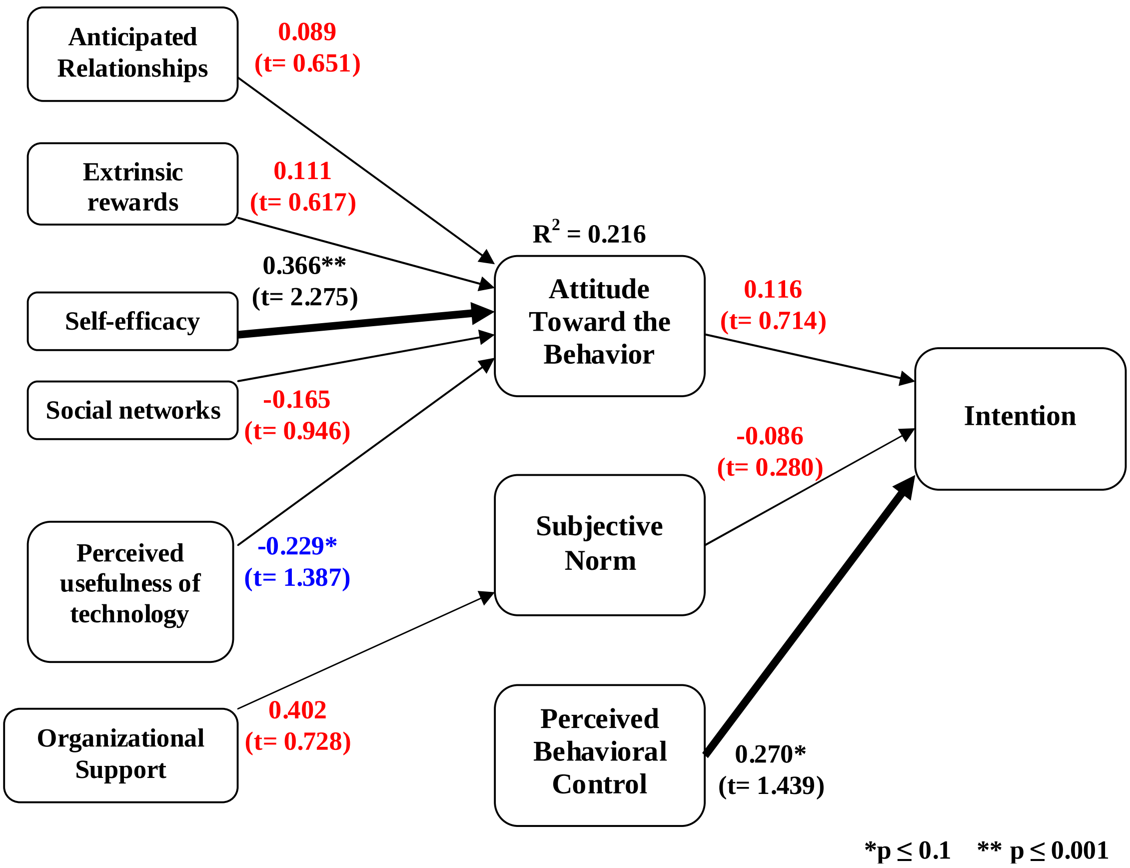

Figure 10, Results of PLS analysis

5.6 Findings and Conclusions

The study was conducted to find factors that are likely to positively influence knowledge sharing behavior of management consulting professionals. Six potentially salient motivational factors (anticipated relationships, extrinsic rewards, self-efficacy, social networks, perceived usefulness of technology and organizational support) were found and applied as antecedents to the constructs of TPB model, namely attitude toward behavior, subjective norm and perceived behavioral control. Concentration in this study was on the individual, meaning that every individual answering the survey represented their own perspective.

By studying responses of 43 management consultants, the only factors that were seen to positively influence knowledge sharing behavior were the perceived level of control and ownership the person has to knowledge sharing (perceived behavioral control), which influences intention directly, and perception of person's ability to valuable contributions and their criticality (self-efficacy), which influences the attitude toward knowledge sharing. This shows that consultants need to have a feeling of them being in control of the sharing activity – instead of forced to share – and they need to be sure the knowledge they share is valuable.

