UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

The Process of Knowledge Exchange

- a Case Study of a Project-based Organization

Bachelor Thesis
Spring Semester 2014
Department of Business and Administration
- Section of Management and Organization

Authors
Evelina Eriksson, 1990-07-24
Jessica Börjesson 1989-01-22

Tutor
Roger Schweizer

Abstract

Due to increasingly fast changing markets, there is a need for an efficient knowledge transfer within organizations in order for them to stay competitive. This study regards knowledge transfer as a part of the on-going process of knowledge exchange, in which application and development of the transferred knowledge also are included. The process of knowledge exchange in project-based organizations has been neglected within the research field, even though this organizational form is becoming increasingly common, and furthermore holds specific characteristics. Therefore, this thesis aims to develop a better understanding of how the process of knowledge exchange in project-based organizations is influenced by these characteristics. To do this, a research question regarding how knowledge exchange is enabled and prevented in a project-based organization, compared to in a traditional organization, has been answered through a case study. Five project managers in one organization have been interviewed in-depth.

The findings show that several of the factors that previous research has shown to influence the knowledge exchange in traditional organizations, including lack of time, social interaction, individuals' willingness and ability to exchange knowledge and the corporate culture, also have an influence on the exchange in a project-based organization. However, the characteristics of the project-based organization appear to have an influence on how the factors affect the knowledge exchange. For example, the influence of the lack of time as an obstacle, and the social interaction as an enabler, was shown to be enhanced as a consequence of these characteristics.

Key Words: Knowledge management, Knowledge exchange, Knowledge transfer, Knowledge application, Knowledge development, Project-based organizations, Social interaction

Table of Contents

1. Introduction 6
   1.1 Background 6
   1.2 Problem discussion 6
   1.3 Aim and research question 8
2. Theoretical framework 9
   2.1 Introduction to the theoretical framework 9
   2.2 What is knowledge? 9
   2.3 The concept of knowledge exchange 10
      2.3.1 Two different perspectives on knowledge transfer 10
      2.3.2 Knowledge application and development 11
      2.3.3 The approach of this thesis 12
   2.4 Factors affecting knowledge exchange 12
      2.4.1 Social interaction 13
         2.4.1.1 The influence the workplace landscape has on social interaction 13
      2.4.2 Willingness 14
         2.4.2.1 Motivation 14
         2.4.2.2 Trust 15
         2.4.2.3 Power 15
      2.4.3 Ability 15
         2.4.3.1 Absorptive capacity 15
         2.4.3.2 Ability to understand which knowledge that can be beneficial for whom 16
      2.4.4 Corporate culture 16
   2.5 Project-based organizations and knowledge exchange 16
      2.5.1 Lack of time 17
      2.5.2 The difficulty of standardizing work methods 17
   2.6 Summary of the theoretical framework 17
3. Method 19
   3.1 Research approach 19
   3.2 Sampling 19
   3.3 Data collection 20
   3.4 Research process 21
   3.5 Quality of the study 22
      3.5.1 Internal validity 22

3.5.2 External validity 22
3.5.3 Reliability 23
4. Empirical data 24
4.1 The studied company 24
4.2 Empirical data 24
4.2.1 The process of a project, parties involved and kind of knowledge transferred 24
4.2.2 Factors 25
4.2.2.1 Lack of time 25
4.2.2.2 Social interaction 26
4.2.2.2.1 How knowledge is exchanged 26
4.2.2.2.2 The workplace landscape 26
4.2.2.2.3 Formal and informal meetings 27
4.2.2.2.4 Application and development of knowledge 28
4.2.2.2.5 Other communication channels 29
4.2.2.3 Willingness 30
4.2.2.3.1 Motivation 30
4.2.2.3.2 Trust 31
4.2.2.3.3 Power 32
4.2.2.4 Ability 32
4.2.2.4.1 Absorptive capacity 32
4.2.2.4.2 Ability to understand which knowledge that can be beneficial for whom 33
4.2.2.5 Corporate culture 33
5. Analysis 35
5.1 The process of a project, parties involved and kind of knowledge transferred 35
5.2 Lack of time 35
5.3 Social interaction 36
5.3.1 How knowledge is exchanged 36
5.3.2 The workplace landscape 36
5.3.3 Formal and informal meetings 37
5.3.4 Application and development of knowledge 38
5.3.5 Other communication channels 39
5.4 Willingness 39
5.4.1 Motivation 39
5.4.2 Trust 41
5.4.3 Power 42
5.5 Abilities 42

5.5.1 Absorptive capacity 42
5.5.2 Ability to understand which knowledge that can be beneficial for whom 43
5.6 Corporate culture 43
6. Conclusion 45
6.1 Suggestions for further research 48
7. References 50
8. Appendix 54
8.1 Interview guide 54
8.2 Overview of respondents and interviews 55

1. Introduction

1.1 Background

Many companies today face difficult challenges due to the turbulent environments they operate in. They are constantly required to adapt to new conditions that rise from fast changing markets and rapid technological advances. Consequently, there is a need for an on-going learning in companies for them to stay competitive (Ackerman et al., 2003). Knowledge is considered a crucial resource since it is difficult for competitors to imitate and grows as it is being used (Adler, 2001; Argote & Ingram, 2000; Riege, 1997). An efficient creation and transfer of knowledge is the main source to a company's competitive advantage, due to the benefits it generates (Argot & Ingram, 2000; Lubit, 2001). For example, it leads to a spread of best practices and prevents co-workers from having to search for a solution to the same problem twice. Also, it brings together the knowledge of different individuals, something that may generate synergies and facilitate development of new services and products (Lubit, 2001).

Despite the increased importance knowledge exchange has been given, and the positive effect studies have shown it has on organizational performance, the extent to which companies are successful in this vary significantly. The reason for this is that knowledge exchange is a complex process and more difficult to manage than what might be assumed at first sight due to various reasons (Argot & Ingram, 2000). Firstly, the concept of knowledge is problematic to define, and therefore it can also be difficult to manage. Often it is not obvious which kind of knowledge that is desirable to transfer, nor how to realize the transfer. Furthermore, sometimes individuals within organizations do not wish to share the knowledge they possess (Jonsson, 2012). Since organizational knowledge to a great extent is based on the skills of individuals, it is important to understand what might facilitate the knowledge transfer between these individuals and the utilization of newly acquired knowledge (Ackerman et al., 2003; Jonsson, 2012; Bogner & Bansal, 2007).

1.2 Problem discussion

Even though the idea of knowledge transfer within organizations is not new, more attention has been directed towards this phenomenon during the last decades (e.g. Jonsson, 2012; Wiig, 1997; Davenport & Prusak, 1998). The concept of knowledge management has been established, and it had its breakthrough in the mid-nineties, much owing to the rise of communication technologies (Wiig, 1997). The basic assumption within knowledge management is that knowledge is an essential resource for organizations, and therefore it is important to manage and transfer it as efficiently as possible. Within this field of research, knowledge has traditionally been seen as an object, and the main focus has been on how knowledge can and should be transferred, often by the help of technological solutions

(Alvesson & Kärreman, 2001). This perspective has been questioned since it overlooks social, organizational and cultural aspects, factors that also have a great impact on the ability to exchange knowledge (Jonsson, 2012). There is also another stream within knowledge management, which regards knowledge as fluid and knowledge transfer as a constantly on-going process. Instead of focusing on IT-solutions, this process-based approach emphasizes the influence of social interaction. However, limited attention has been given this approach, and few studies have been carried out investigating how the knowledge transfer is practiced between individuals within organizations in the every-day work (Jonsson, 2012; Chen & Huang, 2007).

Knowledge management has also been criticized for stressing the act of the transfer, mainly to databases, rather than how the knowledge might be applied and developed after the transfer has been made (Alvesson & Kärreman, 2002; Jonsson, 2012). If organizations can improve their ability to utilize the transferred knowledge, this might also lead to the production of new knowledge. This is important, because for the knowledge within an organization to generate a sustained competitive advantage, both the transfer and the development of the transferred knowledge have to be efficient (Lubit, 2001). It is recognized within the research field of knowledge management that transferred knowledge in itself does not create any value if it does not lead to any actual change in the co-workers' behaviour (Davenport & Prusak, 1998; Chen & Huang, 2007). Despite this, what happens to the knowledge after the transfer is the least attended part within knowledge management, both theoretically and empirically (Chen & Huang, 2007).

This thesis argues that, since it is mainly the application and development of knowledge that create value to an organization (cf. Davenport & Prusak, 1998), it is important that these parts also are included when studying knowledge transfer in organizations. To understand how these parts interact with each other, the perception of this thesis is that it is essential to move past the idea of knowledge as a static object. Thus, with the process-based approach as a base, this thesis will examine the transfer of knowledge together with the application and development of the transferred knowledge, arguing that these are brought together in an on-going interactive process of knowledge exchange.

Previous studies within the research field of knowledge management have focused on knowledge transfer in traditionally organized firms (e.g. Riege, 2005; Mårtensson, 2000; Davenport & Prusak, 1998). Thus, there is a gap within this research area when it comes to knowledge transfer in other organizational forms, such as the project-based organization (cf. Hall et al., 2000). However, to organize economic activities in forms of projects has become more usual, and this organizational form is therefore becoming increasingly important (Whitely, 2006). To examine the process of knowledge exchange in this context is interesting since the project-based structure in various aspects differ from traditionally structured organizations. For example, the project-based form often implicates a

diversified daily work, where it is not possible to standardize work methods due to differences between projects (cf. Brensen et al., 2003). Furthermore, individuals in loosely put together organizations, like project-based organizations, are also to a larger extent personally responsible for searching information and cooperating with co-workers, since the functions are not formally connected as in traditional organizations. Therefore the importance of the social dimension is even greater in project-based organizations (Lindkvist, 2001). Also, the stressful climate in project-based organizations can contribute to a neglecting of knowledge transfer (Söderlund, 2005).

1.3 Aim and research question

As established in the section above, a project-based organization has characteristics that differ from the ones of traditionally structured organizations. However, how these characteristics affect the process of knowledge transfer is a relatively unexplored topic (cf. Hall et al., 2000). Therefore, the aim of this thesis is to develop a better understanding of how the process of knowledge exchange is influenced by the characteristics of a project-based organization.

To fulfil this aim, this thesis intends to answer the following question:

- How is knowledge exchange enabled and prevented within a project-based organization compared to in a traditionally structured organization?

2. Theoretical framework

This theoretical framework consists of three main parts. Firstly, an overview is given of the different perspectives there are on knowledge and knowledge exchange. Secondly, factors that have been indicated to influence knowledge exchange in traditionally organized firms will be addressed. Thirdly, a general description of project-based firms is given. Thereafter the limited research that was found concerning specific factors that might influence the knowledge exchange in project-based firms is presented. The chapter is later on summarized.

2.1 Introduction to the theoretical framework

Since this thesis has adopted an abductive approach, the theoretical framework has been revised continuously during the process of this thesis. The initial theoretical framework included the general overview of the different approaches to knowledge exchange. Moreover, it included factors that were said to affect the knowledge exchange in organizations in general, which were social interaction, motivation, trust, power, absorptive capacity, ability to understand which knowledge that can be beneficial for whom, and corporate culture. However, due to empirical insights, additional theoretical explanations have later been added to the majority of the factors. Moreover, a few factors have been introduced for the first time. These include the workplace landscape, lack of time, and the difficulty of standardizing work methods. A more detailed description of the abductive process will be given in the method section.

2.2 What is knowledge?

What knowledge really signifies is one of the fundamental questions that humanity is struggling with (Hislop, 2009). Davenport and Prusak (1998) define knowledge as a "fluid mix" consisting of "framed experience, values, contextual information and expert insights" that altogether make up a base for how new experiences and information is evaluated and incorporated. This is only one out of many definitions, and there is no consensus regarding how the concept of knowledge should be defined. However, one thing that is usually agreed upon is that the concept of knowledge is complex and that it consists of different elements (Davenport & Prusak, 1998).

One separation that is commonly made when talking about knowledge transfer is the one between tacit knowledge and explicit knowledge (Jonsson, 2012). Nonaka and Konno (1998) describe explicit knowledge as knowledge that is easy to express and share. It can easily be noted down and explained in words and numbers, and then shared via data, manuals and the like. Tacit knowledge, on the other hand, is individual. It derives from a person's experiences, values and emotions. This kind of knowledge is more difficult to transfer and share with others and it is hard to explain in words and

numbers (Nonaka & Konno, 1998). In contrast to Nonaka and Konno (1998), Brown and Duguid (2001) argue that it is more correct to talk about different dimensions of knowledge. Consequently, the knowledge has a tacit dimension, as well as an explicit dimension, and it is difficult to separate these two.

This report, in conformity with Brown and Duguid (2001), adopts the view at tacit and explicit knowledge as different dimensions. Thus, both the explicit dimension, which can easily be expressed in words, and the tacit dimension, which is more problematic to define, will be taken into consideration. However, the tacit dimension will be emphasized, since it has been less studied than the explicit dimension, when the focus has been towards IT. It is also mainly from the tacit dimension of knowledge that the competitive advantages are frequently found (Lubit, 2001).

2.3 The concept of knowledge exchange

The ability to create and transfer knowledge is vital for an organization's survival due to the increasingly competitive environment organizations operate in (Ackerman et al., 2003). This ability has received more and more attention, especially since the mid-nineties, and the concept of knowledge management has been established. This concept refers to how an organization can build, administer, transfer and use knowledge assets as efficiently as possible (Wiig, 1997).

2.3.1 Two different perspectives on knowledge transfer

To increase the understanding of the concept of knowledge transfer, there should also be a clarification of the different perspectives of knowledge that exist. Within the research field of knowledge management, the dominating view is that knowledge is a kind of tangible resource that can be stored and thereafter transferred as an object. This perspective focuses on how an organization can identify valuable knowledge that already exists and on ways to codify and communicate it to make sure that it stays within the organization. The challenge is to transform the implicit knowledge into explicit knowledge. The importance of IT-systems is emphasized, and knowledge should be transferred into databases, so that it can be structured and systemized (Styhre, 2003). Although research within this perspective often is carried out with the intention to find normative solutions, many knowledge management initiatives tend to fail. Some researchers argue that the reason for this is the exaggerated importance the technical solutions are given, while the significance of the social interaction is overlooked (Desouza, 2003).

The other view within knowledge management, which is now receiving increasingly more attention, regards knowledge as a socially constructed process rather than an object (Jonsson, 2012). Knowledge is seen as an intangible asset and focus lies on the tacit dimension. Researchers favouring this

perspective believe that knowledge is constantly created between people in their daily-work and is embedded in the actions that these carry out. Consequently, knowledge is fluid and not a stable object that exists independently of individuals (Styhre, 2003). Because of this, it is often not possible to codify and systematically organize the knowledge. Therefor the central role that IT-systems play in the object-orientated perspective cannot be justified. Technological solutions might be a basic enabler for the transfer of knowledge, but it is merely an instrument to facilitate the social interactions (Alvesson & Kärreman, 2001). In contrast to the object-orientated perspective, the process-orientated perspective adopts an interpretivist approach, and intends to describe how knowledge is created and transferred through social relations and interactions, rather than to give normative explanations. Thus, in contrast to the other branch in the field of research, this perspective does not meet the demand for "quick fixes" for how to manage knowledge within organizations. This might be one reason for why the idea of knowledge as an object still is the dominating approach (Styhre, 2003). On the other hand, the object-orientated approach has long neglected the significance of each individual's motivation to exchange knowledge, while the process-orientated perspective emphasizes this factor and gives it much importance (Jonsson, 2012).

Depending on which perspective one has at knowledge, the concept of knowledge transfer will differ. If knowledge is considered an object, knowledge transfer will be regarded as a one-way communication, with one sender and one receiver. However, if knowledge is seen as a complex process, the transfer of knowledge is an on-going process that implicates an interaction between individuals. Consequently, the way to look at the enablers and obstacles for knowledge transfer will be different, since the process-based approach focus not only on the codification and storage but on the entire process (Jonsson, 2012).

2.3.2 Knowledge application and development

The research field of knowledge management has been criticized for focusing on the actual act of the transfer, while less attention has been directed towards how the knowledge is utilized and developed after a successful transfer (Alvesson & Kärreman, 2001; Jonsson, 2012). However, a basic assumption in this thesis is that transferred knowledge in itself has no value, if it is later not applied or developed. This is in line with Davenport and Prusak (1998) who argue that in order for the knowledge transfer to be valuable, the act of the transmission of knowledge has to lead to a changed behaviour among the organizational members, or to the development of new ideas that will change the co-workers' working habits. Also Chen and Huang (2007) opine that knowledge has to be shared and applied where it can be useful, in order to improve performance and create value, and consequently for the knowledge transfer to generate a competitive advantage. If the transferred knowledge is applied, it can also lead to the production of new knowledge, which contributes to strengthen this advantage (Lubit, 2001). Still, it is not unusual that the process of knowledge exchange stops after the transfer, even if the individual

that receives the knowledge understands and embraces it (Davenport & Prusak, 1998). Although the importance of the application and development of knowledge is acknowledged within the research field of knowledge management, these are the parts of knowledge exchange that are the least studied theoretically and empirically (Chen & Huang, 2007).

2.3.3 The approach of this thesis

There is a lack of extensive research on the application and development of transferred knowledge (Chen & Huang, 2007). Therefore, this thesis intends to help creating a better understanding of knowledge exchange, by not only taking the actual transfer into consideration, but also what happens after the transfer. To be able to examine how the knowledge is being used and developed after the transfer, we believe it is necessary to move beyond the perception of knowledge as a static object and instead adopt the process-orientated approach. This because this thesis, in line with Lubit (2001), argues that the transfer and application of knowledge bring together the knowledge of different individuals, which generates synergies and therefor facilitates the development of new knowledge. The developed knowledge can later be transferred, and consequently an on-going loop of knowledge creation is established. This continuous interactive process will in this thesis be referred to as knowledge exchange or knowledge sharing, and consequently it includes knowledge transfer, application and development. In conformity with the process-orientated approach, this thesis regards technological solutions as a prerequisite for the knowledge exchange, while the importance of social dimension and the individuals that participate in this interaction will be emphasized (Jonsson, 2007).

2.4 Factors affecting knowledge exchange

To create a better understanding of the phenomenon of knowledge exchange and of how to achieve a successful exchange, it is important to get an insight to what might enable or prevent it from taking place (Riege, 2005). This thesis adopts the process-orientated approach towards knowledge, and knowledge exchange is regarded as a continuous process consisting of several steps. Due to its complexity, knowledge exchange is difficult to manage and there are a large number of factors that might influence the process, both as enablers and barriers (Riege, 2005).

Within the research field of knowledge management, the importance of the social interaction between individuals as a factor for a successful knowledge exchange, is increasingly emphasized. One of the reasons for this is that the idea that knowledge is connected to individuals, rather than to organizations, is nowadays shared among several researchers (e.g. Desouza, 2003; Chen & Huang, 2007). According to Desouza (2003), each individual's willingness to share her or his knowledge is one of the most important factors for achieving a favourable knowledge exchange, together with giving individuals the opportunity to share knowledge. Also Jonsson (2012) stresses the importance of having motivated

individuals and an organization that provides prerequisites that facilitate the sharing of knowledge between individuals. Another factor that is acknowledged to have an influence on the efficiency of the knowledge exchange is the individuals' ability to share knowledge (Tsai, 2001). Furthermore, the corporate culture is believed to have an important impact on knowledge exchange (Jonsson, 2012). The following paragraphs will further discuss these factors.

2.4.1 Social interaction

Social interaction in this thesis refers to interpersonal relations in which knowledge is exchanged through communication, as opposed to knowledge transfer that occurs through stored information in databases. According to the process-orientated approach, facilitating social interaction is vital since it is mainly through this, tacit knowledge can be exchanged. Thus, the employees have to be given opportunities to exchange information, ideas and experiences (Chen & Huang, 2007). When this occurs through social interaction, it can also lead to knowledge development, when the knowledge of two or more individuals is brought together (Lubit, 2001). Individuals are more willing to exchange knowledge with people that they have a personal relationship with, and with whom the level of the social interaction is high (Nahapiet & Goshal, 1998).

In general, the lack of time to interact and exchange knowledge is the one of the greatest obstacles for achieving an efficient knowledge exchange (e.g. Mårtensson, 2000; Davenport & Prusak, 1998). Mårtensson (2000) argues that creating possibilities to actually transfer knowledge is a prerequisite. She believes in the creation of "formal learning networks" for the employees where identification and transfer of efficient practices become a natural part of work. Davenport and Prusak (1998) also stresses the importance of establishing well-functioning communication channels and meeting points. By participating in, for example, fairs, conferences or other kinds of forums, the individual is placed in a social context. Knowledge exchange through social interaction is therefore more likely to occur. Sometimes physical face-to-face meetings can be absolutely necessary for the knowledge transfer to take place at all. Also spontaneous and informal communication channels are essential for an organization's success. For example, personal conversations that take place in the organization's cafeteria often give opportunities for knowledge exchange to happen. Therefor it is also desirable to encourage this kind of interaction.

2.4.1.1 The influence the workplace landscape has on social interaction

Social interaction is absolutely necessary to achieve an efficient knowledge exchange (Chen & Huang, 2007). How the workplace landscape is shaped has shown to have a great impact on the daily interaction between the organizational members. If the workplace is shaped like an open landscape, compared to if all co-workers have their own office, the opportunities for communication between the organizational members vary significantly (Oseland et al., 2011). Thus, the workplace in which the

knowledge exchange takes place will affect the patterns of the social interaction (Desouza & Paquette, 2011).

2.4.2 Willingness

Each individual's willingness to exchange knowledge is affected by a numerous amount of factors (Dezousa, 2003). Here, these factors are divided into three parts: motivation, trust and power.

2.4.2.1 Motivation

Motivation is particularly in focus in the debate about knowledge exchange. This is because an understanding of this factor can increase the understanding of why knowledge is exchanged. If individuals are not motivated to share knowledge, it cannot be shared efficiently since knowledge resides within individuals (Jonsson, 2012). Bukowitz and Williams (1999) state that for individuals to share their knowledge, it is necessary to profit from it oneself. To motivate employees to exchange knowledge is therefore an important part for managers. The individuals consequently need rewards to be motivated to share their ways of working, ideas and personal resources.

According to Osterloh and Frey (2000), employees can be motivated extrinsically and intrinsically. Extrinsic motivation involves external motivation, especially monetary reward and working conditions. In firms, linking employees' monetary motives to the goal of the firm, result in extrinsically motivated employees. Intrinsic motivation on the other hand, is about the opportunity to learn, self-realization and freedom. When knowledge in organizations needs to be transferred, intrinsic motivation is of greatest importance. Even though economists realize the importance of understanding the intrinsic motivation, focus is often on the extrinsic part since it is easier to measure (Osterloh & Frey, 2000).

There are several incentives for employees to exchange knowledge, for example material reward, such as salary, bonus and working conditions. Employees may also have an ambition to improve their own status and receive acknowledgement. A feeling of self-fulfilling or to achieve certain goals, or the feeling of belonging and/or the feeling of obligation to a group, profession or organization might also be a basis of the desire to share knowledge (Hislop, 2009).

Individuals' motivation to exchange knowledge can also be affected negatively by a number of factors. When it comes to the application and development of knowledge, an instinctive resistance towards change or a stubbornness that makes individuals reluctant to try new things, are two aspects that are mentioned as very influential (Davenport & Prusak, 1998).

2.4.2.2 Trust

Another factor needed to succeed with the exchange of knowledge through social interaction is trust (Ardichvili et al., 2003). Trust creates an environment where employees are willing to exchange and absorb knowledge and employees feel like they can share knowledge without anyone else taking advantage of it. Therefore, if there is trust, it is more likely for knowledge exchange to take place (Rentzl, 2008). Regarding application of knowledge, trust for the source from where the knowledge comes from can also be a determining factor for whether the recipient of the knowledge dares to put it into use. If the recipient respects the source of the knowledge, application of the knowledge is more likely to occur (Davenport & Prusak, 1998).

Trust is created through reproduced interactions, reciprocation and a "shared sense of mutual obligations" to other members of the group (Hatmaker et al., 2012). Davenport and Prusak (1998) also believe that lack of trust might be an obstacle for knowledge transfer. A possible solution to this could be to build relationships and trust through personal meetings and face-to-face contact.

2.4.2.3 Power

The power it actually means to possess knowledge is an important factor to take into account. The possession of specific knowledge that no one else holds, can give individuals certain advantages, and this can result in a resistance towards sharing this knowledge with others (Jonsson, 2012). An employee's opportunities for advancement within the organization may be reduced if she or he shares hers or his knowledge (Newell & Swan, 2000) and by sharing specific knowledge, employees risk giving away career opportunities (Jonsson, 2012).