Perceived usefulness of technology was surprisingly found to possibly cause negative effect on individual's knowledge sharing attitude. There could be many reasons for this surprising result. For instance, it could be due to small sample size of the study, or the fact that technology often supports standardized processes in an organization and because of that, consulting professionals might see IT as a way for the organization to exercise control. As mentioned in the study, knowledge workers such as consultants like autonomy and as little supervision as possible. Thus, negative feelings toward organizational control in this case could lead to negative feelings toward the technology also. The result could also be affected by the specific technologies that are in use at the organizations studied. There is a vast amount of different technologies that support knowledge sharing in the market and some of them are fairly new technologies that still have some issues. Thus, perhaps employees already in general do not perceive the technologies useful, even if they don't have the solution already in use.

Other factors were not found as factors that would positively influence knowledge sharing behavior within management consultants. As shown by knowledge management literature and previous research, management consultants are seen as a difficult group to get to share their knowledge due to the highly competitive culture in consulting organizations that leads to fear of losing advantage if knowledge is shared. This is one possible explanation for this result.

The findings do naturally be interpreted by taking in consideration the limitations of the study. The biggest limitation in the study is that the sample size was small, which affects the significance of the results. While PLS allows a small sample size and has an advantage in finding significant relationships well, it is very sensitive to outliers. Thus, with the small sample size combined with large amount of constructs in the model, this can be a reason for the hypotheses not being supported. The small sample size also affects the reliability and validity of the results. The amount of organizations and hence different organizational cultures were well represented, but as the sample size was small, the results are somewhat difficult to generalize.

The factors and measures were largely adopted from previous studies where they were found significant. This study contributed to knowledge management research in searching the factors in a new setting, namely management consulting. One characteristic of the industry is seen to be a general 'unwillingness' to share information, which made the topic interesting to study. The results were surprising compared to previous research in the area and more research should be conducted to validate the results.

In this light, there is plenty of future research to conduct in this area. A wide range of factors could impact the intention to share knowledge in consulting organizations and for this study only a few were chosen. Thus, future research and research focusing on more specific area of knowledge sharing is needed. Research on how culture, gender, age, amount of work experience of an individual, job grade of an individual and the size and multinationality of an organization influence knowledge sharing would be beneficial for researchers and managers in consulting organizations. Also, this study concentrated on sharing knowledge that can be codified. It would be beneficial to also study behavioral factors when sharing tacit information. On the technological side, it would be interesting to research what tools or technologies are seen useful and what not, as the selection in the market seems to be very wide.

The study concentrated on the perspective of individual and as TPB was the basis for the study, the aim was to find factors that positively influence the behavior as behavioral theory concentrates on finding the factors that has positive influence. It would be interesting to also conduct a research on what the barriers are.

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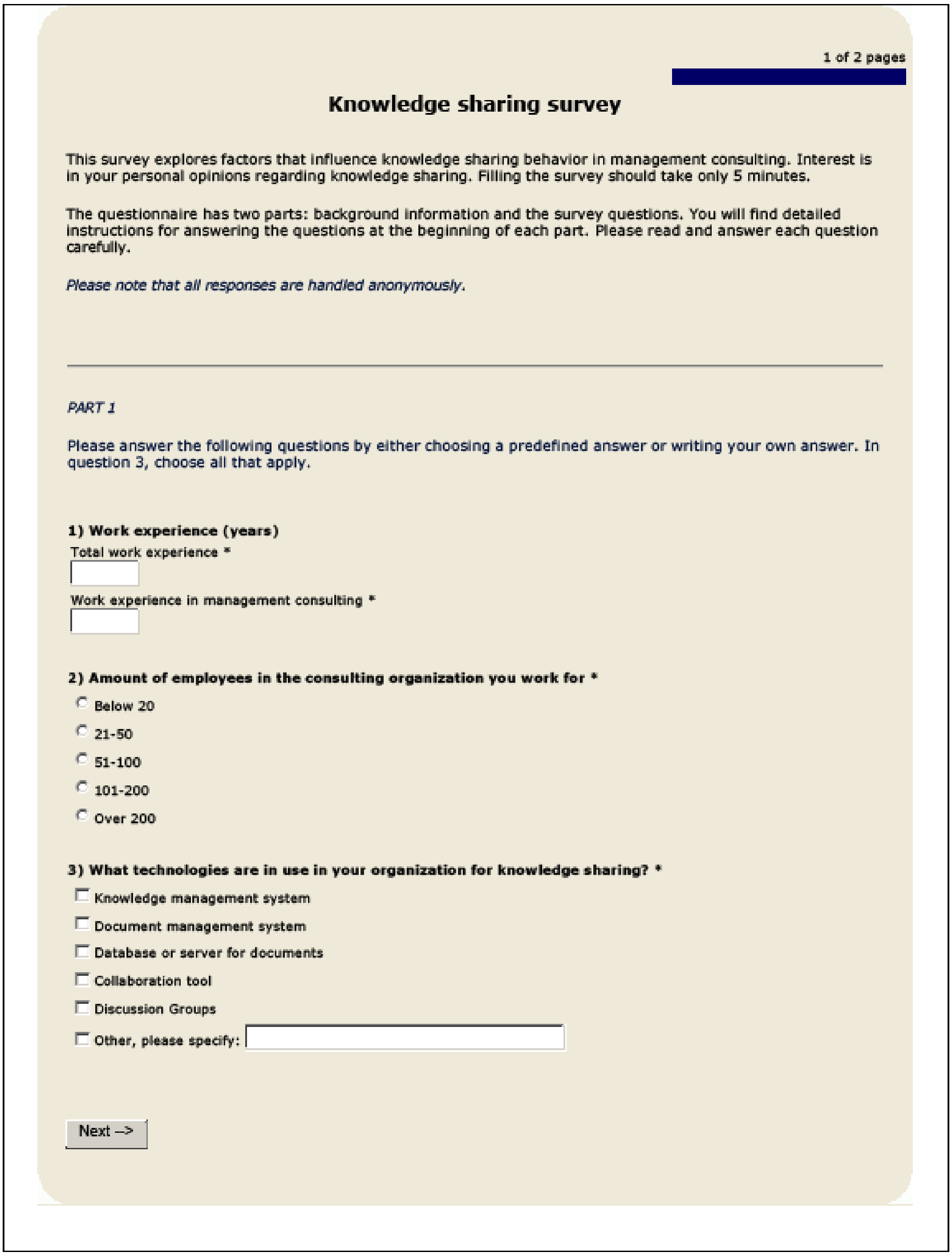
APPENDIX A – The Questionnaire Form



1 of 2 pages

Knowledge sharing survey

This survey explores factors that influence knowledge sharing behavior in management consulting. Interest is in your personal opinions regarding knowledge sharing. Filling the survey should take only 5 minutes.

The questionnaire has two parts: background information and the survey questions. You will find detailed instructions for answering the questions at the beginning of each part. Please read and answer each question carefully.

Please note that all responses are handled anonymously.

PART 1

Please answer the following questions by either choosing a predefined answer or writing your own answer. In question 3, choose all that apply.

1) Work experience (years)

Total work experience *

Work experience in management consulting *

2) Amount of employees in the consulting organization you work for *

- Below 20
- 21-50
- 51-100
- 101-200
- Over 200

3) What technologies are in use in your organization for knowledge sharing? *

- Knowledge management system
- Document management system
- Database or server for documents
- Collaboration tool
- Discussion Groups
- Other, please specify:

Next -->

2 of 2 pages

Knowledge sharing survey

PART 2

The questions consist of statements that you should evaluate. Please answer by choosing a number that describes your opinion of the statement most accurately. The scale is as follows:

5 = Strongly agree
4 = Agree
3 = Neither agree nor disagree
2 = Disagree
1 = Strongly disagree
0 = I do not know / No opinion

Knowledge and knowledge sharing in all the questions of this survey refer to <u>knowledge that is accessible by many members of your organization</u> in a tangible form like words or graphs. Examples of such knowledge include documents you have created that you store in a system and messages you post in electronic bulletin boards. Thus, when answering the questions, please think of sharing such knowledge.