2.4.3 Ability

The ability to exchange knowledge can according to Davenport and Prusak (1998) vary depending on the individual, but also on the context. The factors affecting this ability are here divided into two parts: absorptive capacity and ability to understand which knowledge that can be beneficial for whom.

2.4.3.1 Absorptive capacity

Another aspect that has been shown to affect the knowledge transfer and utilization is the absorptive capacity, the ability to acquire and use new knowledge that the recipient of the knowledge own. This capacity depends on the previous knowledge and experience that the individual possesses, but also the individual's personal ability to evaluate and apply the new knowledge (Tsai, 2001). To improve co-workers capacity to absorb new knowledge, they should be given time and education to develop this ability and to increase their flexibility. Individuals' absorptive capacity also depends on their attitude towards the knowledge. Individuals might have the idea that some knowledge does not concern them, or they might be reluctant to acquire knowledge that originates from someone below them in the

hierarchical ladder. In these cases management should encourage a non-hierarchical view towards knowledge, so that the quality of the knowledge is stressed, rather than the source of the knowledge (Davenport & Prusak, 1998).

2.4.3.2 Ability to understand which knowledge that can be beneficial for whom

One reason why exchange of knowledge is difficult to carry out is that it can be difficult to put in words. Since we cannot easily define knowledge exchange, it is difficult to understand how it could be used, and what it actually means for the organization and the individual. It can also be difficult for employees to know which kind of knowledge they need (Jonsson, 2012). Another important barrier to an efficient knowledge exchange can be that it is difficult to know who would benefit from absorbing the knowledge oneself possess (Ekstedt, 1999). It can also be problematic for employees to know where to find the knowledge that they need. Therefor it is important that there is awareness among co-workers of what is going on in the organization and which kind of knowledge the different employees possess (Lindkvist, 2001).

2.4.4 Corporate culture

Altogether, knowledge management is about creating a corporate culture that promotes learning and the interactive process of knowledge exchange. By having a flexible organization that encourages an open communication, this is facilitated. An organization should try to integrate knowledge sharing activities in the daily work, and involve the co-workers so that they feel responsible for these activities (Jonsson, 2012). Furthermore, it is desirable to foster a culture in which it is seen as something positive to ask for help. An important obstacle to application and development of knowledge is the fear of doing something wrong and of taking risks. To prevent this feeling among the co-workers, creative initiatives and collaborations should be rewarded rather than penalized if they fail, thus creating a culture that promotes development (Davenport & Prusak, 1998).

2.5 Project-based organizations and knowledge exchange

As mentioned in the introduction, this thesis intends to study the process of knowledge exchange in project-based organizations. Organizing economical activities in projects is becoming increasingly common within companies. This has led to an increased interest in project-based firms (Whitely, 2006). Despite this, few studies examining the process of the knowledge exchange in project-based organizations have been conducted (Hall et al, 2000).

The difference between a traditional and a project-based firm is that the latter consists of smaller project organizations that are created specifically to work with certain assignments. When the assignment has been realized, the project organization is dissolved. In project-based organizations,

success is often measured in how much time and resources that have been spent on solving the task. To minimize the time and the costs spent on the project is strongly emphasized. Within the literature of project management, the role of the project manager is often highlighted, since she/he is in charge of coordinating all the activities, bearing the ultimate responsibility for carrying out the project (Engwall, 1995).

Lindkvist (2001) argues that the social dimension is even more important in project-based organizations than in traditional ones. This because it is to a larger extent an individual responsibility for the employees to cooperate with each other and to search for knowledge, since the functions are not as formally connected as in a traditional organization.

2.5.1 Lack of time

Frequently, project-based organizations are structured so that every hour is counted and registered to a project. This implicates that employees, and above all the project managers, are put under a lot of time pressure (Hall et al., 2000). One effect this structure can have is that, due to the time pressure, there is no time for long-term development. Focus lies on reaching deadlines and specific goals for each project. The aim is to finish the project as fast as possible using a minimum of resources. Opportunities specifically dedicated to learning, searching for new knowledge and the development of knowledge, are seldom provided (Newell et al., 2009). Thus, creative initiatives are inhibited, since co-workers are rather encouraged to focus on each project (Nonaka, 1994).

2.5.2 The difficulty of standardizing work methods

This project-based organizational structure often leads to a diversified daily work, since different projects might implicate different challenges. Therefore, it is often not possible to standardize work methods (Brensen et al., 2003). Despite this, in Sweden, many project-based organizations develop standardized models for how projects should be carried out, in order to minimize the risk of repeating mistakes. However, this way of attempting to generalize and convert experience-based knowledge into explicit knowledge means that many aspects will be overlooked or lost (Tell & Söderlund, 2001).

2.6 Summary of the theoretical framework

As described in the theoretical framework, the concept of knowledge and knowledge transfer is complex, and there is no consensus concerning how these should be defined (cf. Davenport & Prusak, 1998). However, this thesis adopts the process-based approach towards knowledge, arguing that knowledge is something fluid and the knowledge transfer is an on-going process taking place between individuals in the daily work (cf. Jonsson, 2012). Tacit and explicit knowledge are considered to be different dimensions of knowledge, rather than something separable (cf. Brown & Dugid, 2001). Thus,

both dimensions will be taken into consideration in this study, even if the tacit dimension will be emphasized. Furthermore, this thesis argues that to understand how knowledge transfer can create value within an organization, it is necessary to take into consideration not only the actual transfer, but also the application and development of the transferred knowledge (cf. Davenport & Prusak, 1998). Based on this, the thesis introduces the concept of knowledge exchange, which is defined as an on-going interactive process in which the transfer of knowledge, but also the application and development of the transferred knowledge, is included.

Depending on which perspective one has on knowledge and knowledge transfer, the factors considered to influence these vary (Jonsson, 2012). Based on the process-based approach of this thesis, four main factors have been identified in the previous research as important influencers for the knowledge exchange. The first one is the social interaction between individuals as a facilitator for knowledge exchange (cf. Desouza, 2003; Chen & Huang, 2007). The second and third ones are the individuals' willingness (cf. Desouza, 2003) and ability (cf. Tsai, 2001) to share knowledge. The fourth factor is the corporate culture, which is also believed to have a great impact on the knowledge exchange (cf. Jonsson, 2012). Since there is a lack of research concerning knowledge exchange in project-based organizations (cf. Hall et al., 2000), we have identified these factors in studies examining traditionally structured organizations. However, due to the general nature of these factors, this thesis argues that they will to different extents also be influential in a project-based organization.

Nevertheless, project-based organizations hold some characteristics that distinguish them from traditional ones. For example, there is normally a very high time pressure in this kind of organization (Newell et al., 2009). Also, the diversified daily work makes it difficult to standardize work methods (Brensen et al., 2003). Moreover, the functions in the organization are not as formally connected as in a traditional organization (Lindkvist, 2001). This thesis argues that these characteristics create a different and more complex context for the knowledge exchange, in comparison with the context in traditional organizations in which previous research has been conducted. Therefore, the perception of this thesis is that the characteristics of a project-based organization implicate that the factors mentioned above will influence the knowledge exchange in a different way, compared to in a traditional organization.

3. Method

This chapter intends to describe and evaluate the methodological approach that has been adopted in this thesis.

3.1 Research approach

An efficient knowledge exchange is vital for an organization's success (Ackerman et al., 2003). However, the process of knowledge exchange is inadequate in many organizations due to its complexity (Argote & Ingram, 2000). Moreover, even if it has become increasingly common among organizations to structure their activities in forms of projects (cf. Whitely, 2006), little attention has been directed towards knowledge exchange in such organizations (Hall et al., 2000), even though project-based organizations have characteristics that differ from traditionally structured ones (cf. Brensen et al., 2003). Therefore, the aim of this study is to develop a better understanding of how the process of knowledge exchange is influenced by the characteristics of a project-based organization. To fulfil this aim, a case study has been carried out in order to examine the process of knowledge exchange in depth. This is in line with Eisenhardt (1989), who argues that this is the relevant method when the study concerns a research area that is less explored and when the existing theory is not able to fully explain the phenomenon. Also Merriam (1994) argues that a case study approach is appropriate when less is known about the research area and when the research questions focus on a process, like in the case of knowledge exchange. Another reason for adopting a case study approach is that this thesis regards knowledge exchange as a phenomenon that is embedded in the organizational context and the individuals' actions in the daily work (cf. Styhre, 2003). Consequently, it is difficult to study this process outside its ordinary context, and a case study approach is therefore preferable (cf. Ghauri, 2004).

3.2 Sampling

Due to the intention of this thesis to study the process of knowledge exchange in a project-based organization, the case study has naturally been carried out at such an organization. The specific organization in this case was chosen due to convenience (cf. Merriam, 1994). Through a mutual contact, we got in touch with the head of one of the departments of the organization, a key account manager. Subsequently, we were given access to the organization, and were permitted to take part of the process of the employees' daily work by conducting in-depth interviews. This access was a prerequisite for carrying out the case study. Among the employees, we chose to interview the project managers, since they occupy the central role in the projects through their responsibility to coordinate the activities (cf. Engwall, 1995). Due to this, we believe that they might also hold a central role when

it comes to the knowledge exchange process. Therefore, the phenomenon of knowledge exchange was thought to be more easily studied by interviewing specifically the project managers.

In total, five project managers were interviewed (see *Appendix 8.2)*, out of the six project managers working in the organization. The aim was to interview as many project managers as possible, within the time frame of this thesis. This in order to obtain several perspectives of the phenomenon, thus increasing the quality of the study. This will be discussed further below in the section *3.5.1 Internal validity*. That specifically these five project managers were interviewed was because they were the ones we were given access to by our contact at the organization.

3.3 Data collection

The empirical data in this thesis has been collected through in-depth interviews with the project managers. This method was chosen because the complex nature of knowledge exchange requires detailed answers. By conducting in-depth interviews, we were provided with opportunities to assure that sufficient answers were obtained (cf. Ghauri, 2004).

The collection of empirical data was initiated by a meeting with our contact, key account manager and head of three of the interviewed project managers. The meeting took place face-to-face on the company's premises, and was recorded in order for us to be able to direct all our attention to the conversation. The purpose of this meeting was to discuss the company and its activities in general, in order to obtain a basic overview of the company.

Before the in-depth interviews with the project managers were carried out, a document containing the general topics and questions that were to be discussed during the interviews, was forwarded to the interviewees. This was done in order to give them a basic idea of what the interviews would include. The in-depth interviews were later conducted face-to-face at the company, lasted from 45 to 60 minutes each, and were, in conformity with the first meeting with the key account manager, recorded. This provided us with the possibility to focus only on the interviewees' answers, thus facilitating asking relevant follow-up questions. Additionally, this enabled us to later on transcribe the interviews, something that decreased the risk of missing out on important aspects. The interviews adopted a semi-structured approach with open questions so that the interviewees to a large extent would be free to formulate the answers. The purpose of this was to allow the identification of new aspects and factors that had not already been recognized (cf. Bryman & Bell, 2013). An interview guide (see *Appendix 8.1*), consisting of general themes, was used during all the interviews to make sure all the areas were covered. Focus was on obtaining concrete examples from the project managers' daily work.

3.4 Research process

This thesis has adopted an abductive approach in the research process and has constantly been moving "back and forth" between theory and empirical observations, conducting the analytical work continuously throughout the thesis. This in order to expand our understanding of the investigated phenomenon (cf. Dubois & Gadde, 2002). Initially, we worked out a wide theoretical framework, which helped us to develop an understanding for the theories that existed within this research area. Furthermore, early in the process, a meeting took place with the key account manager in the company participating in the study. This meeting allowed us to make sure that the case was relevant for the aim of this thesis. Together with the collected theoretical data, it also enabled us to reformulate our research question, making it more specific. This is in line with Ghauri (2004), who argues that the best approach is to interweave the collection of empirical data with the analysis of the data from the very beginning. New insights that came out of this meeting were joined with the existing theoretical framework, and together these formed the basis for the in-depth interviews. As earlier mentioned, these interviews followed a semi-structured design so that the obtained answers would to a less extent be influenced by already existing theories and the theoretical framework that we had composed at the time.

All interviews have been transcribed in order to organize and give structure to the data, thus facilitating the analysis process (cf. Jacobsen, 2002). Subsequently, the empirical data was sorted through coding, which means that we categorized the interviewees' answers into different themes, to then be able to relate the collected data to the theoretical framework and the research question (cf. Ghauri, 2004). In our case, we focused on identifying different factors that the interviewees' believed to affect the knowledge exchange in their daily work. Some variables that came up in the interviews were possible to relate to the theoretical framework we had at the time. However, we also paid close attention to factors mentioned to affect the knowledge exchange that could not be explained or related to any of this theoretical framework. To understand the new aspects that emerged, we once again looked at previous research, searching for additional theories that could explain these aspects. These theories were subsequently added to the theoretical framework.