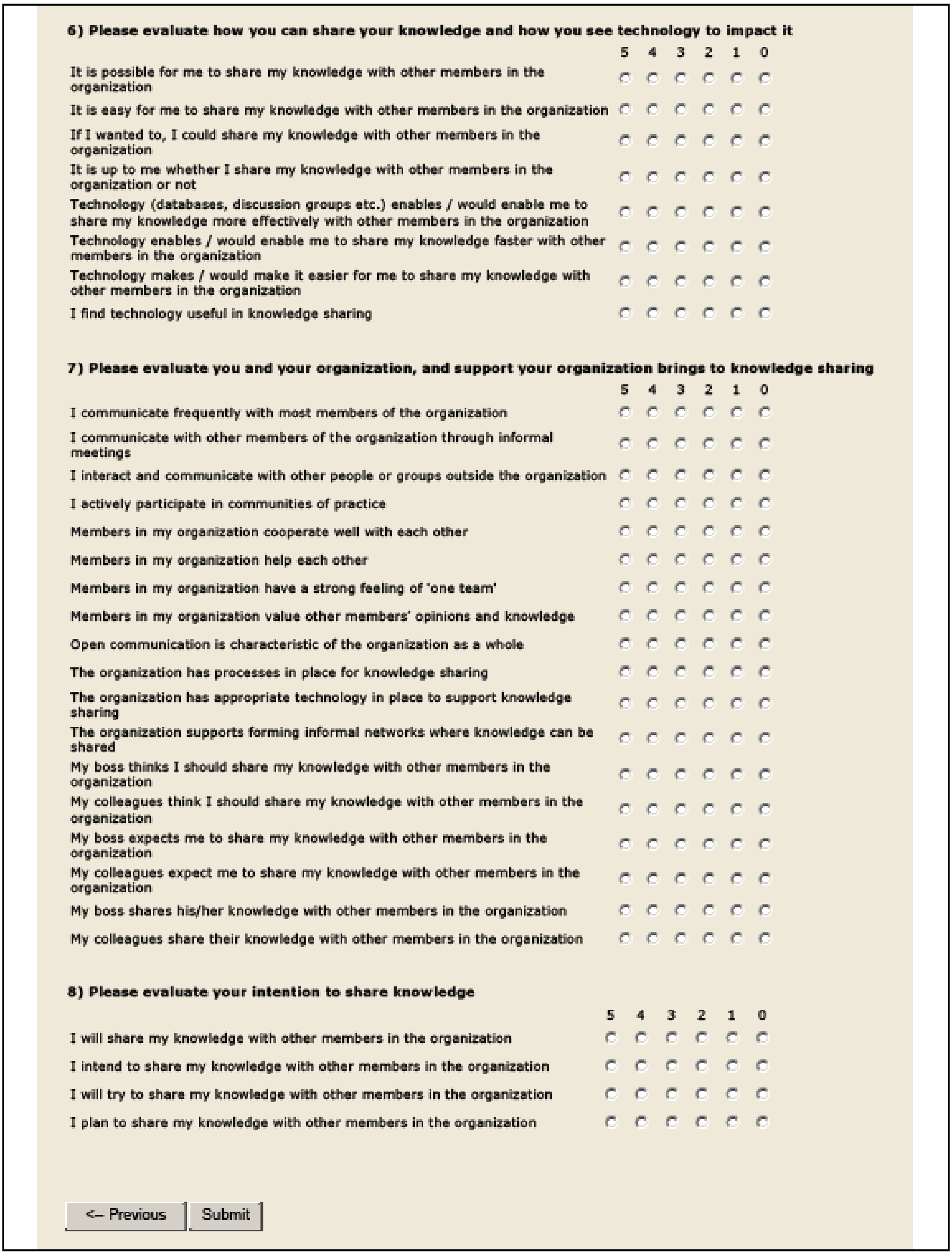
Please remember that you should answer based on your personal opinion.

4) Please evaluate your attitude towards sharing your knowledge

	5	4	3	2	1	0
I think it is good to share my knowledge with other organizational members	○	○	○	○	○	○
I think it is important to share my knowledge with other organizational members	○	○	○	○	○	○
I think it is beneficial to share my knowledge with other organizational members	○	○	○	○	○	○
I like sharing my knowledge with other organizational members	○	○	○	○	○	○

5) Please evaluate the outcome you think sharing your knowledge will bring

	5	4	3	2	1	0
My knowledge sharing would strengthen the ties between existing members in the organization and myself	○	○	○	○	○	○
My knowledge sharing would get me well-acquainted with new members in the organization	○	○	○	○	○	○
My knowledge sharing would expand the scope of my association with other members in the organization	○	○	○	○	○	○
My knowledge sharing would create strong relationships with members who have common interests in the organization	○	○	○	○	○	○
Sharing my knowledge would help other members in the organization solve problems	○	○	○	○	○	○
Sharing my knowledge would create new business opportunities for the organization	○	○	○	○	○	○
Sharing my knowledge would improve work processes in the organization	○	○	○	○	○	○
Sharing my knowledge would increase productivity in the organization	○	○	○	○	○	○
I will receive monetary rewards in return for my knowledge sharing	○	○	○	○	○	○
I will receive additional points for promotion in return for my knowledge sharing	○	○	○	○	○	○
I will receive salary raise in return for my knowledge sharing	○	○	○	○	○	○
I will be faced with penalty measures for hoarding my knowledge	○	○	○	○	○	○



6) Please evaluate how you can share your knowledge and how you see technology to impact it

	5	4	3	2	1	0
It is possible for me to share my knowledge with other members in the organization						
It is easy for me to share my knowledge with other members in the organization						
If I wanted to, I could share my knowledge with other members in the organization						
It is up to me whether I share my knowledge with other members in the organization or not						
Technology (databases, discussion groups etc.) enables / would enable me to share my knowledge more effectively with other members in the organization						
Technology enables / would enable me to share my knowledge faster with other members in the organization						
Technology makes / would make it easier for me to share my knowledge with other members in the organization						
I find technology useful in knowledge sharing						

7) Please evaluate you and your organization, and support your organization brings to knowledge sharing

	5	4	3	2	1	0
I communicate frequently with most members of the organization						
I communicate with other members of the organization through informal meetings						
I interact and communicate with other people or groups outside the organization						
I actively participate in communities of practice						
Members in my organization cooperate well with each other						
Members in my organization help each other						
Members in my organization have a strong feeling of 'one team'						
Members in my organization value other members' opinions and knowledge						
Open communication is characteristic of the organization as a whole						
The organization has processes in place for knowledge sharing						
The organization has appropriate technology in place to support knowledge sharing						
The organization supports forming informal networks where knowledge can be shared						
My boss thinks I should share my knowledge with other members in the organization						
My colleagues think I should share my knowledge with other members in the organization						
My boss expects me to share my knowledge with other members in the organization						
My colleagues expect me to share my knowledge with other members in the organization						
My boss shares his/her knowledge with other members in the organization						
My colleagues share their knowledge with other members in the organization						

8) Please evaluate your intention to share knowledge

	5	4	3	2	1	0
I will share my knowledge with other members in the organization						
I intend to share my knowledge with other members in the organization						
I will try to share my knowledge with other members in the organization						
I plan to share my knowledge with other members in the organization						