The interviews were conducted with some time in between them (see *Appendix 8.2)*, which allowed us to complement the theoretical framework not only after but also during the process of empirical data collection, making sure it was as appropriate as possible, thus continuously analysing the obtained data (cf. Merriam, 1994).

To sum up, during the process of this thesis, the theoretical framework has been reviewed and revised continuously due to empirical insights, making it more specialised than before the collection of the empirical data was initiated.

3.5 Quality of the study

3.5.1 Internal validity

This study intends to investigate the process of knowledge exchange as something embedded in the actions of individuals (cf. Styhre, 2003). To examine this phenomenon, in-depth interviews have been conducted in order to develop a better understanding of how this process works in reality. However, the reality is constructed by human beings, and by carrying out interviews, it is how the interviewees experience the reality that is being studied rather than an objective reality. Thus, in order to increase the internal validity, the congruence between the empirical data and the reality, it is important to aim to take several perspectives into consideration when carrying out the study (Merriam, 1994). In this thesis, this has been facilitated since we are two investigators conducting the study together. We have also had a continuous dialog with our tutor, something that has given us the chance to obtain a third perspective on our findings. Additionally, this thesis has been reviewed by other students, who later provided us with comments and feedback at a seminar. The empirical data has been collected from five project managers and also the key account manager, which helps to increase the understanding of the studied phenomenon, due to the different perspectives that have been provided. With a larger time frame, we believe that it could have been beneficial to broaden the study to also include observations, something that could have further increased the internal validity.

The five interviewed project managers in the study are not mentioned by name in this thesis. However, due to the small amount of interviewees, and the fact that our contact with the interviewees was mediated by the head of three of the interviewed project managers, it is likely that other people at the company are able to identify which project manager that has expressed which opinions. We are aware that this lack of anonymity might have had a negative influence on the answers in the interviews, since the interviewees have been aware that their superiors would take part of the answers.

3.5.2 External validity

It is doubtful whether it is possible to generalize from single case studies, or from qualitative studies at all, and if it is possible, how (Merriam, 1994). In this thesis, one organization has been studied and five in-depth interviews have been conducted, which means that our findings cannot be said to be representative for how knowledge exchange work in project-based organizations in general. However, nor is it the purpose of this case study. Instead, the intention is to study one case in depth, in order to

contribute to a deeper understanding of the phenomenon of knowledge exchange. Problematizing and finding new relations is the aim, rather than to find general explanations (cf. Merriam, 1994).

3.5.3 Reliability

This essay studies knowledge exchange from the process-based approach, emphasizing the social dimension and the behaviour of the individuals (cf. Jonsson, 2012). Since human behaviour is not static but constantly ever changing, is it problematic to reproduce this kind of qualitative study and obtain the same results. However, it is neither the central aim of the study. Instead, what is important is that the results of the study are dependable and consistent with the collected data, and that the investigator is transparent concerning the context in which the empirical data has been collected and the basis for how the interviewees have been selected (Merriam, 1994).

In this thesis, the initial contact with the company that participates in the study was with the key account manager, whose contact information was mediated to us by a mutual contact. The key account manager later presented us to some of the personnel on site and gave us suggestions whom to interview. We asked to interview the project managers, and we were offered to interview five out of the six project managers working in the business unit. No one of the interviewees were known to us on beforehand, which is in line with Esaiasson et al. (2012), who argues that choosing strangers over known people for in-depth interviews is preferable, and this can have a positive influence on the interviewees' answers. That the in-depth interviews took place at the company's premises and therefor in the home environment for the project managers, is positive according to Bryman and Bell (2013), since the interviewees then might feel more comfortable with the situation.

4. Empirical data

This chapter is initiated by a short presentation of the studied organization. This is followed by a description of how a project in this organization is carried out, which parties that are involved and what is transferred during the process. Thereafter, the factors will be presented. The latter part will to a large extent be consistent with the structure of the theoretical framework. However, the section 4.2.2.2 Social interaction has further been divided into five parts, due to the extensive empirical data that emerged in the interviews

4.1 The studied company

The organization in the case study is a large-sized multinational company consisting of various business units. The unit from which the empirical data has been collected manufactures industrial products for other organizations. Thus, production of a product is initiated when a customer places an order. Further details concerning the organization have been anonymised upon request from the organization itself.

4.2 Empirical data

4.2.1 The process of a project, parties involved and kind of knowledge transferred

In short, the project managers described the process of a project starting with them being handed over the project from the market department, and as from then, the project manager is responsible for making sure that the product is delivered to the customer on time and to a cost within the budget. The process includes different stages, like a development phase and production phase, before the delivery takes place. The process of the projects is described as diversified, since customers' specifications for the purchased products vary, which makes every project more or less "*unique*". Due to this, the general opinion is that the project managers often face new situation that involves new challenges.

During a project, the project managers get in contact with a number of different parties within the organization. The core of a project group can vary, but normally it consists of, except for the project manager, a project engineer and a project purchaser. The parties of the project group work closely together. Additionally, the project managers get in contact with other functions in the organization, such as sourcing and shipping. Even if different project managers are normally not involved in the same project, they interact with each other continuously in their daily work.

All the project managers agree that there is a lot of knowledge that has to be communicated between the parties within the organization, in order to complete the projects. During the process of a project, a

lot of information is exchanged within the project group but also in between other functions. However, four of the five project managers highlighted that there is also a continuous exchange of experiences and ideas between several parties, especially when problems arise.

4.2.2 Factors

4.2.2.1 Lack of time

One project manager explained that every work-hour that is used in the projects is counted. Even though the most important thing is to get a good result in the projects, there is an ambition to keep the number of work-hours as low as possible. When talking about exchanges of knowledge that had gone wrong, all the project managers mentioned the time pressure as the greatest reason for this. For example, one project manager talked about an occasion when information about a delayed delivery was not forwarded to the parties involved, something that was a direct consequence of stress and a large workload. Another one stated, regarding the sharing of knowledge: "*Most of us want to share more. The problem is that everybody is busy /.../ and you do not have time to absorb a lot from the other project managers. One just has to choose what is absolutely necessary*". One interviewee thought that one reason for not prioritizing knowledge exchange is due to the difficulties in measuring the value of this. According to another project manager, she/he sometimes hesitates to ask for help from co-workers, since they are so stressed due to the time pressure.

When talking about application of knowledge, one interviewee gave an example of how time pressure can affect her/his work. The interviewee said that during projects, she/he notes errors, for example in the drawings, to later review and change them together with the rest of the parties involved in the project. For the following projects she/he tries to change and improve these errors. When asked if these changes always are implemented, the interviewee answered: *"There are a lot of other projects going on /.../ sometimes there is no time to change all the drawings*". However, two other project managers said that they have not experienced a lack of time to apply transferred knowledge. They explained that this is because, due to the time-pressure, the specific knowledge that someone needs will normally be transferred in the moment when it is needed. Since the knowledge is frequently transferred in the right "*phase*", extra time to apply it is often not needed.

Four of the five project managers stated that they often meet new challenges and problems in their daily work. The fifth project manager expressed that the work process is more or less the same, more like a "*variation of the same theme*". When new challenges or problems arise, or when customers hand in complicated specifications, the parties involved in the project have to find solutions to these. According to four of the project managers, it is mainly when the projects face new challenges that improvements and development of the work process take place within the company. One of them said:

"*This is a problem-orientated business in the way that as soon as problems arise, they have to be solved. I would like to argue that it is solely problems that bring us forward*". Another project manager said about the topic: "*What we see and deal with are the things that are burning. To be able to improve things that work fairly good, one has to have a lot of extra time*". Other development and improvement work than the one that derives from problems, is normally not prioritized. One interviewee gave an example of this: *"...we had an attempt at working with improvement work then, but it was down-prioritized /.../ due to lack of time. /.../ sometimes one can feel that one wants to change something but there is no time. For example, I can feel that I would like to develop that template, but if it is not planned there can be a lack of time there unfortunately, especially for improvement work*". On the other hand, another interviewee said that for her/him personally, this time pressure also serves as an incentive for finding and developing faster solutions to challenges.

4.2.2.2 Social interaction

4.2.2.2.1 How knowledge is exchanged

When the interviewees were asked how information, ideas and experience are exchanged, the face-to-face contact and the interaction between the different parties was strongly emphasized by all of them. The exchange also takes place by e-mail and telephone even though most of the project managers prefer to transfer knowledge in person. The interviewees explained that this is because they often need to advance rapidly in the projects and communicating directly with each other is a way to make sure that answers are given immediately. Several of the project managers also expressed that exchanging knowledge in person enables a "*two-way communication*", something that they believe contributes to the avoidance of confusion and misunderstandings. One project manager also expressed that by talking to the different parties in person, "*lots of extra knowledge*" is transferred, that the parties on beforehand did not even know that they needed.

4.2.2.2.2 The workplace landscape

Several of the internal functions are working in the same building. Three of the five interviewed project managers are sitting together along with the rest of their department in an open landscape on one floor. The other two who belong to another department are sitting in a similar workspace on another floor. When talking about how often the project managers exchange experiences and ideas, one of the project managers stated: "*We do that on a daily basis. But that is due to the way we are sitting, really, and I think that is a good thing. /.../ then you become aware of what is going on, talking a bit with everybody, and that is good*". Another interviewee gave a similar description: "*That is the advantage of sitting in an open landscape, then you can just ask directly if you have a doubt about something. That happens on a daily basis*". A third interviewee said that she/he and the people she/he is sitting next to *"... talk more and also about things that we otherwise would not be talking about*".

Some of the interviewees commented on how disturbing the open landscape can be for them in their daily work. Three of the interviewees said that as a consequence of the open plan workspace they overhear the other employees talking. Sometimes this leads to them taking part of knowledge even if, as one project manager expressed it: "*it is not the purpose*".

Several of the respondents claimed that the continuous interaction is not as frequent between the project managers sitting on different floors, as between the ones sitting on the same floor. This is according to one interviewee partly explained by the fact that the groups work with different customers. Still, the interviewee believed that there is a lot to learn from one another since they have a lot of "*tools in common*", and that the limited interaction between the groups is also a consequence of the stairs in between them.

4.2.2.2.3 Formal and informal meetings

Most project managers said that they have a meeting once a week with the project group, when the progress of the projects is discussed, including problems that have risen and potential delays. One interviewee believed that these meetings are very important, since they provide an established opportunity for the involved parties to meet at the same time. Within one of the departments, they are since two months using a board that shows an overview of the different projects, according to one of the project managers. Every Monday, the employees meet during half an hour to discuss the current state in the projects, with the intention to help and to give each other a hand if anyone is "*behind*". Nevertheless, the project manager stated that until now, it has not been possible to do that since everybody is "*so busy already*".

The project managers also stated that they talk to each other above all informally on a daily basis by direct contact, telephone and e-mail. Most of them explained that this occurs as soon as someone lacks the knowledge that is needed to proceed with a project. Two of the interviewees gave the example that if a project manager is handed a project with a customer that she/he has not been in contact with before, or if the production is about to take place in a country that she/he lacks experience from, this project manager will ask someone who has previous experience from this. Normally, the person lacking knowledge will ask this person directly face-to-face, since it is the easiest and fastest way to get an answer. If there is a bigger concern, a meeting will be booked.

At the moment, there are no recurrent formal meetings dedicated specifically to exchange knowledge, although all interviewees mentioned that there had earlier been such an initiative between the project managers. These meetings were supposed to take place once a month, and aimed to facilitate discussions between the project managers in order to make them work in a more similar way. These

meetings took place one to two times, before they were down prioritized due to lack of time. Four of the five project managers still believed that this kind of meeting would be beneficial for their work and they expressed a desire for a forum that would facilitate the exchange, even if the actual work-load and the lack of time make them prioritize other things. One project manager said: "*There are so much to learn from the others, because there are project managers that have been working for 30 years. There are so many different projects and different problems*". The fifth project manager opined that this kind of meetings only result in "*wage costs wasted on drinking coffee*", and that it is better to *"...walk around and talk to people. Then you get to know specifically what you need and it is less time-wasting*". When talking about formal meetings, a few of the interviewees also mentioned that the project managers went on a three-day course the year before, and that this created an opportunity to "*talk about all kinds of things*". However, going away on this kind of course only happens occasionally.

When asked about what is communicated during lunch and coffee breaks, four of the interviewees expressed that some knowledge concerning their work is exchanged. Three of them said that they actually try not to discuss work during these breaks, but that it can be difficult to avoid, especially if someone is struggling with a problem. One of the project managers claimed that she/he always continues discussing work-related issues during the breaks.

4.2.2.2.4 Application and development of knowledge

Four of five interviewees claimed that they use their co-workers' knowledge continuously in their daily work. One project manager expressed it in the following way: "*It is mostly smaller things, but still, we do that on a daily basis, unconsciously*". In all examples that were given of application of knowledge transferred from other employees, the knowledge had been transferred through social interaction.

As earlier mentioned in section *4.2.2.1 Lack of time*, the development of knowledge is among most of the project managers believed to be driven by problems and challenges. When these rise, four of five project managers emphasized that they usually ask for help from the co-workers, if they do not know how to solve them. One interviewee explained why: "*Often someone has dealt with a similar situation before, and they know how to solve it*". Problems are often discussed within the project group, but also with other project managers or with other functions within the organization. Three project managers claimed that this is something that happens on a daily basis, and that the development of solutions through interaction with other employees therefore is continuous. One of them explained that this often takes place spontaneously, and that employees then gather informally to discuss different issues. Another project manager said that sometimes when different parties meet informally, with the aim to for example go through an idea, suddenly the other parties come with different opinions and then a

discussion is initiated, even if it was not the purpose of the meeting. Through this, this project manager stated, a better idea will be created than the original one.

If a project is facing a more complex challenge, a formal meeting is normally conducted and the employees that might know something about the topic are called. One of the project managers said that this usually happens one time per project. Another interviewee gave an example of this kind of meeting that took place when a problem rose within the production. Then people from the design department, sales department, sourcing department, the head of the project managers, the head of the project engineers and a few more employees gathered for a discussion. The project manager expressed that to put everybody together in a room is sometimes the only way to reach a solution since: "*...everyone contributes with different inputs. Someone has got the answer to one thing, and someone else to something else. Then we just brainstorm and consider different approaches*".

4.2.2.2.5 Other communication channels

To find knowledge that one needs, the only way is to ask for it since "*nothing is written down*", according to one interviewee. The interviewee continued saying that she/he believes that due to this, it can be hard for new employees. They are only given a short summary of tasks, obligations and general information. A manual was supposed to be created for routines for each customer, of things to take into consideration, how their organization functions and additional information. However, that has not happened yet, due to lack of time. Another of the interviewees argued that it is not possible to write down how to carry out a project, since "*every project is unique*" and "*manuals only show the best case scenario*". Instead, she/he said that every project manager must complete the projects following her/his own model. Four out of five of the interviewees described how the involved parties, after every finished project, get together in a meeting discussing what went well or wrong, if the budget was followed, delays etcetera. Learnings from the project are then summarized in a "*lessons learned*"-report, which is sent to the management and the authors of the report. However, the report is not automatically spread to other parties within the organizations.

Even if all of the project managers find face-to-face contact as the best way to find and exchange knowledge, they still think there are other possible channels for this. One of them stressed that the "*lessons learned*"-reports could be put together to a larger extent, which she/he meant would improve the spread of knowledge. Another of the respondents said that if there were a very well-functioning database, maybe it would be used more frequently. However, she/he would prefer talking to someone instead of "*looking for something in a text*".

Regarding databases, some of the project managers are doubtful how these databases could be created. One of them expressed that there is a great amount of knowledge, and it is very difficult to evaluate

what is useful knowledge and worth writing down. Still, she/he said that a risk with not putting knowledge into words is that it can leave the company with the individual if she/he for example gets ill.

4.2.2.3 Willingness

4.2.2.3.1 Motivation

All the interviewees talked about motivation, and how the motivation varies between people. Motivation is a must for everything to function, one of them argued: *"...motivation definitely affects a lot. If there are unmotivated people, things will not work out. In our situation, everyone has to work very hard to keep up*". One of the interviewees claimed that as project manager, one is very involved with the project since one is the responsible and therefore wants it to succeed. She/he said that the project managers therefore have a driving force to make the knowledge flow work. In contrast, she/he believed that someone working in another function, and that has a smaller role in the project might not be as motivated in general, to for example finish the project on time.

Four of the interviewees believed that there is generally a will among the project managers to exchange knowledge, even though the will varies from one person to another. An example was given of when one of the project managers took the initiative to create the monthly meeting for project managers, with the aim to exchange ideas. Some of the project managers said that they want to exchange knowledge since it is not often someone holds knowledge about everything and someone else's opinion is frequently desirable. One of the respondents meant that the will also derives from ensuring "*what is best for the company*". Still, one interviewee said that motivation may depend on whether one see work as a place for earning an income or a place to perform something and "*make the hours count*". If an employee is happy at work or not, was also said to have a great influence.

The interviewees expressed that the main reason for them to share experiences is that they believe this will facilitate the process and lead to an easier way to reach the goals. Two of the project managers stated that there is little that can be done from the management to encourage knowledge exchange, especially among the project managers since they all have strong personalities.

When talking about what affects motivation negatively, problems at work was mentioned as a factor by one of the respondents. If an employee faces too many problems at the same time, or commit many mistakes, this may affect the employees' motivation in a bad way, one of the interviewees stated. She/he said that the risk is that the negativity also affect co-workers and lead to less communication. The same respondent also thought that a too great workload could affect motivation to exchange knowledge negatively. Another interviewee said that if someone has ideas, but they are never given

any attention, in the end one will stop trying, and gave an example of this: "*I have tried to for example suggest that we prepare better before meetings and so on. One has an ambition in the beginning but then if there is not any response, it is easy to get tired*".

One of the respondent explained that some people just do what they are told, and nothing additional. On the other hand, she/he said that there are people who feel like they are part of something important, and therefore are more motivated. One interviewee stated that since they often have to make decisions about complex issues, it is often not clear which decision is the correct one, and they often have to take chances and risks. Therefore, by asking for someone else's opinion, "*you can share the responsibility*".

During the interviews it came out that some people are more stubborn than others. One interviewee said that when problems occur and need to be discussed, some people already from the beginning are determined what is wrong and right. Some people want everything to be as it always has been, since they do not like changes or think it is too tiresome, according to another project manager. A third of them believed it to be a matter of personality. Some people are interested in debating things, while others just are interested in doing things their way all the time.

4.2.2.3.2 Trust

Several of the respondents mentioned that the personal relationship with the co-workers might affect what is communicated, but to have different relationships with different people is natural. One of them said that there is always someone one prefers to contact if problems occur, since one has a better and more open contact with some people than others. The same interviewee also said that the contact is better with those people sitting closely together in the workplace landscape. Another interviewee also mentioned the significance of the personal relationship, and said that a good relationship means faster responses among employees. Additionally, she/he said that lack of good relationships and to not feel comfortable together with someone makes the direct contact difficult. A third respondent said that some people might have difficulties working with certain co-workers and that a professional relationship easily turns into a personal one.

Four of the project managers believed that the extent to which they utilize the knowledge they have gotten from a co-worker is affected by who the co-worker is, at least unconsciously. One project manager said that there are some people she/he trusts more and therefore she/he might not question the knowledge received from them as much as when it comes from other people. Furthermore, this interviewee said that in her/his case, who is trusted or not depends on how well the interviewee knows the person, what is known about this person's achievements and also previous experience from advices this person has given. Another project manager stated that everyone is different and the

competences vary. If someone has been successful earlier, this person will be asked firstly when a co-worker needs help. On the other hand, if this project manager believes that someone is less capable, she/he will not ask this person for help. A third project manager commented the topic by saying that not all advices from co-workers are good advises and that they therefore should be a bit critical towards what is said, and compare it to their own experience. This is something that also another interviewee mentioned: "*Some people just accept everything that is said, and that can cause problems*". One of the project managers emphasized that for her/him, if advices from co-workers are applied or not depends solely on the reasonableness of what is transferred, and is not influenced by any other factor.

4.2.2.3.3 Power

Two of the interviewees speculated that there might be people who choose to retain knowledge. One of them expressed: "*Some people might want to keep knowledge from others since they want to be important and needed*". However, they were unable to give examples of this happening within the organization. Another respondent said that there are people with specialist knowledge, but she/he does not believe that they deliberately keep it from themselves. This the respondent imagine is more common abroad, for example in China, than in Sweden. One of the other respondents argued that no one would benefit from keeping specialist knowledge to her-/himself. Additionally, this respondent said that she/he thinks and hopes that no one would do that.

4.2.2.4 Ability

4.2.2.4.1 Absorptive capacity

According to the interviewees, when knowledge is transferred, the project managers compare that knowledge with their own experiences and value the received knowledge based on this. This because, according to one of them, they rarely obtain completely new knowledge. It is rather additions to what they already know. However, another project manager believed it to be very difficult to acquire new knowledge if it has not been experienced, and if one has not committed a mistake and learnt something new in that way. One of the other interviewees said something similar, about it being problematic to remember knowledge that has not been lived through by her-/himself. This especially concerns information sent by e-mail. Due to the great amount of received e-mails, according to one interviewee around 50-60 per day, it difficult to embrace anything at all.

One project manager mentioned that, in contrast to an e-mail conversation, a face-to-face conversation makes it easier to remember what has been said. She/he said about direct contact: "*...it is the best way for me to absorb and to learn*".

Most of the interviewees said that the communication flow depends on the people involved. It was by two interviewees stated that everyone is differently experienced and talented. The experience and talent depend to some extent on the personality, according to one respondent. She/he stated: "*The personality is very important. If you are going to be a project manager, you must be communicative*". One of the project managers also said that it is necessary to understand that everyone is not of the same opinion, or have the same point of view on problems. The same interviewee claimed that certain people already from the beginning is determined of what is right and what is wrong, which can make it difficult to at all discuss issues with them.

4.2.2.4.2 Ability to understand which knowledge that can be beneficial for whom

When talking about occasions when communication not turned out perfect, one of the project managers said that it has happened that someone who needs certain knowledge, have not received it. This because it is not always easy to think of who is affected indirectly by the knowledge: "*If there for example is a delay in the delivery one remembers to tell the person in the assembly that the screws will not arrive...but the rest…one can sometimes miss that*". Several of the other interviewees gave similar examples.

The respondents also highlighted that it can sometimes be hard to know which knowledge other people possess. The project managers are supposed to perform approximately the same tasks. However, some have worked for the company much longer than others, and maybe also at another department, or with other customers. Therefore, they possess different knowledge. It can also be difficult to know if the knowledge that is received from a co-worker is the best one to be found, another of them argued. However, all the project managers claimed that the majority of the knowledge they need in their daily work exists within the company, even though additional knowledge from authorities, suppliers or customers sometimes is needed. According to one of them, the problem is not that the knowledge does not exist within the organization, but rather to localize it: "…*the hard part is finding it*".

4.2.2.5 Corporate culture

During the interviews, we talked about how free the project managers are to work independently during their projects. Three of them highlighted that they to a great extent are free to work as they wish, and if they receive new knowledge they are also free to apply it. One of the respondents told us that even if they have a basic model of how a project should be carried out, they are still relatively free to work as they like. In the middle of the project there is coordination with the management, but as long as "*everything is up and running, there are never any issues*". Another project manager opined that she/he is not certain whether people completely follow the basic model or if they permit

themselves to do as they like. Since everyone has a background and knowledge that differ from the others, one automatically is different and act differently.

When talking about if they are encouraged to take initiatives and come up with new suggestions for solutions, one of the interviewees said that it is very welcome to come up with new ideas and that: "*…there are no one saying that we always should do as we always have*". She/he told us about one time when they were handed a few things that they were supposed to improve, and also encouraged to come up with new ideas and find solutions and improvements. Three of the others argued that they are neither encouraged nor discouraged. One of them argued that this is due to that their job constantly requires new solutions. We continued asking if they are encouraged to rationalize the process of the project and got the answer from one of the interviewees that the management probably do not study in detail how they work but that perhaps they would if major problems emerged. She/he suggested that this is because everyone is so busy doing her/his things, and as long as the management are happy with the work, everything continues. We also talked about whether the co-workers at work discuss how things are working out for the others. They meant that within the department, there is an awareness of what the co-workers do, due to the meetings with the members of the department. Otherwise, one does not hear that much unless there is something that went very wrong, since it is the problems that are debated. When asked about how big failures are met by the management, one of the project managers answered that it is often met in a good way and that the important thing is to solve the problem: "*If there is a big mistake, it can cost several millions, but most of the time it is not an issue. They are pretty nice, actually /.../ we just have to try to solve it*".