<-- Previous | Submit

APPENDIX B – Weights and Loadings

Construct	Measure	Weight	Loading	Standard Error	T-Statistic
Intention to share knowledge	**I1**	0.3612	0.6633	0.2024	3.2767
	I2	0.3248	0.9188	0.0788	11.6530
	I3	0.1636	0.7945	0.1557	5.1029
	I4	0.3786	0.8770	0.1321	6.6375
Attitude toward behavior	**A1**	0.3966	0.8743	0.0779	11.2231
	A2	0.3271	0.7473	0.1384	5.3998
	A3	0.4465	0.9156	0.0349	26.2620
Subjective norm	**S1**	0.1757	0.7793	0.3477	2.2414
	S2	0.2341	0.8292	0.3755	2.2083
	S3	0.1156	0.6898	0.3659	1.8852
	S4	0.2210	0.6918	0.3941	1.7554
	S5	0.0902	0.5365	0.3804	1.4102
	S6	0.4562	0.8504	0.5062	1.6800
Perceived behavioral control	**P1**	0.6281	0.9402	0.1386	6.7836
	P3	0.4620	0.8863	0.1607	5.5148
Anticipated relationships	**AR1**	0.4154	0.7583	0.2511	3.0196
	AR2	0.2435	0.6991	0.2398	2.9154
	AR3	0.5850	0.8800	0.0863	10.1937
Extrinsic rewards	**ER1**	0.7329	0.9481	0.5950	1.5935
	ER2	-0.0254	0.6537	0.3290	1.9867
	ER3	0.4036	0.7970	0.3102	2.5689
Self-efficacy	**SE1**	0.2593	0.7321	0.1550	4.7243
	SE2	0.4086	0.8334	0.0920	9.0564
	SE3	0.2102	0.7648	0.1294	5.9122
	SE4	0.3723	0.8297	0.0724	11.4671
Social networks	**SN1**	0.2397	0.6111	0.3335	1.8322
	SN2	0.4190	0.6310	0.2762	2.2842
	SN4	0.6999	0.8418	0.4706	1.7889
Perceived usefulness of the technology	**PU1**	0.3959	0.9651	0.1668	5.7876
	PU2	0.2830	0.9700	0.1619	5.9919
	PU3	0.2667	0.9256	0.1756	5.2700
	PU4	0.1445	0.6674	0.2378	2.8070

Construct	Measure	Weight	Loading	Standard Error	T-Statistic
Organizational support	**OS1**	0.2384	0.7958	0.1472	5.4045
	OS2	0.2517	0.6679	0.1619	4.1258
	OS3	0.1094	0.6170	0.1827	3.3765
	OS4	0.1158	0.5003	0.1466	3.4133
	OS5	0.2056	0.5207	0.1872	2.7813
	OS6	0.1429	0.6108	0.2328	2.6240
	OS7	0.2825	0.7489	0.2305	3.2495
	OS8	0.1730	0.6411	0.1358	4.7208

Standard errors and t-statistics are for loadings, not weights.

APPENDIX C – Individual Item Reliability

Measure	Test 1 Loading	Test 2 Loading
I1	0.6225	0.6633
I2	0.9336	0.9188
I3	0.8290	0.7945
I4	0.8833	0.8770
A1	0.8823	0.8743
A2	0.7126	0.7473
A3	0.8916	0.9156
A4	0.3648	-
S1	0.7784	0.7793
S2	0.8286	0.8292
S3	0.6887	0.6898
S4	0.6915	0.6918
S5	0.5365	0.5365
S6	0.8515	0.8504
P1	0.8701	0.9402
P2	0.4461	-
P3	0.6719	0.8863
P4	-0.5907	-
AR1	0.7995	0.7583
AR2	0.7002	0.6991
AR3	0.8447	0.8800
AR4	0.3471	-
ER1	0.9326	0.9481

Measure	Test 1 Loading	Test 2 Loading
ER2	0.6601	0.6537
ER3	0.7937	0.7970
ER4	0.1819	-
SE1	0.7433	0.7321
SE2	0.8313	0.8334
SE3	0.7665	0.7648
SE4	0.8225	0.8297
SN1	0.5365	0.6111
SN2	0.6228	0.6310
SN3	0.2988	-
SN4	0.8660	0.8418
PU1	0.9631	0.9651
PU2	0.9650	0.9700
PU3	0.9143	0.9256
PU4	0.6974	0.6674
OS1	0.7959	0.7958
OS2	0.6679	0.6679
OS3	0.6172	0.6170
OS4	0.5003	0.5003
OS5	0.5209	0.5207
OS6	0.6106	0.6108
OS7	0.7487	0.7489
OS8	0.6410	0.6411