5. Analysis

This chapter intends to analyse the empirical findings based on the theoretical framework. The same headings as in the chapter of the empirical data will be used, in order to provide a clear structure.

5.1 The process of a project, parties involved and kind of knowledge transferred

According to the empirical data, what characterises this organization, due to its project-based form, is that new situations and challenges form part of the daily work. This is because the projects to a large extent are diversified. There are also a large number of parties involved in the projects and the daily work that have to interact with each other. Additionally, the exchanged knowledge is according to the empirical data not only pure information, but also experiences and ideas, suggesting that there is a tacit dimension to the knowledge. These variables appear to influence how some of the identified factors affect the knowledge exchange, something that will be further analysed in the sections below.

5.2 Lack of time

Throughout the interviews, the recurring factor that was mentioned to have the greatest negative impact on the knowledge exchange, and also the communication in general, was lack of time. This is also regarded as an important barrier to an efficient knowledge exchange in previous literature concerning traditional organizations (e.g. Mårtensson, 2000; Davenport & Prusak, 1998). However, the extraordinary time pressure mentioned in the interviews can be related to the system of counting every hour and relating them to a certain project, as commonly done in project-based organizations (cf. Hall et al., 2000). Due to this, employees are obliged to spend their time dealing with the most critical issues that arise along the process of the project. This can result in them missing out on giving or receiving knowledge that they do not know that they could benefit from, and knowledge that could lead to improvements in the daily work in general, even if it is not the solution to the specific present problem. Since employees are so busy focusing on current projects, they are sometimes not able to apply general knowledge that they possess, even if this application would lead to time savings in the long run. Moreover, the time pressure to a large extent denies the employees the ability to stop and reflect over how the overall work can be improved. Instead, developing solutions for the specific situations is prioritized. Thus, the influence on knowledge exchange the time aspect has, appears to be even greater in project-based organizations with this structure than in traditional organizations. This is in line with Newell et al. (2009), whose research has shown that opportunities specifically dedicated for learning is not often provided in project-based organizations.

Furthermore, the empirical data suggests that the time pressure can have another impact on the application and development of knowledge. This organizational structure does not constantly imply

that less knowledge is applied, since the shortage of time leads to that the needed knowledge is transferred specifically in the correct moment. Therefore the application of this does not require a lot of extra time. Furthermore, the time pressure can work as an incentive to work faster, thus developing solutions to be able to reduce the time needed. However, the time pressure as a facilitator for knowledge exchange can according to the empirical data only be related to the application and development of knowledge in specific situations in projects, and not to the application and development of general solutions and improvements.

5.3 Social interaction

5.3.1 How knowledge is exchanged

The previous literature suggests that social interaction, especially through face-to-face contact, can be an important facilitator for knowledge exchange (e.g. Davenport & Prusak, 1998). This appears to also be the case in the studied project-based organization in this thesis. From the empirical data, it is obvious that face-to-face contact is the preferred way to exchange knowledge. One reason they mentioned for this is that communication by e-mail, and to some extent by telephone, more easily leads to misunderstandings. The direct contact on the other hand enables a two-way communication, which contributes to eliminating these confusions. This adds to the indication that there is a tacit dimension to the exchanged knowledge. That there is a tacit dimension indicates that social interaction is of great importance for the knowledge exchange also in this project-based organization, since this kind of knowledge mainly can be transferred through this (cf. Chen & Huang, 2007).

Another mentioned consequence of face-to-face contact is that extra knowledge often is exchanged. This appears to be an important advantage, especially in this organization, where the employees experience a diversified daily work in which new challenges rise continuously. Due to this, it is, according to the interviewees, not always easy to know what to ask or which knowledge that they need. Thus, by communicating with co-workers in person, the exchange of needed knowledge is facilitated.

5.3.2 The workplace landscape

During the interviews, it was emphasized that the workplace landscape has a great impact on how the employees interact and exchange knowledge with each other. This supports Desouza and Paquette's (2011) general statement that the workplace formation affects the patterns of social interaction, also is applicable on the project-based organization in this case study.

In this project-based organization, the short physical distance between the co-workers enables them to carry out a lot of the knowledge exchange in person, which in turn brings out the positive effects of the

face-to-face contact mentioned in the paragraph above. Furthermore, the empirical data suggests that the open landscape implicates that the co-workers in general interact and exchange knowledge to a larger extent between each other. This especially concerns the employees sitting on the same floor. This results in closer relationships between the co-workers, something that according to Nahapiet and Goshal (1998) further facilitates the knowledge exchange.

Between the employees sitting on the same floor in an open landscape, also additional knowledge is spread unconsciously when they overhear the co-workers discussing. This also creates an awareness of what the co-workers are doing. However, this additional knowledge exchange does not naturally take place between the employees sitting on different floors. Moreover, the continuous interaction on a daily basis is according to the empirical data far from as frequent between the two floors as it is on the same floor. That one staircase can influence the patterns of social interaction to this extent, gives an indication of the great the influence on knowledge exchange the formation of the workplace can have.

5.3.3 Formal and informal meetings

In order for knowledge exchange to take place through social interaction, Mårtensson (2000) argues that the creation of "formal learning networks" is central. However, except for the weekly meetings within the project group, and the half-hour meeting every Monday within the department, there are no recurring meetings dedicated to promote learning and knowledge exchange in this case.

Instead, all interviewees strongly emphasized that this is something on-going that mainly takes place through informal meetings in the daily interaction between the co-workers. If an employee believes that there is a co-worker who possesses knowledge that can be useful, the common thing to do is to ask directly in person. Since the project managers often come across new situations in their work, this happens on a daily basis. Due to this high frequency of facing new challenges, the continuous informal interaction appears to be especially important in this project-based organization. The time pressure and the diversified work that characterize the organization results in knowledge exchange taking place so often that it would probably not be possible to call to a formal meeting every time smaller issues come up in the daily work. Nor is it likely that it would be efficient to only exchange knowledge at regular meetings. Instead, in the daily work in this project-based organization, it is more beneficial that the employees have direct access to other co-workers in order to obtain help rapidly.

However, as mentioned above in section *5.2 Lack of time,* the employees in a project-based organization will primarily search for solutions to the most critical situations that arise during the projects. This due to a high time pressure. This image is confirmed by the empirical data that suggests that the largest part of the knowledge exchange takes place through informal interaction, when an employee has a doubt about something regarding a project in process. The focus on solving critical

problems can at the same time result in neglect of the knowledge exchange that could generate general improvements in work methods and the like.

Consequently, in a project-based organization, a regular formal forum could be a solution to preventing this neglect, rather than helping in specific situations during the process of the projects. According to the empirical data, an initiative to such a forum had been taken once, when there was an attempt at establishing a monthly meeting for the project managers. Even though it was down prioritized after only a couple of times, the majority of the project managers opine that this meeting could have facilitated them to start working in a more similar way, something that would be beneficial for their work in the long-run.

5.3.4 Application and development of knowledge

Regarding application of transferred knowledge the empirical data suggests that this to a large extent takes place as a result of social interaction, and that it occurs continuously in the daily work of the project managers. The high frequency of application of transferred knowledge appears to be a natural effect to the on-going process of knowledge transferred between the co-workers, which was described in the section above. Since the transfer of knowledge also enables the application of knowledge, social interaction can also be regarded as an important factor for application of knowledge to take place.

In previous sections of this analysis, the influence that social interaction has on knowledge exchange in general has been emphasized, and the importance of face-to-face contact has been highlighted. When Lubit (2001) talks about knowledge exchange in organizations in general, he stresses that the social interaction is important also specifically for the development of knowledge. This because when two or more individuals are brought together, and their knowledge is summarized, synergies can be created that facilitates the development of knowledge. The empirical findings of this thesis are consistent with this statement, suggesting that the influence social interaction has on knowledge development in the project-based organization is equally great. This because in the studied organization, the employees often face new challenges due to differences between projects. To solve these problems, new solutions have to be developed, and the employees continuously ask each other for help and advice. Moreover, problems are often discussed in groups. During the interviews, several examples were given of how knowledge had been developed through these interactions. The development can take place in formal meetings dedicated to solving specific problems, where different parties get together to contribute with their piece to the puzzle. Furthermore, knowledge development can also occur spontaneously during informal discussions, even if it is not the original purpose.

The implication of the empirical data is that the importance of social interaction for knowledge development cannot be understated in this project-based organization. It is rather indicated that the

importance is especially great since the employees are constantly required to develop new solutions, due to the differences between the projects.

5.3.5 Other communication channels

According to the empirical data, there is no extensive database or wide-ranging manual for how to carry out the project managers' daily work, or how to treat specific customers. However, the interviewees expressed doubts concerning whether relevant models could at all be created, since the projects are so diversified that it is not possible to take into account all the situations and problems that can rise during the process of a project. This is something that is also mentioned in the literature of project management. For example, Tell and Söderlund (2001) argue that it is problematic to compose standardized models for how to carry out projects, since different projects often implicate different challenges, and the models therefore overlook many aspects.

The empirical data also indicates that there exists a great amount of knowledge within the organization, and that not all could be written down. This in turn is problematic, since it is difficult to choose which knowledge that is useful and therefor worth putting into words. Moreover, as earlier concluded in section *5.3.1 How knowledge is exchanged*, the exchanged knowledge in the studied project-based organization appears to have a tacit dimension to it. This also implicates that it would be difficult to at all convert this into explicit knowledge by writing it down. Furthermore, some of interviewees said that they prefer to exchange knowledge in-person.

However, it is also expressed that a well-functioning data-system for spreading knowledge, for example by organizing the "*lessons learned*", could function as something complementary to the knowledge exchange that takes place through social interaction. According to the empirical data, especially newly recruited employees could benefit from this. This could also to some extent prevent that knowledge is missing at work if an employee is not there. Still, this kind of system would not be able to fully replace the knowledge exchange that takes place through social interaction. As mentioned in sections *5.3.1 How knowledge is exchanged* and *5.3.4 Application and development*, communication in-person can lead to the spread of additional knowledge, but also to the development of new knowledge, something that is vital in this organization, because of the diversified projects. By solely exchanging knowledge through data-systems, these advantages would be lost.

5.4 Willingness

5.4.1 Motivation

In the theoretical framework concerning traditional organizations, in section *2.4.2.1 Motivation*, motivation to exchange knowledge is described as one of the most important factors for this process to

take place (Jonsson, 2012). Based on the empirical data, motivation is a factor that also affects the knowledge exchange in the project-based organization in this study. Moreover, several aspects affecting the motivation to exchange knowledge in traditional organizations are also found in the studied project-based organization. For example, according to Bukowitz and Williams (1999), an individual will not exchange knowledge if she/he does not benefit from it. Something similar was expressed in the interviews, where it was stated that the main reason for transferring and applying knowledge is because it is thought that this in some way would facilitate work process for oneself, thus making it easier to reach the goals. Specifically in a project-based organization where the projects are diversified, the employees are motivated to share knowledge, since they often not possess all the knowledge they need themselves, and they can therefore benefit from taking part of co-workers' knowledge. The empirical data suggested an additional factor that can be related to the organizational form. Since the projects are so diversified, they include a lot of risk taking and risk assessments. Therefore, employees can be motivated to ask for second opinions, and by this share the responsibility for difficult decisions, if some of them later on turns out to be mistakes.

It was also mentioned that employees who only go to work to obtain the salary, will do just their job and nothing more, and is consequently not motivated to exchange more knowledge than they absolutely need. On the other hand, someone who is happy at work, and who wants to accomplish something during the work hours, will be more motivated to exchange knowledge. This can be compared with Osterloh and Frey's (2000) research, which states that self-realization can be an important motivator. Furthermore, it was stated that some motivation derives from ensuring that the best for the company is carried out. This is in line with Hislop (2009) who argues that a feeling of belonging to a group increases the motivation for knowledge exchange. However, encouragement from the management to exchange knowledge is not considered to have an influential impact, at least not on the project managers. On the other hand, if initiatives to changes and ideas are not paid attention to, this affects the motivation negatively.

Regarding what can affect the motivation to exchange knowledge in a negative way, a great workload and facing too many problems at the same time can make employees less inclined to share knowledge. Since coming across new situations and challenges occurs in the daily work in a project-based organization like this one, on top of the already large workload, this aspect appears to be an important influencer on the motivation in specifically this organizational form.

One of the respondents mentioned that to be the responsible one, the project manager, for the projects, contributes to increased motivation to exchange knowledge. As responsible, it is easy to see the greater picture. This can be more difficult for someone who plays a smaller part in the project, and therefore she/he might not realize the importance of the communication flows.

When it comes to the application and development of knowledge, previous research has shown that stubbornness and an unwillingness to change things can be an influential barrier (cf. Davenport & Prusak, 1998). In the interviews it was stated that some people from the beginning have decided that they are right, which makes it difficult to carry out a profitable discussion with them. This can depend on the personality. Some people are more interested in communicating with co-workers than others. Others are too tired to carry out changes, and they are just interested in continuing like they always have. Thus, stubbornness and unwillingness to change things appears to be important barriers to knowledge exchange also in the studied project-based organization.

5.4.2 Trust

As established in the theoretical framework in section *2.4.2.2 Trust,* trust has shown to be a significant factor for knowledge exchange in traditional organizations. The empirical data suggests that the factor is influential also for the project-based organization in this case study. The impact the personal relations have on the way the co-workers interact, communicate and thus exchange knowledge between each other is something that came up naturally during the interviews. If an employee gets along well with another co-worker, the interaction and exchange will take place more frequently. In contrast, if an employee does not feel comfortable with a co-worker, the direct contact will be difficult, thus inhibiting the exchange. This is in line with Rentzl (2008), who claims that trust affects for example attitudes and behaviours, and whether you decide to exchange knowledge with others or not.

That a less well-functioning relation results in difficulties in the direct contact is something problematic, especially in this project-based organization. This because knowledge, as mentioned in section *5.3 Social interaction*, is mainly exchanged between the co-workers in-person, due to the fact that very little knowledge is written down, and that communication by for example e-mail can result in misunderstandings. The exchange of knowledge also takes place continuously, due to constantly rising challenges. Therefore it is especially important that good relations and trust exist between the co-workers in this kind of organization, since the exchange in-person is often the only way to give, receive and develop knowledge. Davenport and Prusak (1998) argue that trust can be built up through mutual interaction and face-to-face contact. This is consistent with something mentioned in the interviews, which was that the co-workers sitting closely together have a closer relationship with each other.

Regarding the influence trust of the source has on whether knowledge is applied or not, is emphasized by Davenport and Prusak (1998). This influence is also highlighted in the empirical data. All interviewees but one claimed that the person they receive the knowledge from affects the application of it, at least unconsciously. There are people they trust more, and therefore this knowledge is to a less

extent questioned before put into use. The degree of trust can depend on how close the relationship to the person is and what is known of this person's skills and previous achievements. The project manager who opposed to this said that the application is entirely dependent of the reasonableness of what is transferred.

5.4.3 Power

As mentioned in section *2.4.2.3 Power,* power is regarded as an important factor for knowledge exchange in organizations in general. However, power was not a factor that came up naturally in any of the interviews. Therefore, we asked specific questions regarding this, and the answers we then got were very hesitating. One of the project managers denied that any knowledge could be retained due to power aspects, and guessed that it probably is more common abroad than in Sweden. Another of them also denied power as an affecting factor, and argued that no one would benefit from keeping knowledge for her/him-self. Two of the respondents speculated that it could be possible that some might want to keep knowledge to themselves in order to stay important, but could not think of any examples of when this has happened. Thus, the power aspect appears to have little influence of the exchange of knowledge in this project-based organization.

5.5 Abilities

5.5.1 Absorptive capacity

According to the empirical data, the interviewees believe that the capacity to absorb knowledge vary from person to person, which in turn means that the knowledge exchange is affected by the individuals involved. The interviewees described how received knowledge always is compared with the receiver's previous knowledge, and thereafter evaluated based on this. This is in line with Tsai (2001), who argues that the absorptive capacity is influenced by the individuals' previous experience. Moreover, the individual's personality and attitude were in the interviews also said to have an effect on the ability to absorb knowledge. Some people are more communicative and open to receive knowledge from others, while some on the other hand are less interested in communicating, and therefore less capable absorbing knowledge. This is consistent with Davenport and Prusak's (1998) research that concludes that the absorptive capacity partly depends on the attitude.

The empirical data also suggests that the absorptive capacity can vary depending on the circumstances in which the knowledge is transferred. An individual's absorptive capacity appears to be influenced by the amount of knowledge and information that this person receives. In an organization where the knowledge flow is large, it is more difficult to absorb the received knowledge. This is the case in this project-based organization, where mainly the information flow by e-mail is large, especially for the project managers who get in contact with many parties due to their central role in the projects. It is not

possible for them to absorb all the knowledge that is to be transferred to them. Additionally, it is difficult to memorize the things that at some point are partly absorbed, due to the constantly incoming flow of knowledge. However, when this large amount of knowledge is received, it is easier to remember it if it is obtained through a face-to-face conversation.

5.5.2 Ability to understand which knowledge that can be beneficial for whom

As can be observed in section *2.4.3.2 Ability to understand which knowledge that can be beneficial for whom*, in previous studies concerning knowledge exchange in organizations in general, this ability is said to have an important influence. The empirical data suggests that this ability also affects the knowledge exchange in the project-based organization in this study.

It is stated that the problem is not that the knowledge the employees need is not available within the company, because it normally is with some exceptions. The difficulties rather arise when it comes to localizing this knowledge. The project managers have been working with different projects and customers, and some employees have worked there for a longer period than others. Thus, due to different experiences and the diversified work that characterize this project-based organization, the individuals possess different kinds of knowledge. Therefore, it can be difficult to know who has the knowledge that one needs, and if the knowledge transferred from one person is the best available. The way to organize organizational activities in projects can strengthen these difficulties further. Due to the project-based form, there are many people and functions involved in the projects, and that these parties can vary between the projects. The large and varying number of involved parties might make it even more difficult for employees to know who has got the knowledge they need.

One of the project managers also expressed that it can be difficult to know who is affected indirectly by which knowledge, since there are so many parties involved. Several others gave similar descriptions, thus agreeing that it sometimes can be hard to know who needs the information one possess.

5.6 Corporate culture

During the interviews it came out that the project managers to a great extent are free to work as they wish, and that the management does not intervene as long as everything is going well. This appears to be a consequence of the project-based form, since this structure emphasizes the result of the projects, rather than how they are carried out. Thus, the management does not seem to take an active role when it comes to the promotion of knowledge exchange. When Jonsson (2012) is writing about knowledge exchange in traditional organizations, she claims that it is important for the organization to integrate knowledge-sharing activities in the daily work in order to achieve a corporate culture that fosters

knowledge exchange. Despite the lack of promotion for this from the management in this organization, knowledge exchange takes place continuously between the employees in the daily work (see section *5.3.3 Formal and informal meetings)*. This is because the employees are driven to ask co-workers for help due to that they constantly face new situations. Therefore, the management involvement appears in this project-based organization to be of less importance when it comes to fostering a corporate culture that promotes the daily exchange through social interaction. However, as previously mentioned in section *5.3.3 Formal and informal meetings*, a regular formal forum could be beneficial to prevent the neglect of long-term development. When it comes to implementing such forum, the importance of management involvement can be of outmost importance, since the employees themselves will down-prioritize this in order to focus on the most current challenges in their daily work.

According to Davenport and Prusak (1998), new initiatives and collaborations should be encouraged in order to create a corporate culture that facilitates the application and development of knowledge. The empirical data suggests that the encouragement from management regarding this is not articulated, even if it is neither discouraged. In spite of this, application and development of knowledge constantly take place, as a consequence of the diversified daily work in this project-based organization. Therefore, the influence of encouragement from management to take new initiatives and to find new solutions is not as great as it might be in other organizations, where the development of knowledge is not part of the daily work. Yet again, the management holds a more important role when it comes to encouraging the long-term development of knowledge.

Davenport and Prusak's (1998) research on knowledge exchange in traditional organizations shows that an important obstacle for application and development of transferred knowledge is a fear among the co-workers of taking risks. However, the empirical data suggests that taking risks is part of the daily work as a project manager of diversified projects. Since new challenges constantly arise, no one can be really sure of which is the best solution in every situation. Therefore, according to the empirical data, the management within the company does not penalize mistakes. This appears to have promoted a corporate culture in which employees to a less extent fear risk taking. Thus, the fear of taking risks might exist in this project-based organization, but since risk evaluation is something that has to be done on a daily basis, it does not appear to be a dominant obstacle for knowledge application and development to the same extent as previous research has found it to be in a traditionally structured organization (cf. Davenport & Prusak, 1998).

6. Conclusion

This section intends to summarize the purpose and findings in this case study. Thereafter, suggestions for further research will be given.

The aim of this thesis is to develop a better understanding of how the process of knowledge exchange is influenced by the characteristics of a project-based organization. To carry this through, the following research question was formulated:

- How is knowledge exchange enabled and prevented within a project-based organization, compared to in a traditionally structured organization?

This study shows that several of the enablers and obstacles that previous research has shown to influence the knowledge exchange in traditional organizations, also have, to different extents, an influence on this process in a project-based organization. However, what characterizes this organization, due to its project-based form, is that there is a high time pressure, that employees constantly face new challenges, that there are a large number of parties involved in the daily work, and that there is a tacit dimension to the knowledge exchanged. These characteristics appear to have an influence on how the factors affect the knowledge exchange.

Lack of time

Lack of time is in general regarded as an important obstacle for sharing knowledge (see section *2.4.1 Social interaction)*. However, in a project-based organization, the lack of time to exchange knowledge seems to be even greater. This organizational form causes a high time-pressure and a focus on meeting project deadlines. Therefore, the exchange that takes place is mainly related to solving problems that occur in specific situations. The exchange of knowledge regarding general solutions, and improvements of the general processes is down prioritized. This even if the transfer, application and development of certain knowledge would lead to time savings in the long run. Consequently, the high time-pressure in this organizational form is something that prevents knowledge exchange that does not concern present challenges, and therefore long-term thinking can be neglected.

Social interaction

Previous research highlights the influence social interaction has as an enabler for the process of knowledge sharing in traditional organizations (see section *2.4.1 Social interaction)*. In the studied project-based organization, this also appears to be a prerequisite for the exchange to take place. Especially the exchange that occurs face-to-face is emphasized as an important enabler, since this way of sharing knowledge has a number of advantages. If there is a tacit dimension to the knowledge

exchanged, direct contact is often the best way to carry this through. The project-based form also implicates a diversified daily work, which sometimes makes it difficult to know which knowledge to ask for. The interaction in person therefore facilitates the exchange, since extra knowledge then is shared.

The in-person interaction is in turn facilitated and promoted if there is a short physical distance between the co-workers. Especially to sit in an open landscape increases the amount of knowledge exchanged, and also creates an awareness of what the co-workers are doing. This enabler appears to be particularly important in a project-based organization where the employees are working with different things.

The social interaction in person takes place in formal meetings, but primarily in informal encounters. The findings in this study suggest that in an organization with a high time-pressure and where new challenges often arise, having direct access to co-workers knowledge is a prerequisite. Formal meetings dedicated specifically to exchange knowledge can on the other hand work as a facilitator for the development of general working methods and improvements.

Concerning the application and development of knowledge, this is promoted through social interaction in person. Development of knowledge even takes place sometimes without it being the purpose, when co-workers are brought together. Thus, the exchange occurring through in-person contact is of special importance in a project-based organization, where the employees are constantly required to develop new solutions due to the diversified projects.

Alternative communication channels for knowledge, such as databases and manuals, would not be able to replace the exchange through social interaction in this project-based organization. The diversification of the projects, the constantly arising challenges, and the large amount of knowledge that exists within the organization, make it impossible to write down all knowledge that is needed in the daily work. However, models or a functioning data system for spreading knowledge could function as a complement to the knowledge exchanged through social interaction. This could be particularly beneficial for newly recruited employees who lack the basic knowledge for how the process of the projects is carried out.

Motivation

The existence of motivation is according to previous research an important prerequisite for achieving an efficient knowledge exchange (see section *2.4.2.1 Motivation)*. This also showed to be an equally important factor in the studied project-based organization. Several of the aspects that the previous research mentioned as influential for the motivation to share knowledge within a traditional

organization, was also found in this case study. Additionally, a new aspect that appeared to affect the motivation to exchange knowledge was that it is a way to spread the responsibility. This is a factor of particular importance in an organization where many risk assessments have to be done. On the other hand, in a project-based organization, the motivation to exchange knowledge can as a result of the high time pressure be affected negatively.

Trust

The existence of trust is an important enabler for knowledge exchange in traditional organizations, according to previous research (see section *2.4.2.2 Trust)* but has also shown to be an influential enabler in the studied project-based organization. The personal relations between co-workers influence the amount and how knowledge is exchanged. That there are good relationships between co-workers is additionally important in the project-based organization, due to that the knowledge exchange in person is an important part of the daily work, and vital for carrying out projects. Furthermore, lack of trust in the sender of knowledge seems to be an important inhibitor especially regarding the application of that knowledge.

Power

In contrast to previous research (see section *2.4.2.3)*, to retain knowledge in order to maintain or gain advantages does not appear to have an influence on the knowledge exchange in the project-based organization.

Absorptive capacity

The influence on knowledge exchange that the absorptive capacity has, appears to be equally important in the studied project-based organization as in traditional ones, that previous research has studied (see section *2.4.3.1 Absorptive capacity)*. The factors mentioned to affect this capacity in previous research seem to be consistent with the ones in the project-based organization. However, an additional aspect that influences this capacity in the project-based organization is the great flow of knowledge that exists partly because there are so many parties involved in the projects. This great flow can inhibit the ability to absorb any knowledge, since it is difficult for the employees to handle this amount.

Ability to understand which knowledge that can be beneficial for whom

The ability to understand which knowledge that can be beneficial for whom is a basic requisite for knowledge exchange to be efficient in traditional organizations according to previous studies (see section *2.4.3.2 Ability to understand which knowledge that can be beneficial for whom)*. In the project-based organization, there is a lack of this ability, which functions as a barrier for the knowledge exchange. This is partly because of the diversified work that the employees carry out, which

implicates that they all have different experiences. Furthermore, the large number of parties involved also affects this ability negatively.

Corporate culture

Previous studies on traditional organizations have shown that knowledge management basically is about creating a culture that promotes knowledge exchange (see section *2.4.4 Corporate culture)*. However, the findings in this study show that management involvement in a project-based organization is not to the same extent indispensable when it comes to creating a culture that encourages knowledge exchange in the daily work. This is because employees mainly are driven to exchange knowledge by the diversified daily work. However, management involvement can play a more important role when it comes to encouraging long-term development and the implementation of formal learning networks. Furthermore, the fear of taking risks has been shown to have a negative influence on knowledge exchange in previous research. Nevertheless, due to the constant risk taking that follows from a diversified daily work in a project-based organization, this factor does not appear to be as influential in a project-based organization as in a traditional one.

6.1 Suggestions for further research

How the characteristics of a project-based organization influence the process of knowledge exchange is an unexplored topic within the research field of knowledge management, and what this thesis has done is to contribute to a better understanding of this. However, due to the narrow time frame, the case study that has been carried out is relatively small, since only five in-depth interviews have been conducted in one single organization. Due to this, a larger study with the same aim as in this study could be carried out, in order to discover additional factors and aspects that were not found because of the limited number of respondents. Further studies would also contribute to making the findings of this thesis more generalizable. Moreover, the process of knowledge exchange is a complex phenomenon, since it is embedded in the organizational context and the individuals' daily interaction. Therefore, to study this phenomenon through in-depth interviews has its limitations, since knowledge exchange to some extent, according to the findings in this thesis, takes place unconsciously. Thus, one way to broaden the understanding of the phenomenon and to increase the internal validity could be to complement the interviews with observations.

Moreover, some of the findings in this thesis would be interesting to follow up with further studies. For example, in contrast to research on traditional organizations, this study shows that power as a factor does not appear to have a great influence on the knowledge exchange in the studied project-based organization. However, the findings in this thesis do not serve to give a further explanation of why, and it would therefore be beneficial to carry out additional research to investigate this.

One of the findings of this study is that the characteristics of a project-based organization can enhance the importance of social interaction through direct contact as a facilitator for knowledge exchange. However, the studied company in this thesis is an example of a large-sized organization with business units in multiple countries, and daily in-person contact is naturally not possible between employees working in the different units. Therefore, further research is suggested of how the characteristics of a project-based organization affect the knowledge exchange between employees working on different locations, when frequent face-to-face contact is not an option.

7. References

Ackerman, Mark, Pipek, Volmar & Wulf, Volker. 2003. *Sharing expertise: Beyond knowledge management*. Cambridge: The MIT Press.

Adler, Paul S. 2001. Market, hierarchy, and trust: The Knowledge economy and the future of Capitalism. *Organization Science:* 12 (2) pp. 215-234.

Alvesson, Mats & Kärreman, Dan. 2001. Odd couple: Making Sense of the curious concept of knowledge management. *Journal of Management Studies:* 38 (7) pp. 995-1018.

Ardichvili Alexander, Vaughn Page, Tim Wentling. 2003. *Motivation and barriers to participation in virtual knowledge-sharing communities of practice*. Journal of knowledge management: 7 (1) pp. 64-77.

Argote, Linda & Ingram, Paul. 2000. Knowledge Transfer: A Basis for Competitive Advantage in Firms. *Organizational Behaviour and Human Decision Processes:* 82 (1) pp. 150-169.

Bogner, William C. & Bansal, Pratima. 2007. Knowledge management as the basis of sustained high performance. *Journal of Management Studies:* 44 (1) pp. 165-188.

Brensen, Mike, Edelman, Linda, Newell, Sue, Scarbrough, Harry & Swan, Jacky. 2003. Social practices and the management of knowledge in project environments. *International Journal of Project Management*: 21 (3) pp. 157-166.

Brown, John Seely & Duguid, Paul. 2001. Knowledge and organization: A social-practice perspective. *Organization Science*: 12 (2) pp. 198-213.

Bryman, Alan, Bell, Emma. 2013. *Företagsekonomiska forskningsmetoder*. 2 ed. Stockholm: Liber.

Bukowitz, Wendi & Williams, Ruth L. 1999. *The Knowledge Management –field book.* London: Pearson Education Limited.

Chen & Huang. 2007. How organizational climate and structure affect knowledge management – the social interaction perspective. *International Journal of Information Management:* 27 (2) pp. 104-118.

Davenport, Thomas H., Prusak, Laurence. 1998. Working knowledge: How organizations manage what they know. Boston: Harvard Business School Corporation.

Desouza, Kevin C. 2003. Facilitating tacit knowledge exchange. *Communications of the ACM:* 46 (6) pp. 85-88.

Desouza, Kevin.C, Paquette, Scott. 2011. *Knowledge management - An introduction*. USA: Facet publishing. pp. 179-211.

Dubois, Anna & Gadde, Lars-Erik. 2002. Systematic combining: An abductive approach to case research. *Journal of Business Research:* 55 (7) pp. 553-560.

Eisenhardt, Kathleen M. 1989. Building theories from case study research. *Academy of Management Review:* 14 (4) pp. 532-550.

Ekstedt, Eskil. 1999. *Neo-industrial organising: Renewal by action and knowledge formation in a project-intensive economy.* London: Routledge.

Engwall, Mats. 1999. *Jakten på det effektiva projektet*. 2 ed. Stockholm: Nerenius & Santérus.

Esaiasson, Peter, Giljam, Mikael, Oscarsson, Henrik & Wängnerud, Lena. 2012. *Metodpraktikan: Konsten att studera samhälle, individ och marknad*. 4 ed. Stockholm: Norstedts.

Ghauri, Pervez. 2004. Designing and conducting case studies in international business research in: Marschan-Piekkari, Rebecca & Welch, Catherine (eds.), Handbook of Qualitative Research Methods for International Business. Cheltenham: Edward Elgar.

Hall, Jeremy, Sapsed, Jonathan & Williams, Kelly. 2000. *Barriers and facilitators to knowledge capture and transfer in project-based firms*. University of Calgary and Brighton. http://in3.dem.ist.utl.pt/downloads/cur2000/papers/S28P04.PDF

Hatmaker, Deneen M, Park, Hyun Hee, Rethemeyer, R. Karl. 2012. *Learning the Ropes: Communities of practice and Social Networks in the Public Sector.* International Public Management Journal: 14 (4) pp. 395-419.

Hislop, Donald. 2009. *Knowledge management in organizations: A critical introduction*. 2 ed. Oxford: Oxford University Press.

Jacobsen, Dag Ingvar. 2002. *Vad, hur och varför: om metodval i företagsekonomi och andra samhällsvetenskapliga ämnen*. 1 ed. Lund: Studentlitteratur.

Jonsson, Anna. 2012. *Kunskapsöverföring & knowledge management*. 1 ed. Malmö: Liber.

Lindkvist, Björn. 2001. *Kunskapsöverföring mellan produktutvecklingsprojekt*. Diss., Stockholm: Handelshögskolan.

Lubit, Roy. 2001. Tacit Knowledge and Knowledge Management: The Keys to Sustainable Competitive Advantage. *Organizational Dynamics:* 29 (4) pp. 164-178.

Merriam, Sharan B. 1994. *Fallstudien som forskningsmetod*. 1 ed. Lund: Studentlitteratur.

Mårtensson, Maria. 2000. A critical review of knowledge management as a management tool. *Journal of Knowledge Management:* 4 (3) pp. 204-216.

Nahapiet, Janine, Ghoshal, Sumantra. 1998. Social capital, intellectual capital, and the organizational advantage. *Academy of Management*: 23 (2) pp. 242-266.

Newell, Sue, Robertson, Naxine, Scarbrough, Harry & Macmillan, Swan. 2009. *Managing knowledge work and innovation.* 2 ed. Basingstoke: Palgrave Macmillan.

Newell, Sue & Swan, Jacky. 2000. Trust and inter-organizational networking. *Human Relations:* 53 (10) pp. 1287-1328.

Nonaka, Ikujiro. 1994. A Dynamic Theory of Organizational Knowledge Creation. *Organization Science:* 5 (1) pp. 14-37.

Nonaka, Ikujiro, Konno, Noboru. 1998. The concept of ”Ba”: Building a foundation for knowledge cretaion. *The California Management Review:* 40 (3) pp. 40-54.

Oseland, Nigel, Marmot, Alexi, Swaffer, Felicity & Ceneda, Sophia. 2011. Environments for successful interaction. *Journal of Corporate Real Estate*: 29 (1/2) pp. 50 – 62.

Osterloh, Margit & Frey, Bruno S. 2000. *Motivation, Knowledge Transfer, and Organizational Form*. Organization Science: 11 (5) pp. 538-550.

Rentzl, Birgit. 2008. Trust in management and knowledge sharing: The mediating effects of fear and knowledge documentation. *Omega: 36 (2)* pp. *206-220.*

Riege, Andreas. 2005. Three dozen knowledge-sharing barriers managers must consider. *Journal of knowledge management:* 9 (3) pp. 18-35.

Styhre, Alexander. 2003. Knowledge management beyond codification: Knowing as practice/concept. *Journal of Knowledge Management:* 7 (5) pp. 32-40.

Söderlund, Jonas. 2005. *Projektledning och projektkompetens: Perspektiv på projektkompetens*. 1 ed. Malmö: Liber.

Tell, Fredrik & Söderlund, Jonas. 2001. *Lärande mellan projekt*, in: Berggren, Christian & Lindkvist, Lars (eds.), Projekt – Organisation för målorientering och lärande. Lund: Studentlitteratur.

Tsai, Wenpin. 2001. Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management*: 44 (5) pp. 996-1004.

Whitely, Richard. 2006. Project-based firms: New organizations form or variations on a theme? *Oxford Journals*: 15 (1) pp. 77-99.

Wiig, Karl M. 1997. Knowledge management: Where did it come from and where will it go? *Expert Systems with Applications:* 13 (1) pp. 1–14.

8. Appendix

8.1 Interview guide

- The interviewee's role at the company, length of employment and work tasks
- Procedure of the projects, and example of a project process
- Involved parties and the communication between these parties
- The exchange of information, experiences and ideas between the parties within the organization
- Usage of models, data bases and similar
- Examples of when the transfer of knowledge has gone well/not so well
- Enablers and barriers for knowledge transfer

- The usage of co-workers knowledge and experiences
- Examples of when application of knowledge has gone well/not so well
- Enablers and barriers for knowledge application

- Similarities and differences between different projects
- Procedure for solving new challenges and problems
- Examples of when solutions of challenges and problems have gone well/not so well
- Enablers and barriers for knowledge development

8.2 Overview of respondents and interviews

Respondent (5)	**Length of employment**	**Date**	**Duration** (Approx. 255 min in total)
Project Manager 1	10 years	April 29, 2014	55 min. Recorder used
Project Manager 2	3.5 years	April 29, 2014	45 min. Recorder used
Project Manager 3	3 years	April 30, 2014	60 min. Recorder used
Project Manager 4	2 years	May 7, 2014	50 min. Recorder used
Project Manager 5	37 years	May 7, 2014	45 min Recorder used